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Analysis of a Worst Case Oil Spill EIS, Galveston

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ABSTRACT

On July 8, 1980, the Galveston district of the U.S. Army Corps of Engineers (Corps) issued the permits required for the construction of an onshore deepwater port. The proposed port expansion project has been the subject of extensive controversy and litigation. The primary conflict has centered on the exclusion of a worst case oil spill analysis, as required by recent Council on Environmental Quality (CEQ) regulations.

A rational-deductive approach to this decision leads to the conclusion that the economically and environmentally favored choice would have been to include the worst case analysis in the initial Environmental Impact Statement (EIS). Because of changes in oil import conditions and prices, the project has probably been delayed to such an extent that it is no longer economically viable. This discrepancy leads to important generalizations about agency decision making. The utility and necessity of the worst case regulation are also explored.

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CHAPTER I

INTRODUCTION

The Port of Galveston has served for many years as a major refinery and distribution area for both Texas and the nation. In order to meet a perceived need for an increased oil handling capacity, an onshore deepwater port was proposed by Galveston Wharves, a private utility of the city of Galveston. The expanded port would facilitate oil imports by allowing deep draft Very Large Crude Carriers (VLCC's) to unload at Galveston. The proposed onshore port met with considerable opposition, primarily concerning the increased potential for catastrophic impacts resulting from a major oil spill in Galveston Bay.

The United States Corps of Engineers (hereafter referred to as the Corps) is responsible for permitting, construction and dredging operations in U.S. waters. Under the National Environmental Policy Act (NEPA), the federal official responsible for a major federal action, such as permitting construction of a deepwater port, must prepare an Environmental Impact Statement (EIS). The EIS is intended to ensure that the environmental impacts of major actions are considered as part of the agency's decision-making process.

This thesis focuses on the decision by the Corps not to include a worst case oil spill analysis in the EIS for the

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This thesis follows the format and style of A Manual for Writers, by Kate A. Turabian.

proposed deepwater port at Galveston. The study was selected because it presented two "firsts": 1) this is the first time a deepwater port has been proposed in a sensitive wildlife estuary (see Chapter Four), and 2) the litigation resulting from the proposed project was the first to apply one of a set of newly issued Council on Environmental Quality (CEQ) regulations. The CEQ has an advisory function within the executive branch and is charged with providing agencies with additional guidelines for the preparation of EIS's. The regulation on which the litigation focuses requires that any scientific uncertainty relating to a project or its impacts be disclosed in the EIS. If the impacts are not known or if the impacts of a project cannot be determined using existing methods, a "worst case" scenario must be formulated and its effects considered. Along with the environmental impacts of a low probability/ high risk event, a probability analysis of such an event must be presented as part of the EIS, according the CEQ regulations. The current CEQ has made clarification of the worst case regulation a primary policy issue. At the present time, the Corps and other federal agencies are "concerned" and "confused" by the requirement; they are uncertain when and how a worst case analysis should be completed. The present case helps clarify by way of example.

Objectives

This thesis draws from a variety of sources and disciplines. In order to put the following pages in perspective, these objectives are presented:

1. To present a factual overview of the case study. By considering the historical development, it is expected that the current situation and its implications for the future can be better understood.

2. To understand the views of the opposing interests. These are addressed under the heading of economic and environmental considerations.

3. To evaluate the decision by the Corps in terms of the interests involved. This entails examining the stated goals of the Corps, the proposed project and NEPA. Within the framework of a case study approach, this thesis evaluates the Corps' decision using the "rational-deductive" ideal (see Chapter 3). Briefly stated, this approach involves defining the goal(s) to be pursued, identifying the available options and then choosing that option which best meets the stated goals.

4. Finally, to uncover reasons for the Corps' original decision and to draw conclusisons and implications for this and other agency actions.

History of Port Development in the Galveston Area

The first known use of Galveston as a port was in 1824, at which time it functioned as a provisional port for Mexico. At that time a few breakwaters were constructed, but otherwise the port relied solely on the natural water depth (5) and coastline. Between 1869 and 1873 a mile long breakwater was constructed to limit the erosion of Galveston Island and to improve access to navigation. This latter objective was accomplished by increasing scouring between the inner and outer channels (Fig. 1). The depth through Bolivar Roads was increased as a result of a number of dredging projects. At the turn of the century it was dredged to approximately 26 feet mean low water (mlw). By 1905 the channel was deepened naturally to 30 feet mlw due to scouring

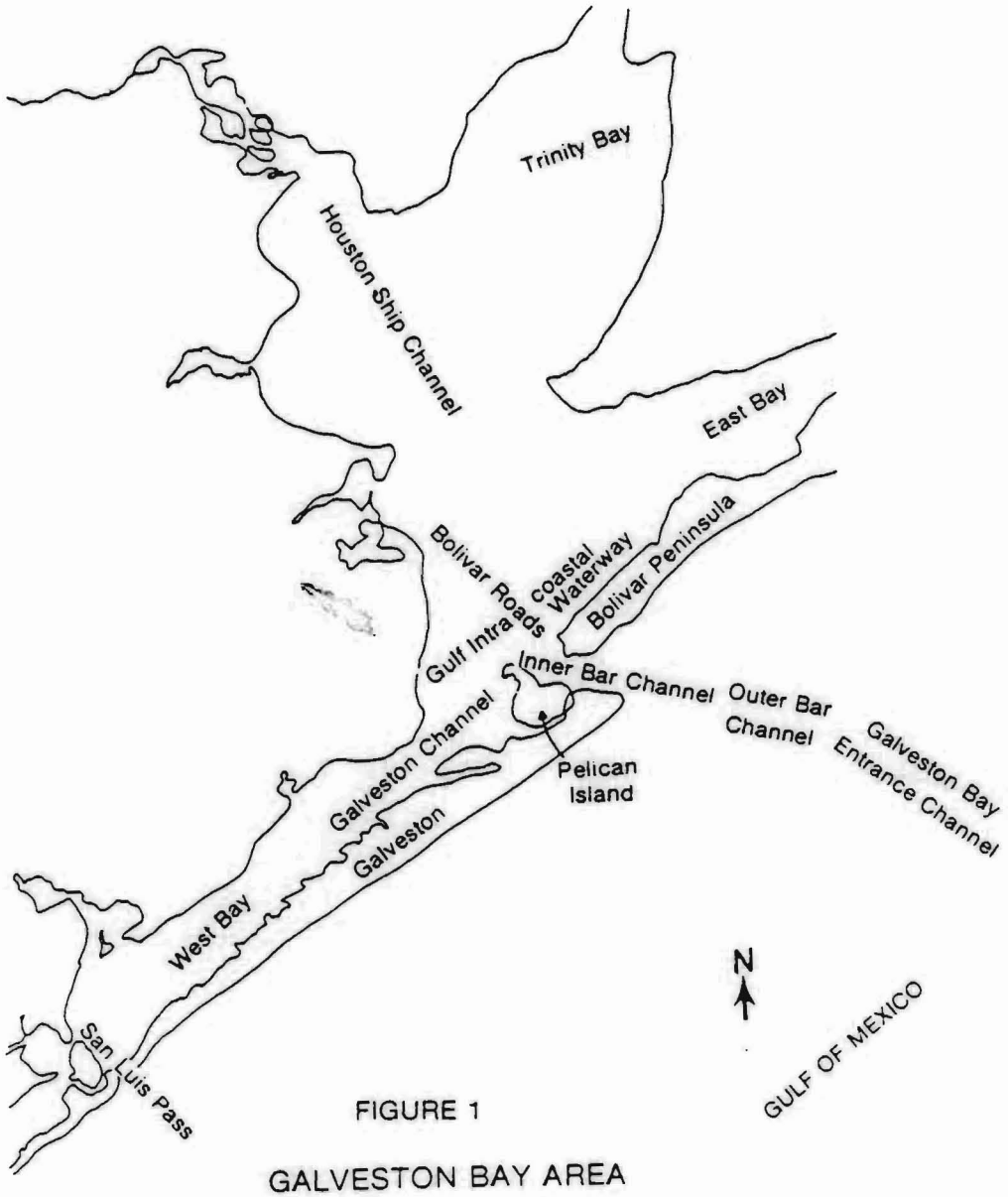

FIGURE 1

GALVESTON BAY AREA

as a result of the completion of the north and south jetty. The authorized depth of the main channels was increased to 34 feet mlw by 1935 and to 36 feet mlw in 1948. The present 40 foot mlw depth was authorized in 1958 and completed in 1966. Galveston Channel proper was dredged to the same depth in 1975-76. Main navigation channels that terminate at the port are the Galveston Bay Entrance Channel, Outer Bar Channel, Inner Bar Channel, Galveston Channel, Texas City Channel, Houston Ship Channel and the Gulf Intracoastal Waterway (GIWW) (Fig. 1).

The suggestion to provide a deep draft port at Galveston was one of many deepwater port proposals to appear in the United States in the late 1960's. These projects were originally proposed as a result of decreased U.S. production and the resulting increased demand for imported oil. The construction of a Galveston deepwater port was first suggested in June 1966 during a meeting of Galveston Wharves, oil companies and tanker chartering firms held by local Congressman Jack Brooks (6). Authorization for a feasibility study of a 200,000 dead-weight ton (dwt) capacity superport in the Galveston-Port Arthur area came in December of 1970. However, like many other superport projects suffering from a lack of funding and/or confusion over which federal and state agencies were to approve the funding, the proposed feasibility study was never undertaken. In response to these difficulties and similar problems confronting other ports, the Deepwater Ports Act (PL 93-627) was enacted. It was

signed on January 3, 1973 "to regulate commerce, promote efficiency in transportation, and protect the environment by establishing procedures for the location, construction, and operation of deepwater ports off the coasts of the U.S." (7). It gave the Departments of Transportation and Justice, Environmental Protection Agency and the Federal Trade Commission each a hand in port licensing, operation and/or construction.

A subsequent study dealing with the establishment of a Texas deepwater port was undertaken jointly by Texas A&M University, the Texas Sea Grant Program and the Texas Superport Study Corporation. This was the first of eight major studies conducted by this and other groups centering on the need and feasibility of a Texas superport (8). The overall conclusions strongly favored port expansion to accomodate a projected increase in oil traffic. However, an offshore port was concluded to be environmentally preferable in all of the studies and economically preferable in most.

Galveston Wharves filed dredging permit application #10400 with the Corps in June, 1974. The permit would have authorized a 67 ft. mlw channel depth. However, the permit was not processed at that time; the applicants chose to wait for the results of further environmental and economic impact studies.

In December, 1975, the Public Works Committee of the U.S. Congress passed a resolution authorizing another study of a Texas deepwater port. This was combined with an ongoing

study by the Corps which compared a number of different Texas cities as alternative locations for a deep draft port. Comparing the economic and environmental impacts of an onshore versus an offshore facility, this study concluded that both were economically feasible given the status of the petrochemical industry at that time. However, the study also concluded that an offshore port would be the environmentally preferred alternative, since no bays or estuaries would be disturbed by the laying of a pipeline. Furthermore the effects of oil spilled offshore would be less immediate and therefore less detrimental.

Concurrent with these plans for the Galveston project, the development of a potentially competetive offshore port in the Freeport, Texas area was being considered by Seadoc, Inc. Seadoc was a Texas corporation formed to own, plan, develop and operate the facility. It consisted of a large number of prominent industry groups including Cities Service Company, Continental Pipe Line Service, Crown-Seadock Pipe Line Corporation, Dow Chemical Company, Exxon Pipe Line Company, Toronto Pipe Line Company, Mobil Oil Corporation, Phillips Investment Corporation, and Shell Oil Company.

The Texas Deepwater Port Authority was established when several of the participating companies pulled out of the Seadoc Corporation in 1977. Recession and higher oil prices combined with an overall decrease in demand for oil led many of the companies to decide that they could not justify the substantial investment in a new port. In 1980,the Freeport

offshore project underwent another metamorphosis resulting in a scaled down version and was renamed Texas Offshore Port (TOP). Its backers included Phillips, Dow Chemical and Seaway Pipeline Companies. TOP was issued a license in September, 1981. However, the port at Freeport will probably never be built, given the recent decline in oil transportation in the area (9).

Current Status of the Problem

The current permit application was filed in July, 1976 as an amendment to the original application #10400, which had been held back two years earlier. It proposes deepening and extending Galveston Harbor and Channel to allow access to VLCC's of up to 320,000 dwt. A crude oil tanker berthing and offloading facility would be built on Pelican Island (Fig. 1), connected by pipeline with storage facilities at Texas City, Beaumont, Houston and Freeport.

On July 8, 1980, the Corps issued five permits authorizing the private construction of an onshore deepwater port and crude oil terminal at Galveston. The permits were issued jointly to Galveston Wharves (Wharves) and the Pelican Terminal Corporation (Pelco), who, along with the Chicago Iron and Steel Company and Northville Industries, would provide the financial backing for the project. The location of the proposed "superport" terminal is Pelican Island, located just inside Galveston Bay and adjacent to Galveston City. The entrance to the port is Galveston Bay,

which has served for many years as a commercial waterway for crude oil tankers averaging 50,000 dwt. The proposed project would increase the maximum tonnage of allowed tankers from 50,000 to 320,000 deadweight ton VLCC's.

The proposed project has sparked considerable controversy, primarily over the potential effects of a major oil spill within Galveston Bay. Two groups emerged representing the local public's split reaction to the project: 1) Stop the Terminal On Pelican Island (STOP), which feared oil spill impacts and their associated fire and explosion potential, and 2) the Joint Organization for a Better Seaport (JOBS), which viewed port expansion as a means of increased employment and tax base.

The Bay is Texas' largest estuary and serves as spawning ground and critical habitat for many species of wildlife, including fish and migratory birds (10). For example, much of Texas' commercial fishing industry is based on fish that spend part of their life cycle in the Bay (11). The recreational value of the area is also cited as an important reason for protecting it from the effects of a major oil spill (12). These issues will be discussed in greater detail in Chapters Four and Five.

In 1978, subsequent to permit applications filed on behalf of the superport project, work began on the EIS as required by the National Environmental Policy Act of 1969 (NEPA) (13). After issuance of the Draft Environmental Impact Statement (DEIS) in April, 1979 and following a

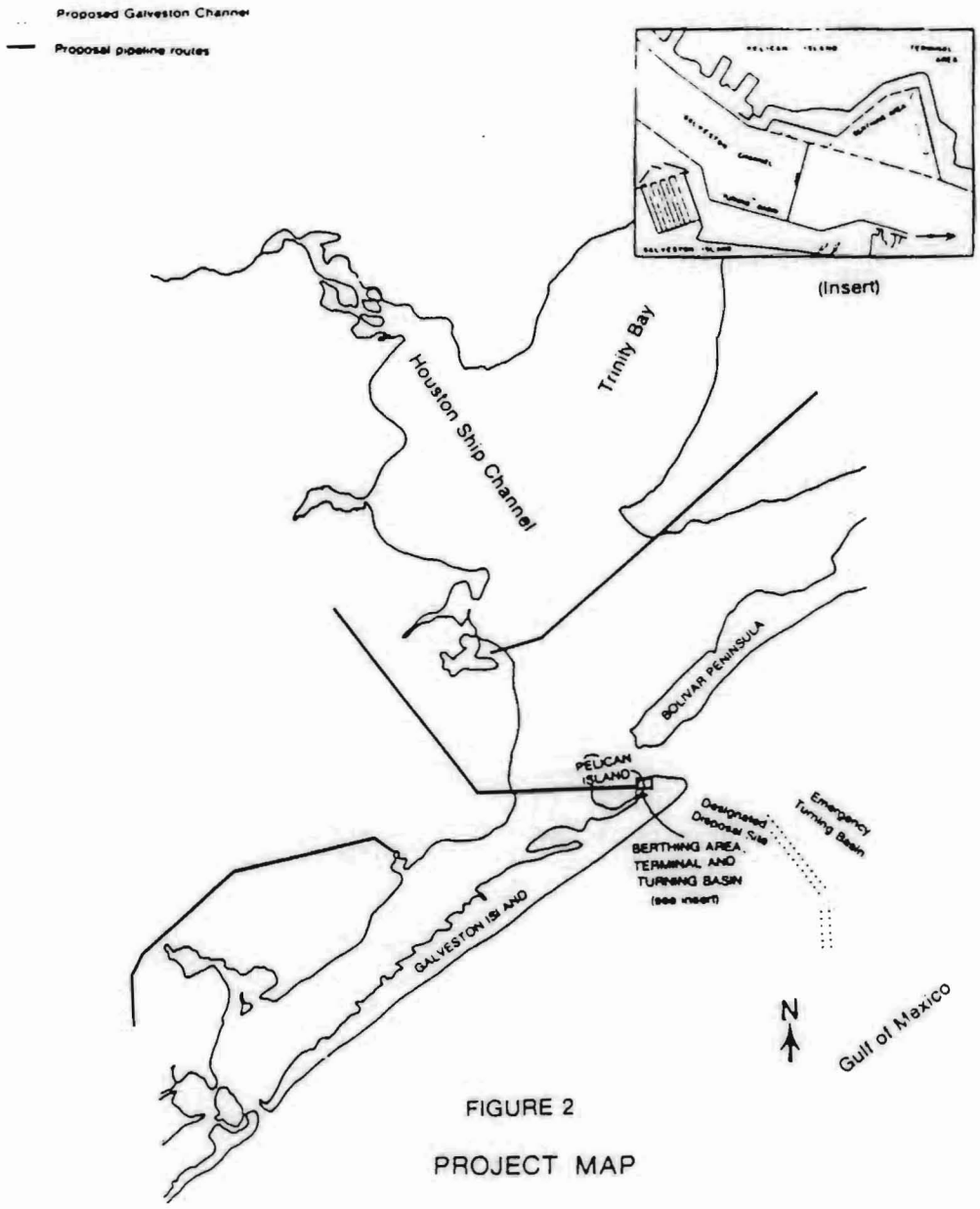

FIGURE 2

PROJECT MAP

required comment and hearing period, the Final Environmental Impact Statement (FEIS) was filed in September, 1979. Based on the Corps' mandate under the Federal Water Pollution Control Act (Clean Water Act) (14), and in accordance with Corps regulations, the Galveston District Engineer issued five permits on July 8, 1980 authorizing the deepening of the channel and construction of an oil terminal, tank farm and associated pipeline systems.

On May 19, 1981, the Sierra Club, along with other environmental organizations, sued the Corps (Sierra v. Sigler), challenging the adequacy of the FEIS and the Corps' review of the permit application. The plaintiffs' strongest argument concerned the failure of the Corps to conduct a "worst case" oil spill analysis as part of the EIS. The plaintiffs pointed to the newly issued CEQ regulation (15) which required agencies to perform a worst case analysis when proceeding with an action involving important information beyond the current state of the art of existing technology. Since the Galveston project presented the first time a deepwater port had been proposed in a sensitive estuarine environment, there was uncertainty surrounding the effects of oil spilled in the area. For example, the Corps claimed that the state of the art in very accurate oil spill analysis was limited to a 24-hour dispersion model. However, enough wind and current information was available to "reasonably forecast" the movement of spilled oil (16). Both parties and the court agreed that the worst possible case would involve a

total cargo loss by a VLCC inside the channel. The defendents argued that a worst case analysis was not required for a variety of reasons including the uncertainty surrounding its impact. The arguments of both the plaintiffs and defendents will be discussed below and in greater depth in later chapters.

The District Court in Galveston agreed with the Corps, ruling that the worst case regulation did not apply in this case (17), since such a scenario would be "remote and speculative". On appeal, the Fifth Circuit Court of Appeals in New Orleans reversed the District Court's decision. In its arguments the Appeals Court ruled that the effects of a major oil spill by a supertanker within an estuary constituted important information "beyond the state of the art", and was therefore "precisely what was required by the CEQ regulation" (18).

The Corps is presently in the process of preparing a Supplementary Environmental Impact Statement (SEIS). Following its completion, the SEIS will be circulated for comment and review for a forty-five day period. The District Engineer is then required to reconsider the permit decision in light of the SEIS. The entire process is not expected to be completed before late 1986(19).

Organization

This thesis is organized into six chapters. This first chapter has presented introductory material and has provided an historical account of the case. The second chapter

reviews the material relevant to this study concerning NEPA, EIS's the CEQ and the Corps. Chapter three describes the method used in carrying out the investigation and subsequent analysis. It also explains the origin of the data. Chapters four and five contain parallel discussions of environmental and economic considerations for Galveston area port development and the preparation of a worst case analysis. Chapter four presents the sources of environmental goals and values as they relate to the project. This chapter also presents the options available to the Corps, and reasons and ramifications of pursuing each option. Chapter five focuses on economic considerations. The last chapter concludes the thesis with a summary and discussion of the implications of the study.

Notes for Chapter 1

1. Sierra Club v. Sigler, No. G-81-42, S.D. Texas (1982); Sierra Club v. Sigler (Appeal), No. 82-210-1, 5th Cir. (1983).

2. Southern Oregon Citizens Against Toxic Sprays (SOCATS) v. Watt, No. 79-108 F.R., D. Oregon (1983); Village of False Pass v. Watt, No. A-83-176, 565 F. Supp. 1123 (1983).

3. Dinah Bear, Council on Environmental Quality. Telephone interview. March 9,1984.

4. Ibid.;C.R. Harbaugh, Chief Galveston District Corps of Engineers. Telephone interview. August 27,1984.

5. Most of the information in this section was taken from the Final Environmental Impact Statement (Galveston: U.S. Army Corps of Engineers, 1979) and from the SEADOCK Environmental Report (Freeport: SEADOCK, Inc., 1974).

6. FEIS, p. 3-46 - 3-55.

7. Deepwater Ports Act, P.L. 93-627, 1974.

8. These studies include: Work Plan for a Study of the Feasibility of an Offshore Terminal in the Texas Gulf Coast Region, June,1971 TAMU-SG-71-212; A Survey of the Economic and Environmental Aspects of an Onshore Deepwater Port at Galveston, Texas, Part I: Econmic Effects, April, 1974 TAMU-SG-74-213; Part II:Environmental Considerations, April, 1974 TAMU-SG-74-214; Port Planning- Local, State or Federal?, August, 1973 TAMU-SG-73-506; Texas Navigation Districts and Regional Planning in the Texas Gulf Coast Area, March,1973 TAMU-SG-73-605; Major Port Improvement Alternatives for the Texas Gulf Coast, March, 1977 TAMU-SG-77-205; Environmental Aspects of a Supertanker Port on the Texas Gulf Coast, December, 1972 TAMU-SG-73-201.

9. Peter Schaff, General Manager, Port of Freeport. Telephone interview. March 1,1985.

10. Sierra Club v. Sigler (1983).

11. Ibid.; FEIS.

12. FEIS.

13. 42 U.S.C. 4321 et. seq.

14. 33 U.S.C. 1433 sec. 10.

15. 40 CFR 1502.22(b).

16. Sierra Club v. Sigler (1983); Ability to forecast spill movement beyond 24 hours confirmed by Drs. Roy Hann, Tom Lee and Frank Kelly, TAMU Department of Environmental Engineering.

17. Sierra Club v. Sigler (1982).

18. Sierra Club v. Sigler (1983).

19. Harbaugh, (1984); Roy Hann, personal communication.

CHAPTER II

REVIEW OF RELATED MATERIAL

Introduction

This chapter reviews the literature topically. Although the rationale for the CEQ "worst case" regulation and much of the subsequent discussion comes from more general environmental legal principals, the Sigler case was the first court case dealing with the specific regulation. The National Environmental Policy Act (NEPA), the EIS requirement and general environmental case law lay the foundation for the worst case regulation; therefore they will be discussed first.

The National Environmental Policy Act

A great deal of literature exists on both the substantive and procedural aspects of the NEPA. The substance of NEPA can be found by examining the legislative history of the Act. The Act was conceived to meet the need for a coherent national environmental policy and for a greater understanding of ecological facts and processes. These needs were first articulated in Congress in the House report, Managing the Environment(1). This report outlined the relationship between the objective of environmental quality and management within the federal government. The report concluded that a single national policy would make it easier to incorporate the isolated and often conflicting policies focusing on conservation, esthetics, recreation,

economic development and human health.

Another Congressional report was published by the Interior and Insular Affairs Committee, chaired by Senator Henry Jackson. The National Policy for the Environment(2) considered a wide range of national environmental policy issues, emphasizing human health, happiness, economic welfare, and physical survival.

> Environmental quality does not mean indiscriminate preservationism, but it does imply a careful examination of alternative means of meeting human needs before sacrificing natural species of environments to other competing demands...the total environmental needs of man--ethical, esthetic, physical, and intellectual, as well as economic, must be taken into account...(3)

When NEPA was enacted in January, 1970, it produced a flurry of commentary and analysis. Much of this discussion centered on legal actions resulting from the Act. A great deal of the commentary that is important to this study centers on the procedural versus the substantive requirements imposed by NEPA; it is often difficult to separate the two. Both approaches are relevant to this study. The procedural argument as it relates to the present problem focuses on the CEQ regulation which specifies the inclusion of a worst case analysis as part of the EIS process in certain situations. The court cases and their subsequent commentary focusing on the procedural requirements imposed by NEPA are discussed in the next section. The substantive approach argues that even without the regulations, the intent of NEPA would require a worst case analysis. Although the courts differ in approach to this question, most see NEPA as imposing some substantive

duty on agencies.

The substantive versus procedural debate over the effect of NEPA is expressed well in the question "what happens if the EIS is perfect, the project is an environmental disaster, and the agency decides to go ahead anyway?" (4). Although the courts differ in their approach to this question, most see NEPA as imposing some substantive duties on the agencies. Judicial opinion varies with regard to the extent of these duties, as evidenced by the following representative cases.

One of the first cases reinforcing the substantive ideal of environmental protection involved the Corps. In Zabel v. Tabb (5), the court reviewed the issue of whether the Corps could deny a permit solely on environmental grounds. The developer of a Florida trailer park argued that the Corps could only deny him a permit in order to protect navigation. The court, however, held that federal agencies, under NEPA, had the responsibility to promote environmental goals.

In Calvert Cliffs Coordinating Committee v. AEC (6), the plaintiffs charged that the AEC's issuance of a permit for construction of a nuclear power plant was based on an inadequate EIS. Calvert Cliffs Coordinating Committee claimed that the AEC's consideration of the alternatives was incomplete and therefore in violation of NEPA. The court ruled that federal agencies must weigh environmental impacts against economic and social factors in a "finely tuned systematic analysis". The D.C. Circuit court in Calvert Cliffs relied on NEPA's requirement that alternatives to a

proposed project be discussed "to the fullest extent possible" (102)(c) (iii). Although the court denied that it could reverse substantive agency decisions on their merit, procedural requirements were found to be subject to a strict standard of compliance. The court did not require maximum mitigation of adverse environmental impacts. However, in his comments, Judge Wright stressed the substantive importance of NEPA, pointing to the directive that agencies use "all practicable means and measures to protect environmental values". While it is impossible to consider all of the environmental effects, it is "practicable"(sec 101a) (7) to consider the worst case. According to Yost (8), the worst case analysis is the best practicable way to deal with environmental impacts which are of low probability but would have a catastrophic impact. It would provide a scenario from which to evaluate the effects of a high impact/ low probability event.

In the 1979 case of Andrus v. Sierra Club (9) the Supreme Court relied on the CEQ's interpretation of NEPA as more than just a procedural statute. The court found that the EIS is only the "outward sign that environmental values and consequences have been considered". In addition, the

> "thrust of 102(2)(c) is thus that environmental concerns be integrated in the very process of agency decisionmaking...for this reason the [CEQ] regulations require federal agencies to integrate the NEPA process with other planning at the earliest possible time to insure that planning and decisions reflect environmental values..." (10).

Perhaps the case dealing with the issue of substance

most directly is another decision involving the Corps. In the Gillham Dam case, the Environmental Defense Fund (EDF) opposed the damming of Arkansas' Cossatot River for environmental reasons. The dam was to be built on the last free-flowing river in the area. EDF argued that the Corps did not consider leaving the river in its free-flowing state by using non-structural flood protection alternatives (11). On Appeal, the Eighth Circuit Court affirmed the district court's ruling to allow the damming of the river. However, the circuit court found that the merits of the case were reviewable under NEPA 101 and 102(1) by the standard of "arbitrary and capricious":

> The language of NEPA, as well as its legislative history make it clear that the Act is more than an environmental 'full disclosure' law. NEPA was intended to effect substantive changes in decision making. (12)

Most authors see NEPA as imposing both procedural and substantive mandates. Baker, Kaming and Morrison discuss the lack of a definition of the substantive role of NEPA: "To date, neither the courts nor the federal government have made much progress in defining or clarifying what constitutes the substantive role of an environmental impact statement" (13). On the other hand, they point to the fact that "procedural steps...involve matters of substance"(14). Section 102(2)(c) of NEPA sets forth the procedural steps to be followed. However, choosing which alternatives are discussed and how they are treated are issues of substance. The concluding remarks by the authors on this issue are

that "the issue is not closed, and efforts to develop mechanisms for enabling the courts to rule using substantive standards will continue"(15).

Findlay and Farber take a similar position. The arbitrary and capricious standard of review is applicable to NEPA cases, they claim. "There has been a growing tendency in environmental cases for courts to apply the 'arbitrary and capricious' test in a way that resembles the 'substantial evidence' test. This has become known as the 'hard look' approach"(16). Federal agencies are therefore subject to review, both of their procedures and of their factual determinations. This work offers an explanation for why no court has reversed an agency's decision because of substantive flaws. It is easier, it is argued, for a court to find the EIS procedurally inadequate than to directly attack its substantive merits. Although no court has ruled on substantive grounds, nor is it likely to do so according to these and other authors (17), the goal or intent of NEPA is to produce substantive changes in environmental decisionmaking. The worst case requirement, as discussed later, was issued to facilitate these decisions.

The Environmental Impact Statement

Substantive policies of NEPA are set forth in section 101 of the Act. The procedural tool, the EIS, requires agencies to consider environmental concerns and information. These provisions are contained in section 102, which reads as follows:

> The Congress authorizes and directs that, to the fullest extent possible...(2) all agencies of the federal government shall...
> (c) include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the environment, a detailed statement by the responsible official on-
> (i) the environmental impact of a proposed action,
> (ii) any adverse environmental effects which cannot by avoided should the proposal be implemented,
> (iii) alternatives to the proposed action,
> (iv) the relationship between local short-term uses of man's environment and the maintainance of and enhancement of long-term productivity, and
> (v) any irreversible and irretrievable committment of resources which would be involved in the proposed action should it be implemented.

The EIS serves as a reviewable document with specified contents as outlined by NEPA and the CEQ. Prior to NEPA no comprehensive legislation existed requiring environmental information and effects be addressed. The EIS process also works to further the substantive intent of NEPA by bringing the public and other agencies into the decisionmaking process. Section 102(c) requires participating agencies to contact other agencies with jurisdiction over or special expertise in the issues involved. The statement, along with comments received, must be made available to the public. This additional input and insight serves to inform the agency of environmental consequences of a project that may otherwise be unknown to them. An outside reviewer may also have the objectivity to suggest different alternatives. It has been suggested that the pressure of having the public aware of the rationale used and the factors considered in the decision process lead to better decisions (18). Although the EIS provision does not mention judicial enforcement, Calvert

Cliffs established that "judicially enforceable duties"(19) were imposed on federal agencies through the NEPA process. This opinion has been incorporated into case law.

The content and scope of an EIS are issues that have received a great deal of attention in the literature. Specifically relevant to this discussion are the duties of an agency in cases of scientific uncertainty. Two critical questions are: 1) Can agencies rely solely on existing information, or must new information be generated if it is necessary to assess the impact of a project? and 2) If existing methods of obtaining information are inadequate to answer relevant questions, must new methods be developed? If the purpose of the EIS is to anticipate and discuss the environmental consequences of a proposed action, then the EIS would be meaningless without accurate information. Often the information needed is not available or readily attainable.

This problem was discussed in Scientists' Institute for Public Information v. AEC (20). This case dealt with the issue of whether the cumulative impacts of an entire program for breeder reactors needed to be addressed in the EIS or if the effects of individual reactors could be addressed separately. The Atomic Energy Commission claimed that a programmatic EIS was not necessary since the future, cumulative effects were not known. The court, however, ruled that the impact of the whole program must be assessed. The "rule of reason", originating in NRDC v. Morton was found to be the test for determining which alternatives must be

considered in the EIS and how thoroughly they must be considered. The court also held that time and resource limitations prevent every conceivable alternative from being addressed. However, one of the functions of a NEPA statement is to indicate the extent to which environmental effects are unknown; "...[i]mplicit in the rule of reason is the overriding statutory duty of compliance with impact statements procedures to the fullest extent possible" (21). Both the alternatives and potential impacts considered in the EIS must be thorough; "reasonable forecasting and speculation is...important in NEPA"(22). One commentator writes, "NEPA is quintessentially a prospective statute; it requires agencies to look into the future to make informal guesses about the eventual consequences of proposed actions"(23).

In NRDC v. NRC (Vermont Yankee) (24) the court ruled that NEPA requires "disclosure of uncertainty and significant risks" (25). The costs of uncertainty are important in assessing environmental impacts. The court considered environmental risks to be significant if the probability of damage is high or if the damage is severe, regardless of the probability. Anderson (26) writes, "[w]hen the uncertainties are especially large, as when the action is the first of its kind, 'full disclosure' would seem to require that the agency establish a system for monitoring the impacts". It is specifically to deal with such high risk or catastrophic events that the worst case requirement was created.

The procedural tool of NEPA, the EIS, requires agencies

to develop ways in sec. 102(2)(B) to "insure that presently unquantified environmental amenities and values be given appropriate consideration...". Additional, more specific procedural requirements are set forth in the CEQ guidelines.

The Council on Environmental Quality

The purpose of the CEQ is to advise the President on environmental policy matters. The CEQ has the responsibility to elaborate on NEPA's procedural requirements. An Executive Order issued in March, 1970 (27) called on the CEQ to develop guidelines for federal agencies to follow in the preparation and review of EIS's.

Three sets of guidelines have been issued by the CEQ beginning with an interim set in 1970, followed by a revised set in 1971 and a third in 1973. The interim guidelines were general and offered primarily procedural advice. Their main contributions to the EIS process included publicizing the statements, requiring EIS's for highly controversial actions and the creation of an optional draft statement. The draft statement provides a preliminary statement for review and comment by the interested public.

The 1971 revised guidelines attempted to include environmental considerations in the decision-making process "as early as possible, and in all cases prior to agency decision"(29). These guidelines discussed the range of issues to be incorporated in agency procedures more specifically. They also set a minimum public review and comment period following the filing of the DEIS and FEIS.

The 1973 revisions to the CEQ guidelines were more detailed and involved more substantive NEPA goals. They stressed meeting general national environmental goals and NEPA's specific objectives (30). They also required that considerations that competed with environmental values be explicitly addressed in the EIS.

The latest revision was the issuance of the CEQ regulations in 1978 (31). These regulations concern all subsections of 102(2). They are premised on the assumption that the structure of the decision best attains the goal of "not better documents but better decisions" (i.e. emphasis on substance) and also provide agencies with more detailed procedural requirements.

There is little academic research related to the new CEQ regulations. There are essentially two reasons for this. First, they are relatively recent and second, the Sigler case is the first time the regulations have been brought to court. The appeal of the Sigler case was decided on January 20, 1983, and since it was the first court case requiring a worst case analysis, it provided agencies, consultants and the academic community with the first indication of how the courts would interpret the worst case regulation. Some of the resultant commentary dealt specifically with the regulation and its application to the Sigler case while other commentators attempted to tie the regulation to the intent of NEPA (32).

Two articles by Yost, the chairperson of the CEQ at

the time the regulations were issued, discuss the importance of the CEQ regulations in upholding the intent of NEPA (33). The earlier Yost article is a justification for the entire package of regulations and only briefly mentions the worst case regulation and its basis. The regulations are intended to clarify specific requirements for preparing EIS's. They also provide agencies with guidelines to make EIS preparation more uniform among agencies. The later paper deals more specifically with the worst case regulation. Without them, Yost claims, the court in Sigler would not have produced the same ruling. However, the author later agreed that a worst case analysis could have been required on other grounds; the regulations only codified existing case law.

Other analyses of the regulation were published prior to its application in the Sigler case. Liebesman (34) argued that the regulations alone are not enough to further NEPA's "substantive mandate". Only agencies can integrate NEPA goals into decision-making. Another commentator, McChesney, takes the opposing view. This author points to the fact that the rule had not been applied prior to the Sigler case. In general, he claims, court decisions play a larger role than the existence of regulations, noting that prior to the Sigler case, few EIS's addressed the worst case issue and none addressed it by name. In practice, neither of these arguments alone suffices. Taken together, they illustrate the interaction between regulations, agency actions and the evolution of case law.

The current CEQ has responded to agency confusion over the worst case regulation by threatening to withdraw or revise it. A draft proposal by a Reagan administration task force would require that an impact be "reasonably foreseeable" before the worst case analysis be prepared. A similar idea was proposed in 1984, arguing that agencies wasted time and money by considering the impacts of low probability events. This proposal met with strong opposition. Another possible problem with the regulations is the opportunity they present for agencies to shortcut necessary environmental analyses. In Sierra Club v. Corps of Engineers (concerning New York's Westway project)(35), the court ruled that the Corps acted irresponsibly in preparing a worst case analysis instead of completing a necessary two to three year study.

The Corps of Engineers

A number of books have been written about the Corps by outside observers. Many of the earlier efforts deal solely with the construction projects of the Corps and are condemnatory. Two of these are The Dark Missouri (36) and Muddy Waters (37). Both deal with the politics and economics of Corps' water projects. The first book condemns the Corps for its shortsightedness and economically questionable methods of choosing projects. The second book accuses the Corps of committing federal funds without concern for their long-term profitability. The preface to this volume concludes that "(i)t is to be doubted whether any Federal

agency in the history of this country has so wantonly wasted money on worthless projects as the Corps of Engineers"(38).

Many recent authors have been more generous in their assessment of the Corps. Mazmanian and Nienaber (39) concluded from their study of the Corps that the agency "seemed to be making a concerted effort to comply with both the spirit and the letter of the law". Soon after the enactment of NEPA, the Corps underwent major self-imposed reorganization in its decision-making process to incorporate NEPA requirements. Environmental departments within the Corps are seen as necessary evils, according to another survey by Mazmanian and Nienaber. It impedes the economic development and construction that the Corps perceives as its primary objective. This study credits the Corps, after a bad start, with above average procedural performance by the mid-1970's. The book concludes that the Corps is a politically astute organization, in tune with the political necessities of complying with NEPA, even if the substantive goals contradict their own pro-development stance.

Andrews (40) accuses the Corps of treating EIS's as "paperwork documentation exercises". He concludes that it is possible for agencies to comply with procedural requirements "without necessarily making the changes in their substantive actions that the procedures were intended to bring about" (41). Most of the EIS's found to be substantially more complete were those associated with litigation alleging violation of NEPA -- i.e. the Corps responded to project-

specific threats. Very few Corps projects were cancelled as a result of NEPA requirements; some were modified, but the majority were just postponed.

These two studies lead to the conclusion that the Corps has had a great deal of experience with EIS's. At least procedurally, the Corps should be expert at getting their projects through the regulatory system and when litigation results, at successfully arguing disputed projects in the courts. However, of the NEPA cases filed in 1982, the Corps had the worst track record, with eight out of twenty-nine-or more than one quarter of the cases-- ending in injunctions. Four general criticisms were made of almost all EIS's prepared by the Corps: 1) they did not provide enough detail regarding significant adverse effects; 2) they did not consider areas of uncertainty, nor did they consider secondary impacts; 3) they were deficient in their discussion of the alternatives; 4) they often presented the opinions of the District Engineer, unsupported by documentation. Although the data on which these studies are based are not readily available and therefore not verifiable, it may be assumed from the foregoing that many of these cases were found to be deficient in substance. Consequently, the Sigler case appears to be unusual in light of the recent history of the Corps, since it was found to be procedurally deficient.

Summary

NEPA has been interpreted by the courts and commentators as imposing both substantive and procedural requirements.

Support for the substantive intent of the Act is found in the legislative history leading up to the NEPA, subsequent case law and commentary. Substantive issues involve the need for more environmentally sensitive decisions. Making environmental decisions when scientific uncertainty exists has been the focus of a great deal of commentary and litigation. The CEQ worst case analysis arose in response to the need for more specific procedural requirements for EIS's in such cases. It attempts to codify existing case law to make EIS preparation both easier and more uniform. The worst case analysis has its roots in both the procedure and substance of NEPA; justification for the worst case requirement can be found in both substantive and procedural arguments. This chapter also discussed the Corps as the object of scrutiny for their environmental attitudes and policies. In the past, numerous Corps projects have been held up in the courts because of procedural noncompliance. The agency has responded by becoming, in general, very politically astute and procedurally complete.

Notes for Chapter 2

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9. Andrus v. Sierra Club, 442 U.S. 349 (1979).

10. Ibid.

11. Environmental Defense Fund v. Corps (Gillham Dam) 325 F. Supp.

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18. Firestone and Reed.

19. Calvert Cliffs Coordinating Committee "judicially enforceable duties" as discussed in Anderson, pp.256-257.

20. SIPI v. AEC 481 F2d. 1009, D.C. Circuit 1973.

21. NRDC v. Morton 481 F.2d @ 1092.

22. Natural Resources Defense Council v. Morton 337 F. Supp. 165, (DOC 1971).

23. Francis McChesney,"CEQ's New "Worst Case" Rule: Reasonable Sceculation or 'Crystal Ball Inquiry?" 13 ELR 10069-10073.

24. NRDC v. NRC 605 Fed. 459.

25. Ibid.

26. Anderson, p.25.

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28. Andrus v. Sierra Club.

29. Federal Register XXXVI p. 7742.

30. 1973 CEQ revision sec. 1(a).

31. 1978 CEQ revision. 43 Federal Register 35978. Nov. 29, 1978.

32. For example, Francis McChesney, 1983.

33. Yost,9 Boston College Environmental Affairs Law Review, pp. 507-509; Yost, "Don't Gut Worst Case Analysis". 13 Environmental Law Reporter 10394-10396.

34. Lawrence Liebesman, "The CEQ Regulations to Implement the National Environmental Policy Act- Will They Further NEPA's Substantive Mandate?". 10 Environmental Law Reporter 50039-50052.

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39. David Mazmanian and Jeanne Nienaber, Can Organizations Change?: Environmental Protection, Citizen Participation and

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40. Richard N.L.Andrews, Environmental Policy and Administrative Change (Lexington: Lexington Books, 1976).

41. Ibid.

CHAPTER III

INVESTIGATIVE PROCEDURE

Method

This study utilizes a qualitative, case study approach to assess the decision by the Corps not to include the worst case analysis in the EIS for a proposed Galveston, Texas deepwater port. According to Black and Champion, "a case study, basically, is a depiction either of a phase or the totality of relevant experience of some selected datum"(1). Procedurally, a case study approach allows the greatest amount of flexibility. It is based on the assumption that "much can be learned from an attempt to relate the two worlds of academic reflection and political (and administrative) action" (2).

The objectives of this study as outlined in Chapter One include 1) providing an historical background of the Galveston region and the conditions leading to the worst case requirement for the port, 2) presenting the views of opposing interests, 3) evaluating the Corps' decision, and 4) suggesting reasons for the decision made and discussing the implications of the case.

The historical background of the area was derived from secondary data sources. These include the EIS's from this and previously proposed port expansion projects. The historical events are presented for the purpose of understanding the economic importance of port development in

the area and the ecological systems present there.

The second objective, that of presenting the views of the interested parties, was primarily accomplished through the review of secondary data, i.e., information already collected by other sources. Past activities, arguments presented in court, articles in local newspapers, letters and responses to the DEIS were all reviewed to help gain an understanding of the parties' views. The FEIS and the decision document, which is the Corps' public rationale for issuing the dredging permits, provide additional insight into the Corps' perception of the issues. When these secondary sources were unavailable or incomplete, interviews were conducted to further elucidate and clarify the positions of persons and groups involved. Respondents were chosen on the basis of their familiarity with the issues, their expertise, and their accessibility. For instance, Colonel Sigler, the Corps official responsible for issuing the permits, had left the Galveston District and was not available for comment. Principal contacts included Charles Harbaugh, head of the Environmental Resources Branch of the Galveston District Corps of Engineers; Roy Hann, Jr., head of the Environmental Engineering Department at Texas A&M University who has conducted numerous oil spill studies in the area since the early 1960's; Nicholas Yost, chairperson of the CEQ at the time the worst case regulation was issued; Dinah Bear, chairperson of the CEQ at the time of the Sigler case; Eugene Poe, Jr., Deputy Director of Port Affairs at the Port of

Galveston; Aurey Selig, Comptroller for Galveston Wharves; and Herman Rudenberg of the Galveston Area Sierra Club.

A discussion of the limitations in study design is in order here. A major drawback of the method lies in the fact that it may not be easily replicable. By its nature, a case study runs the risk of researcher bias, since not every facet of the case can be considered in detail, but only those aspects that the researcher considers important or relevant. In addition, the primary sources, and frequently the secondary data sources used in this study, come from individuals or groups with vested interests. Attempts to minimize these biases were made by consulting a number of sources on both sides of the issues. Disagreements and inconsistencies between the groups are discussed and an attempt is made to understand their origin.

A case study design can be used to test theories or hypotheses "provided that the investigator has prepared a theoretical framework within which to cast his research activity" (3). This thesis analyzes the information primarily on the basis of the rational-deductive ideal or rational-comprehensive method, as explained by Braybrooke and Lindblom (4) and Simon (5). According to traditional economic theory, man is assumed to be rational. "Rational man" or "economic man" (and their brother "administrative man") is assumed to know the relevant aspects of his environment. Although this knowledge may not be complete, it is "at least impressively clear and voluminous". He is also

assumed to have a stable and ordered set of preferences and be able to calculate which of the alternative courses of action available to him would best reach the desired goal.

The rational-deductive system was chosen because of its simplicity of design and because of its similarity to the stated approach taken by the Corps in preparing EIS's (6). Essentially, the rational-deductive evaluative method involves a two-step approach. First, the value(s) to be pursued are identified. This study discusses the environmental or economic history and significance of the Galveston area together with the sources of these same values under the headings of "environmental considerations" and "economic considerations" (see Figure 3). Then the alternative decisions or policies to promote those values are considered (7). The motivations and ramifications of pursuing either course of action are then considered.

In order to simplify further, the rational-deductive approach is applied separately to two sets of values in this thesis. A great deal of the more recent literature on decision theory focuses on the shortcomings and limitations of traditional rational or economic decision-making. Figure four compares the characteristics of this method with those of its most-cited alternative, that of successive limited comparisons or incrementalism. Difficulty in constructing a workable rational-deductive system results when conflicting values need consideration. According to Simon, "administrative man" restructures decision problems by 1)

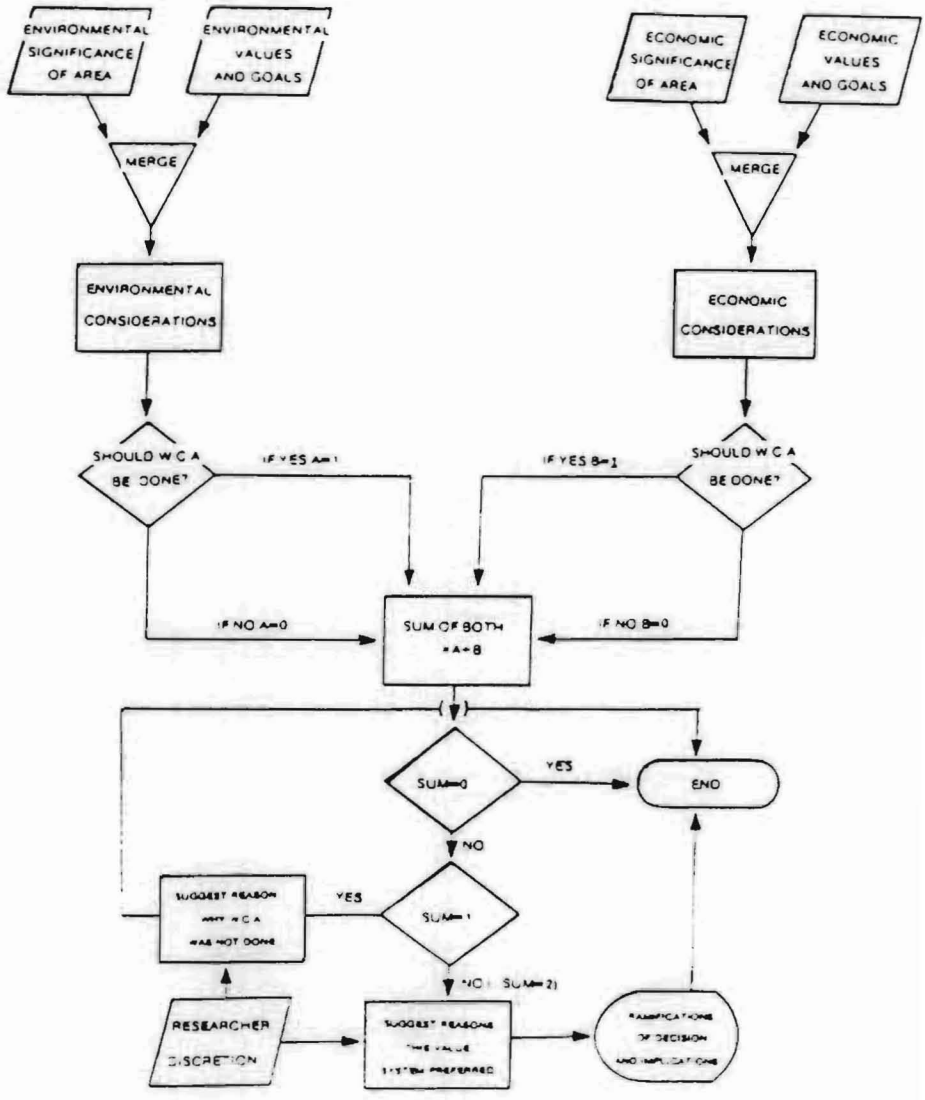

Figure 3 Flow Chart Illustrating Thesis Procedure

Rational-Deductive (Comprehensive)	Successive Limited Comparisons (Incremental)
1. Clarification of values or objectives usually prerequisite to empirical analysis of alternative policies.	1. Selection of value goals and empirical analysis of the needed action are not distinct from another but are closely intertwined.
2. Policy-formulation is therefore approached through a means-end analysis: First the ends are isolated, then the means to achieve them are sought.	2. Since means and ends are not distinct, means-end analysis is often inappropriate or limited.
3. The test of a "good" policy is that it can be shown to be the most appropriate means to the desired ends.	3. The test of a "good" policy is typically that various analysts find themselves agreeing on a policy (without their agreeing that it is the appropriate means to an agreed objective).
4. Analysis is comprehensive; every important relevant factor is taken into account.	4. Analysis is drastically limited: i) Important possible outcomes are neglected. ii) Important alternative potential policies are neglected. iii) Important affected values are neglected.
5. Theory is often heavily relied upon.	5. A succession of comparisons greatly reduces or eliminates reliance on theory.

FIGURE 4: Comparison of characterisitics of two methods

(From Charles Lindblom, "The Science of 'Muddling Through'", XIX Public Administration Review, Spring 1959, p.81.)

reducing the multivaried goals to single valued constants and 2) reducing the range of choices by recognizing only the most obvious relationships. In this case the multivaried goals are reduced to environmental and economic goals in two separate analyses. The range of choices include the inclusion or exclusion of the worst case analysis and discussion is limited to a consideration of the effects of each choice. In this way, the often cited problems with the model are avoided. Figure three outlines the steps taken in carrying out the two analyses.

The Corps' statement of policy (8), following NEPA, requires consideration of the sometimes conflicting concerns of conservation, economics, aesthetics, environmental, historical, fish and wildlife, water quality and other considerations. For the purposes of this study, the conflicting interests are grouped into economic and environmental values. These two sets of values correspond to the two required considerations imposed on the Corps by two separate mandates -- the economic benefit-cost requirement established by the Flood Control Act of 1936 and the environmental quality requirement established by NEPA. A study by Mazmanian and Nienaber found that economic and environmental interests overlapped negligibly for Corps projects. People who responded to draft EIS's or were otherwise involved in the planning process of a proposed action identified themselves according the following classification: 1) those primarily concerned with the

environmental effects of the project, 2) those with personal property or commercial or economic interests and 3) those who were just curious. In other words, people were either concerned with economic or environmental impacts. Economic and environmental values, in addition to typically being incompatable, are in many ways incomparable. For example, there is the common problem of translating the intangible environmental costs and benefits into economic terms. One group of authors discusses the problem as follows:

> Whenever possible, quantification based cost-benefit analysis processes should be avoided. They involve a large number of assumptions which may not be defensible. NEPA recognizes in Section 102(2)(b) the existence of non-quantifiable' factors or values which cannot be considered other than arbitrarily, in quantification analysis. The required balancing of project costs and benefits should fully describe the issues and the importance ascribed to each, but should not extend to obscuring or hiding the assumptions in artificial quantification (9).

The final rationale for separating the analysis into environmental and economic values is that these were the criteria on which the two parties based their arguments in the Sigler case. The Sierra Club is a group established for the purpose of defending environmental interests. The Corps of Engineers, by contrast, is more committed to economic development (see Chapter Two, discussion of Corps). For these reasons, the rational-deductive approach will be applied separately to the two sets of considerations.

The choices available to the Corps, for the purposes of this study, are limited to either including or excluding the worst case analysis. The probable environmental effects of a

decision to include and not to include the worst case analysis are discussed. The second parallel analysis is then undertaken based on economic considerations. This provides a workable framework within which to study this case. It is not expected that the Corps took this approach, since the final permit decision was based on many considerations, and ultimately, on a subjective "public interest" rationale. However, environmental and economic considerations cover most of those required of the Corps by both environmental law and Corps policy.

The fourth objective involves discussing the ramifications of the decision not to do the worst case analysis. Here, the discussion goes beyond the rational-deductive model to compare its results with the actual choice made by the Corps. Implications specific to the Galveston project are considered, and then points on which lessons can and cannot be generalized are explored.

This approach yields three possible results. First, if neither interest (economic or environmental) benefits from the inclusion of a worst case analysis in the EIS, one would conclude that the CEQ regulation needs to be re-examined. This result would indicate that the worst case requirement serves no real purpose. The second possible result is that only one of the interests favors the inclusion of a worst case analysis. If this is the case, a reason must be sought for the Corps' choice to exclude the analysis to the advantage of this interest. Finally, if it is determined, as

hypothesized, that both economic and environmental interests benefit from a worst case analysis, then it can be concluded that it should have been done. If this is the case, possible explanations for its exclusion must be sought.

Notes for Chapter 3

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CHAPTER IV

Environmental Considerations

Introduction

The primary legal dispute in Sierra Club v. Sigler concerned the question of whether the worst case oil spill analysis should have been included in the original EIS. In court, the Sierra Club argued that the worst case analysis was an unfulfilled procedural requirement. Outside of court, some environmental organizations were willing to accept the project with better environmental protection measures in the EIS (1), while others felt that the area was too sensitive to support the project under any conditions (2). This chapter explores these arguments in the context of the rational-deductive model. The Corps made the arguments in court that the CEQ worst case regulation did not apply, and that the analysis would have been too "remote and speculative" since there was not enough scientific information on which to base it. In interviews Corps personnel argued at different times that 1) they thought they <u>had</u> done a worst case analysis (3) and 2) that the language of the statute was "so expansive" that it was virtually impossible to spell out the worst possible case scenario.

In this section, the rational-deductive model will be applied to environmental aspects of the Galveston port expansion project. The first step in this method is goal definition. In the first part of this chapter, environmental goals and their sources will be clarified. The second step

in the rational-deductive approach considers the options; the Corps' options in this study are limited by study design to either the inclusion of exclusion of the worst case analysis. The rational-deductive model is considered in contrast to its alternative, incrementalism, in the previous chapter. The decision whether or not to include a worst case analysis can be approached by considering the ramifications and reasons for and against each alternative. Included in the term "environmental" will be conservation, aesthetic, fish and wildlife values, as set forth by the court in Sierra v. Sigler.

There are two levels of decisionmaking occurring simultaneously for the Galveston project. The primary focus of this discussion is on the isolated decision by the Corps not to include a worst case analysis in the original EIS. The larger decision, in part contingent on the worst case decision, concerns the Corps' decision to permit port construction. Prior to the analysis, a general discussion of the environmental significance of the area is presented as background. These considerations are not formally part of the rational deductive decision as applied to the worst case decision, yet they may have influenced the Corps' final choice.

Environmental Values and Goals

Environmental Significance of the Area

The dominant environmental features of the Galveston Bay

and Bolivar Peninsula areas are the beaches on the Gulf side and coastal marshes of the East and Trinity Bay (see Fig.1). High biological productivity characterizes the entire Galveston Bay system. Estimates of the importance of the area to biological systems vary, but are all significant. In the trial court case, it was estimated that Galveston Bay is the habitat, at least at some point in their life cycle, for 98% of Texas' commercial fisheries. Hann (4) estimates that the majority of the coastal finfish and shellfish either live entirely within the Bay or spend some part of their lifecycle there. Nearly all are biologically dependent on biota that live in the bay. Gulf Menhaden require bays and estuaries for their rapid growth and develpoment stages (5); Galveston Bay is the largest such area in the Gulf. Another important commercial fish, the Bay Anchovy, is dependent on estuaries and shallow Gulf water for spawning. Other fish reliant upon the Galveston habitat include Sea Catfish, Sand Seatrout and Atlantic Croaker. These fish depend on the higher primary productivity in the estuary. Shallow waters also protect developing fish from many open water predators.

The continental shelf extending seaward from the Galveston shoreline is also a biologically productive region. Both sport and commercial finfisheries are growing in importance in the region although shrimping is still the largest commercial catch by value (6). The Galveston port project would be located within a major white shrimp zone (7). These and other biota would be impacted by a major oil

spill in the area. This discussion illustrates the environmental significance of the study area. Galveston Bay is biologically both abundant and varied and therefore considered an area requiring environmental protection.

Environmental Values

In addition to the environmental significance of the area based on the local ecology, sources of environmental values include NEPA, its subsequent case law, and the Corps' own statements and policies. These sources taken together, justify the choice of environmental protection as an important value system. It is not suggested that the Corps arrived at its decision through this methodological approach, although the relevant information was readily available to the agency. It is instead presented as an ideal against which to compare the actual decision.

As discussed above, the single most important piece of environmental legislation pertaining to this and other projects is NEPA. The Act states as one of its purposes the enrichment of "the understanding of the ecological systems and natural resources important to our nation". Title II declares as national policy an assurance to future generations of a safe environment. These, and similar provisions of the Act arose from scientific testimony in support of the concept that man's activity was having far-reaching detrimental impact on the environment (8). Both scientists and the public have expressed concern over the finite resilience and assimilative capacity of the

environment(9). Many authors (see Chapter Two) see the EIS requirement not only as imposing procedural duties, but also as requiring decision-makers to assess the substantive impacts of projects in terms of ecosystem health and productivity. NEPA also supports the notion that major federal actions are to be taken based on rational, comprehensive decisionmaking.

The importance of NEPA and its goals as significant decisionmaking concepts has been upheld by executive input, judicial interpretations, and further regulatory support. The CEQ's "Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations" states:

> NEPA requires that impact statements, at a minimum contain information to alert the public and Congress to all known possible environmental consequences of agency action. Thus, one of the federal government's most important obligations is to present to the fullest extent possible the spectrum of consequences that may result from agency decisions, and the details of their potential consequences for the human environment.

The interpretations and applications of NEPA were discussed in Chapter Two. The thrust of these cases, (e.g. Calvert Cliffs, Strycker's Bay, Gillham Dam) is to require consideration of socio-environmental values. One additional recent case is worth mentioning at this point which reinforces the importance of environmental considerations in preparing EIS's, even at significant economic expense. In SOCATS v. Clark, the court found that the Bureau of Land Management (BLM) must do a worst case analysis for an Oregon herbicide spraying program since there was scientific

uncertainty surrounding the carcinogenic and mutagenic effects of the pesticide 2,4-D. BLM argued that the CEQ regulations overstepped the limits of NEPA by requiring BLM to perform research that would take at least five years and cost the agency over five million dollars. However, the court found that the "worst case analysis codifies prior NEPA case law" (10) in requiring consideration of the environmental impacts of the worst possible case.

Finally, environmental values are mentioned in both the Corps statement of policy (11) and in the decision document--the record of decision as required by CEQ regulations--prepared by the Corps for the port project (12). These two sources are especially important in comparing the Corps' choice with the theoretically preferred alternative, since they are in essence the first step in the rational-deductive approach; these documents establish the value systems on which the decision was based. The decision document, the Corps' "Findings of Fact" for the Galveston port, claims to have weighed the project benefits against its detrimental impacts. The findings mention NEPA and its purpose. It points to the Act as their "basic national mandate for the protection of the environment". The primary environmental concern discussed in this decision record is the potential for serious oil spill impacts. The Corps' policy for evaluating permit applications requires consideration of the effects of the proposed project on "conservation,...esthetic, general environmental concerns, historic values and

fish and wildlife values". Although both the general statement of policy and specific document issued for this project claim that the CEQ guidelines are to be followed as part of the decision process, the final determination requires only that probable impacts be weighed and that the project be in the national interest. The decision not to include the worst case analysis is only one component of the Corps' decision to permit port expansion. Whereas the component decision may be analyzed within the framework of the rational-deductive model, the larger decision carries with it many of the shortcomings of the method discussed in the last chapter. Problems in applying the model to the decision to permit the port will be discussed in detail later.

Taken together, NEPA, its history and resultant case law, the Corps' general policy statement and the specific decision document for this project, provide strong support for the importance of considering environmental values. Once they have been established, the rational-deductive approach requires that the alternatives available to the decision maker be addressed in terms of these goals and values. Two major criticisms of the model are 1) that it is difficult to gather information on every conceivable alternative available to a decision-maker and 2) that different and often conflicting value systems make it nearly impossible to choose a "best" path. These difficulties are overcome in the following discussion of the worst case decision by

considering environmental values only, and by limiting the choices available to the Corps.

Discussion

The third, and most important step in the rational-deductive approach involves deciding on the option that best meets the stated goals. The choice to include or not to include a worst case analysis can be approached by considering the ramifications and reasons for and against each alternative. It is axiomatic that the performance of a worst case oil spill analysis would not have any negative effect on the environment; if there are any environmental consequences of carrying out the exercise of a worst case analysis, they would be beneficial. In other words, the inclusion of a worst case analysis, compared with the alternative of its exclusion, is the option that best serves the end of environmental protection. The following discussion needs only to enumerate these potential or actual benefits of including the analysis.

The primary benefit of performing a worst case oil spill analysis concerns the preparation of control and countermeasure plans. Although the probability of a total cargo loss within the Bay is small, the scope of the project creates the potential for oil spillage in association with offshore loading and transportation operations. Recognizing this potential, it becomes necessary to consider the responsibilities of the spiller and the resources which would

be involved in the amelioration response.

> The first step in drawing up a contingency plan against oil pollution must be to establish what harm could be done by the oil and why it should be cleaned up.(13)

The effects of oil on marine biota have been well studied (14). The ability of organisms to recover from certain impacts is also known, at least in general terms. The greater the exposure, the greater the biological impact. For example, preening by birds is affected by oil. The more the bird is exposed, the greater the coat on its feathers. The heavier the coat of oil on the bird, the greater its disturbing effects on behavior. Birds have been known to die due to the toxicity of the oil ingested in preening and because the oil coating interferes with respiration (15). For many organisms, the impact of spilled oil is quantity dependent, ranging from minor behavior disturances to mortality; for others, there is a threshhold response level. In either case, the greater the oil spill, the more that needs to be removed to assure safe residual levels. Also, a larger quantity of spilled oil is more likely to cover more surface area, impact more beaches and sink to cause greater harm to benthic organisms. The FEIS for the Galveston project recognizes most of these impacts; however they are often accompanied by editorial comment downplaying their importance. For example, following the EIS's discussion of the biological impacts of oil spilled within Galveston Bay, it states "because important commercial and sport fishes generally avoid contaminated areas, the likelihood of severe

impacts is reduced. Also, the threat of oil spills would be reduced on the upper Texas coast after completion of the proposed project"(16). Or,"investigations of environmental impacts of construction, dredging, operation and maintainance of an onshore deepwater port at Galveston disclose no major threat to the sensitive ecosystem of the area (17). Also, when many of these claims are challenged in comments, the Corps responds by simply reiterating the claims (18). This indicates a lack of genuine committment to environmental protection. This supports previous claims that the Corps pays only lip service to sound environmental management. By attempting to undervalue the apparent impact of the project on biota, the Corps is sidestepping the rational process; the value system is first established, then it is not given objective treatment and action is not taken to promote the stated goals.

An estimate of the maximum size of a potential spill is also necessary in drawing up contingency plans (19). The state of Texas" Oil and Hazardous Substances Pollution Contingency Plan requires the deployement of floating booms and other devices such as skimmers and weirs as the initial cleanup action. Simultaneously, methods and/or equipment for removing the oil are to be put into operation (20). Clean Gulf Associates, the co-op that would be responsible for cleanup at Galveston, is an equipment-only co-op. Most of the contracted personnel are employed in some capacity other than oil spill clean-up; there is not enough business to

warrant full-time personnel for oil spill clean-up (21). Each contractor can provide on the order of one hundred people at one time. Therefore, although a number of oil spill cooperatives are available to clean up spills in the Texas coastal region, many of them are interdependent in the case of a large spill (22). Their participation in emergency situations may depend on contractual agreement prior to the spill. Adequate preparation is an important beneficial result of considering the impacts of the maximum potential spill (i.e. a worst case scenario). The impacts associated with a spill are largely a function of the size of the spill which in turn is a function of the size of the draft of the vessel, and determined by channel depth. Again, the FEIS recognizes the importance of oil spill preparedness, but qualifies most of the discussion on oil spill impacts by claiming that oil spills in the "upper Texas coast" would be reduced. For environmental protection purposes, the introduction of major spills into Galveston Bay and the increase in their potential size require greater consideration. A worst case analysis would identify the maximum potential damage port expansion could introduce into the Galveston environment. The final determination need not be based on this impact, although it is a component of the decision to permit port expansion. However, the worst case analysis has the benefit of alerting the Corps and port authorities to potential oil impacts. With environmental protection as a stated goal, the worst case analysis, rather

than necessarily halt port construction, would allow for proper mitigation provisions. Although environmental protection was a stated goal, the treatment of oil spills in the EIS does not meet that goal. Given its own declaration of the importance of environmental protection, the Corps' treatment of oil spills is less than rational. The organization's approach more closely resembles the incremental model in neglecting important possible effects and by only taking actions incrementally different from those already in existence. This approach to the worst case issue is inappropriate given the stated objectives.

One might assume that Texas, with its long-term close ties with the oil industry, would be prepared for any eventuality in oil spill management. One argument presented by the Corps claims that a worst case analysis was not required because its possiblility is remote and that oil spill preparedness is already very good for the Texas coast. In terms of the theoretical models, this argument indicates that the an incremental approach was appropriate. Numerous spills in the past do not support this assumption. The Esso Bayway spill, in the Neches Ship Channel resulted from the ship overrunning its own anchor. The spill is noteworthy because extensive worldwide marine casualty response program planning had been carried out by the company involved. Even with a relatively capable management team working on the spill, sensitive marshland areas were protected from impact only because of favorable wind conditions (23). The spill

showed that site-specific planning for areas such as estuary entrances was lacking. It also exposed poor oil spill industry cooperative organization and contingency planning for the entire area. The preparation of a worst case analysis would hopefully promote contingency planning for a catastrophic spill which in turn would increase the ability of oil cleanup industries to deal with spills of all sizes. In terms of the rational-deductive model, a worst case analysis would again be the best choice to meet the stated goal of environmental protection.

1979 was an especially bad year for oil spills in and around Galveston. The poor response to these spills indicate that better environmental protection is necessary in the Galveston area. The Ixtoc oil well blowout in the Bay of Campeche in June, 1979 was the world's largest known oil spill, releasing between three and five million barrels or well over 10,000 tons. Texas beaches and estuaries were protected with booms, skimmers and manual cleanup operations only near important beach resort areas. A policy for cleaning Texas beaches was not established until approximately 10,000 tons of oil had reached the the coast (24). Again, if environmental protection is a goal of the Corps, the Ixtoc spill demonstrates that better measures are needed. Larger spills need to be considered to further the goal of environmental protection. A better policy would be one in which the impacts are considered before they occur. This is what the worst case requirement is intended to

provide.

A major oil spill within Galveston Bay exposed weaknesses in a "well-developed" government offshore containment and removal package. There was no response for four days following the collision of two ships-- the freighter Mimosa and the Burmah Agate in November, 1979. Again, according to Hann, the insufficiency of site specific contingency plans for the area was apparent. Cleanup personnel were contracted and protection measures were designed only after the spill occurred. Again, preparation of a worst case analysis would result in better planning and preparation. All of the abovementioned spills occurred between the time that work began on the FEIS and the Corps' decision to permit the port. This is significant since these spills served to increase public awareness of oil spill potentials. In other words, if these spills had not occurred, there is a lesser probability that the public would be bothered by potential oil spills. The following chapter discusses the importance of public perception on this project.

The most recent example of the destruction by oil in the Galveston area is the spill of approximately one million gallons of crude from the British tanker Alvenus in the summer of 1984. This spill lead Governor Mark White to appoint an advisory panel to review the state's response to this and other spills. Again, the effect of the spill was contemplated after the fact. Again, too, the effects

could have been minimized by more thorough contingency plans.

These examples, taken together, illustrate that the probability of a large spill is not so remote as the Corps seems to think and the potential for destruction is great. Hann's arguments for the protection of the Texas coast in general are even more compelling when considering the development of a deepwater port. Another author writes: "the move to large (super)tankers increases the hazard from any single accident and the possibility grows that a single spill from any of these large tankers might impair...maritime resources..." (25). By introducing supertanker traffic into a previously less trafficked estuary, the possibility of major oil spills increases. However, rather than focusing on introduction of tanker traffic within the bay, the Corps chose to concentrate on their projected decrease in the number of spills on the upper Texas coast. The Corps was familiar with -- and bound by -- the environmental values laid out earlier in this chapter. Given the choice of including the worst case analysis or not, for environmental reasons, rationality dictates that it should be done.

The Corps, in the EIS, discussed the "worst probable oil spill", as opposed to the worst possible case spill. Such a spill would involve thirty percent cargo loss from a VLCC. The Corps asserted that a worst possible case analysis was not required since 1) it was not probable, and 2) a supertanker port had never been built in a sensitive

estuarine area, so information on the effects was not available and 3) a supertanker had never lost its entire cargo at a superport in the U.S. before. These arguments indicate that the Corps feels an obligation to consider the environment, but that there are limits to its committment. Again, it appears that an incremental approach was taken, and indicates a preference for business as usual policies. This is where the different goals acting on the agency make real-life application of the rational-deductive model difficult. In this academic treatment of solely environmental values, limited to the choice of including the worst case analysis or not, the rational-deductive approach is appropriate. In practice, even if the agency hoped to do so, both time and monetary constraints limit the Corps from considering every environmental impact in its permit decision. These problems of time and money are recognized by the CEQ regulations which allow a worst case analysis to be done in lieu of analyses of the full range of effects. The actual approach was probably more similar to the incremental approach, in which action is taken based on readily available information. Also, none of the stated sources of environmental values require that environmental issues be considered at the expense of other considerations. The Corps is justified in not considering every conceivable environmental impact in its decisionmaking. However, in the EIS and in its Statement of Policy, the Corps obligates itself to perform the worst case analysis by claiming to follow the CEQ regulations. Therefore, both

legally and by its own application of the standards, the Corps is required to do the analysis.

The worst case regulation is separated into two requirements-- one concerning the environmental impact of a catastrophic event and one concerning a probability estimate of such an occurrence. In other words, an agency must first indicate how the proposed action would affect the environment, including a discussion of uncertain impacts and unknown harms. It then must assess the probability of such events. Therefore, if the probability of an impact is low, it still does not free the agency from its obligation to consider the impact of the worst case. In fact, the appellate court found that "this case presents precisely the type of situation for which the worst case regulation was designed". Again, modus operandi and objectives were established, yet not followed.

Much of the litigation in Sierra Club v. Sigler focuses on the scientific uncertainty surrounding the effects of a major oil spill. The appeals court ruled that enough information existed from which to extrapolate the worst case effects. It is generally agreed that the worst case would wreak the same damage as any other large sized, uncontrolled major oil spill (26), for which Galveston has been shown to not be prepared. One of the most important advantages of including a consideration of the worst case spill is in drawing up contingency plans for the control of the spill, as discussed previously. Scientific uncertainty is a

problemmatic area of EIS preparation, as discussed in Chapter Two. The CEQ regulations are intended to establish a way in which to deal with such information gaps.

In an interview, the Corps reasoned that the exclusion of the worst case analysis from the EIS was justified since a worst case spill is possible "right now-- right today" (27). Two supertankers could collide offshore and release a catastrophic amount of oil, similar to the amount hypothesized by the worst case scenario. A representative of the Louisiana Offshore Oil Port (LOOP) agreed without hesitation that a "worst case oil spill is a real possibility--now!" (28). Although the worst case regulation was not in existence at the time LOOP was built, they claim to have equipment and training capable of dealing with such a spill. If a worst case spill is possible now, and attempts at cleanup of smaller spills have proven inadequate in the past, it is an even more pressing reason for considering the fate and impacts of a catastrophic spill in the Galveston EIS. Environmental values dictate that preparation be thorough; at the very least they should be adequate to deal with spills that have already occurred. The Corps' response again indicates the limits of the agency's committment to environmental protection. The value system of the Corps is not as committed as the ideal system projected by the model. Based on this discussion limited to environmental considerations, the rational choice, i.e. that which best meets the stated goals, would be to include the analysis.

Although the Corps does not have an unqualified committment to environmental protection, (nor should it) it does have an excellent record of procedural compliance. The value system of the Corps requires the final decision whether or not to permit port expansion to be made on the basis of national interest, considering the "probable impacts"(29) of the project. However, the CEQ regulations are part of the procedure to be followed in reaching their decision. By claiming to follow the CEQ guidelines, i.e. by establishing the value system or criteria by which the project should be evaluated, in order to act rationally, the Corps was required to include a worst case analysis. In this situation, the Corps established objectives and did not chose the option that best met the ends. Of the two models outlined in Chapter Three, it appears as though the Corps approached its oil spill considerations incrementally; they considered spills similar to those that had occurred prior to the preparation of the EIS. This approach was faulty on two counts: 1) many of the largest oil spills in Texas history occurred after work began on the EIS and 2) it was contrary to the procedural requirements the Corps claimed to follow.

Summary

The rational-deductive approach requires that the values/goals be set forth, the choices available be considered and a decision be made based on both. Environmental goals can be found by considering the substance

of NEPA. A primary goal of NEPA, according to Anderson, Baker, Kaming and Morrison, and Findlay and Farber (30), among others, is to consider the effects of a project in advance. Environmental values are also found in the legislative history of NEPA, the CEQ regulations, case law and in the Corps' statement of policy. The choices available to the Corps are limited by the study design to either the inclusion of exclusion of the worst case analysis. The preparation of a worst case analysis could only have beneficial results. These benefits would be secondary rather than immediate, i.e. prevention and countermeasure plans could only be complete if the effects of the worst possible spill were disclosed in the analysis. Given the fact that Texas oil spill contingency plans have proven inadequate in the past, the construction of a new oil port seems to be a logical point to reassess spill control and countermeasure capabilities. To this end, the fate and effects of oil spills of all sizes, including the worst possible spill, need to be considered. Given the unique, sensitive estuarine habitat of the Galveston area and the well-known effects of oil on marine biota, complete contingency plans and proper oil spill management capabilities are especially critical for this project. This first analysis, limited to environmental considerations, concludes that the inclusion of a worst case analysis would have been the proper choice to further the goals and values discussed. If the Corps' decision had been based solely on environmental grounds, the worst case

analysis would have been included. This very limited application of the rational-deductive model reaches the same conclusion, as the Court of Appeals in Sierra Club v. Sigler, i.e., that a worst case analysis should have been done, although this conclusion is based on primarily environmental grounds, whereas the court's decision was based on legal arguments. The court relied primarily on the procedural requirement imposed by the CEQ. Environmental goals dictate compliance, not only with the substantive provisions of NEPA, but more generally with the broader substantive goals that are independent of the Act.

Notes for Chapter 4

1. Roy Hann, Personal Communication; Herman Rudenberg. Telephone Interview, October 20,1984.

2. Sharon Stewart. Telephone Interview, October 20, 1984.

3. Note: These two reasons contradict one another. There is also a discrepancy between the first excuse here and what was said in court.

4. Roy Hann, A Survey of the Economic and Environmental Effects of and Onshore Deepwater Port at Galveston, Texas (College Station: TAMU/ Sea Grant, 1974)

5. Kirk Strawn and Andre Landry, Final Report on the Life History and Susceptibility of Fishes in Galveston Bay, Texas to Power Plant Cooling Water Operations. TAMU Dissertation, 1977.

6. Ibid.

7. Hann.

8. Richard Liroff, A National Policy for the Environment: NEPA and it's Aftermath (Bloomington: The Indiana University Press, 1976).

9. Kenneth Kamlet, Assimilative Capacity...; Richard Carpenter, "The Scientific Basis of NEPA: Is It Adequate?" 6 Environemntal Law Reporter 50014-50019.

10. Southern Oregon Citizens Against Toxic Sprays (SOCATS) v. Clark No. 79-108 F.R. D.Or. Sept. 9,1983.

11. 33 C.F.R. 320 Corps Statement of Policy.

12. Decision document.

13. J. Wardley-Smith and M.J. Garnett, "Development of Contingency Planning to Deal With Oil Pollution", presented at a Symposium on the Prevention of Pollution from Ships,in Acapulco, 1976.

14. e.g. FEIS; George Lewbel(ed.), Bering Sea Biology: An Evaluation of the Environmental Data Base Related to Bering Sea Oil and Gas Exploration and Development (Anchorage: LGL Ecological Research Associates, Inc. and SOHIO Alaska Petroleum Company, 1983); A. Nelson-Smith, Oil Pollution and Marine Ecology (New York: Plenum Press, 1973).

15. Lewbel.

16. Wardley-Smith and Garnett: Roy Hann and Wesley James, A Survey of the Economic and Environmental Effects of an Onshore Deepwater Port at Galveston, Texas (College Station: TAMU/Sea Grant, 1974).

17. State of Texas Oil and Hazardous Substances Pollution Contingency Plan (Austin: Texas Department of Water Resources, 1981).

18. Hann.

19. Texas Oil and Hazardous Substances Pollution Contingency Plan.

20. Hann and James, p.3.

21. Ibid.

22. William M. Ross, Oil Pollution as an International Problem (Seattle: University of Washington Press, 1975) p.17.

23. Eugene Poe, Deputy Port Director, Galveston. Personal communication. Roy Hann. Personal communication. Charles Harbaugh, Environmental Resources Division, Corps of Engineers. Personal Communication.

24. Harbaugh.

25. Jack Bouy, Lousiana Offshore Oil Port. Telephone Interview, July 19, 1985.

26. Corps Statement of Policy 33 U.S.C. 240.8.

27. F.R. Anderson, NEPA in the Courts: A Legal Analysis of the National Environmental Policy Act (Baltimore: Resources for the Future, 1973).; M. Baker, J Kaming and R. Morrison, EIS's: A Guide to Preparation and Review (New York: Practising Law Institute, 1977); R.W. Findlay and D.A. Farber, Environmental Law in a Nutshell (St. Paul: West Publishing Co., 1983).

CHAPTER V

ECONOMIC CONSIDERATIONS

Introduction

Although ostensibly, environmental arguments were behind both the Sierra Club's and the Corps' views of the worst case analysis, economic factors appear to have played at least as large a role in influencing their outlook. This chapter shows that, in the Galveston case, there were both economic costs and benefits associated with the inclusion of a worst case analysis, although they still do not explain its exclusion.

This chapter applies the rational-deductive model to economic considerations. It parallels the previous chapter. First, sources and justifications of economic values relevant to the Sigler case are presented. They are followed by a discussion of the economic reasons and ramifications of a worst case oil spill analysis in the context of the rational-deductive model.

Economic Values and Goals

Economic Significance of the Port

Before considering economic values as they relate to the worst case scenario and the formal analysis, the following discussion provides a background of the importance of the Port in the Galveston economy. The largest single employer in Galveston (1), the port's development in the Galveston Bay region has traditionally had a significant effect on regional

economic activity. For example, 35 million dollars were spent on new or upgraded facilities between 1966 and 1973 (2). This expenditure represents 3.5 percent of the total spent on all North American ports, and 19.3 percent of the amount spent by all ports in the Gulf of Mexico during these same years (3). The Port of Galveston currently functions with a maximum ship capacity of 50,000 dwt. The five ports to be served by the Pelican Island Terminal averaged 1.71 million bbl per day in 1979. Fearing dwindling domestic supplies in the mid-1970's, the Corps anticipated increased dependence on foreign imports, leading to greater activity for Texas ports (4).

When and if the deepwater port becomes operational and an integral part of the Galveston area economy, it is estimated that the project would provide long-term economic benefits in terms of increased incomes and employment. The construction of the port and its associated facilities are expected to boost the Galveston-Houston economy by approximately 731 million dollars (5) in the short-term. Employment increases for construction related jobs are expected to number 2357. Another 2391 jobs are expected in support-related industries. The Corps "Findings of Fact" claim that approximately 36 million dollars per year in economic benefits will be experienced by the Galveston- Texas City SMSA's (6). Further, according to the EIS, the availability of deepwater port facilities in the future would benefit the nation, the state, local government, private

business, and individual concerns since the deep-draft facilities generate transportation savings. Additional benefits cited in the EIS include increases in job opportunities, improvements in the national balance-of-payments by decreasing levels of future dollar outflows and by increasing tax revenues on all levels. The EIS states that "most of the socioeconomic impacts expected to result from the proposed project are considered beneficial"(7).

Transportation costs would decrease due to smaller crew size per ton of oil transported, fewer tankers required to transport the oil, and savings associated with the elimination of the need to transship the cargo into smaller (approximately 50,000 dwt) tankers. An estimated savings of twenty-three cents per barrel would be realized (8).

Small short term tax revenue increases are expected to result from retail trade activity, especially during construction of the port. According to the EIS, the local tax base should increase because of increases in income and employment resulting from the project.

Economic Values

In presenting the economic values that serve as a basis for decision in the rational-deductive approach, NEPA again is an important source. NEPA requires that the economic justification for a given project must be identified. Section 102(A) requires federal agencies to give "appropriate consideration" to economic, as well as environmental and technical considerations. The Act also declares as policy a

committment to satisfy the economic requirements of present and future generations. In order to achieve the goal of economic well-being, the Act suggests achieving "a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities" (9). In section 102(2)(B), NEPA recognizes "non-quantifiable" factors or values that must be considered in an impact statement. This recognition leads to the conclusion that a qualitative balancing of costs and benefits is required.

The recent CEQ regulations concerning the preparation of EIS's also provide support for economic considerations, stating that

> (i)f the information relevant to adverse impacts is not known ...and the overall costs of obtaining it are exhorbitant or ...the means to obtain it are not known (e.g., the means for obtaining it are beyond the state of the art) the agency shall weigh the need for action against the risk and severity of possible adverse impacts were the action to proceed in the face of uncertainty. If the agency proceeds, it shall include a worst case analysis (10).

The purpose of this regulation is to save agencies the cost of considering the full range of effects by allowing them to just consider the worst possible case. It was issued partly in response to criticisms that administrative delay and costs of implementing NEPA were "ensnarling the agencies in paperwork, halting the progress of key federal programs and causing considerable economic loss both to government and to the private parties who must await governmental action before

they themselves can act" (11).

The final places to look for support of economic values, as they were for environmental values, are in the Corps' statement of policy (12) and the decision document issued by the Corps for this project. The latter document states that the "scope of this inquiry regarding these effects has been exceptionally broad and has included consideration of a wide range of environmental, safety, economic and other values". The first step in the rational-deductive model, goal definition and justification, draws from the same sources as the environmental analysis. NEPA and its subsequent commentary as well as agency policy direct the Corps to consider economic values in their decision.

Discussion

After establishing the validity of economics as an important value system within which to approach the worst case issue, the next steps are to identify the choices available and determine which choice best meets the established goal. Both economic costs and savings are associated with the inclusion of a worst case analysis in the Galveston port EIS. Therefore, both choices--the inclusion and exclusion of the worst case analysis in the EIS-- need to be considered. The negative ramifications (or costs) are discussed first. There are at least three possible economic reasons not to include the worst case analysis. The ultimate reason may have been one, all, or a combination of these.

The first possible deterrent is the actual additional

cost of performing the worst case analysis. The cost of preparing an EIS is a common complaint among Federal agencies. Charles Harbaugh of the Corps estimates the cost of preparing the initial statement for the Galveston port at between one million and two million dollars. He could only estimate the additional cost of preparing the supplement "in the thousands". However, these costs are not very significant when compared with the total cost of the project or its estimated benefits. Added to the preparation cost is the additional cost of litigation.

Argued from another perspective, the costs of litigation are a function of the Corps' failure to do the worst case analysis in the FEIS. In other words, litigation costs could have been avoided by issuing a procedurally complete original document. It appears that the Corps may not have had long-range economic interests in mind when they chose to exclude the worst case analysis. This points up another problem with the application of the rational-deductive model: even within the single value system of economics, short-term and long-term considerations favor different choices. This is where the contrasted incremental approach was operational. In responding to an immediate oil shortage a "crisis response" or short term remedy resulted. However, given the small initial cost of preparing a worst case analysis relative to the total cost of the project long-term considerations are a preferable goal. It is also logical to consider costs over the same time frame for which project benefits are expected.

In addition to pointing up a problem with the theoretical approach, this ommision indicates an even greater flaw in the decision process. In spite of the Corps' long standing committment to long range economic development, the agency made a choice on the basis of short term economic considerations. Again, the decision does not follow from the stated objectives.

In a sense, the Corps provided their opposition with a ready-made suit. At the outset of the EIS, the Corps professes to follow the CEQ regulations, which had been issued in draft form at the time the statement was issued. "This statement has been prepared under the new Council on Environmental Quality procedures..." (13). The draft regulations exempted EIS's with drafts filed prior to their issuance, although voluntary compliance was recommended. The advisory guidelines that were in effect prior to these regulations did not specifically require a worst case analysis. Therefore, the Corps claimed in the Sigler case, the EIS should not be reviewed under these regulations since they were not law at the time the EIS was issued. The Fifth Circuit Court of Appeals, however, points to the Corps' voluntary compliance in Sierra Club v. Sigler, stating that case law "requires that the court review the Corps' adherence to these regulations...". The court cited NRDC v. Callaway (14), another case involving the Corps. In Callaway, the Corps made specific reference to EPA ocean disposal criteria and relied on them, at least in part, to support the issuance

of a permit. The permit concerned inland waters, so the ocean disposal criteria were not applicable. However, the court ruled that "by its own use of the standards, it has made them applicable in this case". In Sigler, litigation costs could have be avoided by the Corps' not claiming to follow the regulations or by complying more fully. As discussed in the last chapter, this argument is analogous to the major assumption in the rational-deductive ideal: if an objective or value system is offerred, it is logical to expect it to serve as a basis for decision. In this instance the error is not with the model, but with the decision-making logic.

Economic reasons for the inclusion of a worst case analysis are often based on similar arguments against its inclusion, but viewing the situation from a different perspective. For example, it would have been less costly for the worst case analysis to have been included in the original document than in a supplement. "Thorough preparation in the first instance is the most effective means to insure expeditious procedural review and to avoid the need to redo the work or project delay, rejection and economic losses"(16). The "thousands" of dollars spent on the supplement would not have been necessary had the initial document been procedurally complete.

The second economic reason for not including a worst case analysis is the result of one of the arguments in support of including the analysis for environmental

reasons. Better protection and countermeasure techniques would result in the additional cost of providing for them, i.e. the supply of booms, weirs, skimmers, etc. would need to be increased. This cost is small relative to the rest of the project and is unlikely to act as a deterrent to a project of this magnitude. As stated above, LOOP claims to have the capabilities to deal with a similar worst case spill, even though that port was built prior to the CEQ worst case requirement. The philosophy followed at the Louisiana facility is that the minimal additional cost outlays for additional equipment and training is a sound insurance investment against the potential effects of a catastrophic oil spill(15). This reasoning would be another example of the subordination of long range goals to short term economic considerations.

The Galveston Deepwater Port project involved additional cost because of changes in demand for imported oil. The FEIS found that the proposed port would be economically viable by providing a more efficient way of handling imported oil. The FEIS also recognized the variety in projected import demands, depending on energy use and domestic production. In response to a comment from the Department of the Interior in the DEIS (17) concerning changes in imports, the Corps' claims that the project is not dependent on increased imports. Rather, the port would provide an alternate, more efficient way of moving crude oil that would otherwise be carried by smaller tankers. This is contrary to the original

statement of purpose, which claims that the port would be built to meet an increased demand for imported oil. The Corps also claim that the port will have realized a "substantial portion of its financial life" by 1990. A "substantial portion of its financial life" has therefore already been tied up in litigation and preparation of the supplement. The FEIS justifies the need for the project by claiming that "imports are expected to increase by at least three times the currently imported amount by the 2000". The deepwater port would be built to meet these needs. Current import trends and more recent projections indicate that these increases have not been forthcoming. The court bowed out of this argument for legal reasons: "assessment of purely economic costs and benefits fall within a wide area of agency discretion not subject to reexamination by federal courts in the guise of judicial review of agency action". Only if the "economic justifications are, or have become so flawed as to distort grossly the FEIS's presentation of environmental consequences" can the court review economic considerations. The economic standards on which the decision was made are either faulty, or at least no longer valid. Therefore even if the Corps had followed a rational path, the arguments were not sound since the assumptions have proven untrue.

Every source interviewed, with the exception of the Deputy Director of the Port at Galveston, agreed that the viability of the port as an oil import facility has been greatly diminished within the past few years. Discussing the

prospect of another Superport facility on the Texas Gulf coast, a representative of LOOP expressed his belief that there "is clearly no need for one" (18). The Louisiana port is currently handling approximately fifty percent of the projected throughput and half of what it was constructed to handle. This source felt that the future oil import market was not in supertankers. Much of U.S. imported oil comes from Mexico, which exports in smaller tankers. The only hope for LOOP to operate at its originally anticipated profit, and for Galveston to be able to construct a deepwater port, would be if Middle East crude prices were to drop significantly below current levels and to remain low for an extended time.

A Phillips Petroleum representative expressed doubt whether any oil companies would back the Galveston project, given current import conditions (19). He also suggested that only long term increases in Middle East crude would be able to sustain the project. His overall impression was that "nothing is going to happen" with the project. Rather than making a decision based on long-term, rational-comprehensive planning, this project is suffering from the fact that it originated as a short-sighted response to an immediate crisis.

Even Charles Harbaugh of the Corps agreed that oil imports have leveled off and are projected to stay level (20). Since the delays from litigation, oil company backing for the project has become virtually nonexistant.

This response from the industry representatives is exactly the result the plaintiffs had anticipated. Representatives from the Sierra Club and E.D.F. wanted consideration of the environmental effects of the worst case spill, but more importantly, they hoped to delay the project to the point where it was no longer economically worthwhile (21). This tactic would not have worked had the Corps followed the procedure it claimed to follow and made a decision based the values it professed to support.

It should also be mentioned here that the Corps does not have any immediate economic stake in this port's development. Pelco, Chicago Iron and Steel and Northville Industries are the private corporations responsible for the project; the Corps is only acting as the permitting agency. In an interview, the Corps representative said initially that "we don't care if we issue the permit or not" (22), but later retracted the sentiment. The Corps has an interest in the port's development because they have projects that are contingent on construction of a deepwater port at Galveston. If the port is built, the Corps has plans to dredge further up the Houston Ship Channel.

The theoretically favored choice, based on economic values, is the inclusion of worst case analysis. Although this analysis has been done with the benefit of hindsight, all of the information utilized in the study was available to the Corps in making their decision, with the possible exception of a knowledge of recent import trends. At the

time the EIS was issued, however, imports had already begun to decrease. A large part of the discrepancy between the expected outcome and the overall decision to issue the permits can be attributed to shortcomings in the model. For instance, virtually no real-life situation is as simple as the limited application of the rational-deductive model in this analysis. Even this simplified application faced the problem of long-term versus short-term values. It is also unrealistic to posit economic values unchallenged by other considerations.

Criticisms of the economic validity of many Corps projects were mentioned in Chapter Two. Although the organization claims to have changed its approach to development, actions speak differently. There are two levels of decisionmaking involved in this case; one affects the other. The decision whether or not to include the worst case analysis is one component of the decision to permit the project. If the Corps planned to permit the project (regardless of whether that decision was economically or environmentally sound), the effects of a worst case spill had to be disclosed as part of the decision. This disclosure could, in turn, effect the local public's support for the project. Contrary to the commonly held view of the Corps as an economically motivated organization, this study supports the view that the organization is driven more by popular political support than pure economics. Therefore, in many ways, its decision-making is less than explicitly rational.

Rather the agency establishes economic and environmental criteria under which to operate and then may or may not satisfy these criteria; in fact, the decision may not be based on these criteria. The following discussion shows that even if political motivations were behind the Corps' decision, the choice was still not rational, since the actions do not support the desired ends.

Need for public support is critical in this and other Corps projects. This dependence on public support is recognized by the Corps (22) and also by Galveston Wharves and Pelican Terminal Corporation. These latter two groups sponsored public meetings to inform the public about the need for the proposed project and to hear the concerns of local citizens. A resolution was passed in June, 1979 by Pelican Terminal Corporation (Pelco). This company would provide the funds to finance the project until the Terminal Project Revenue Bonds and Channel Project Revenue Bonds become available. The City of Galveston would issue and sell these bonds to pay for "building, constructing, purchasing, acquiring, improving, enlarging, extending, repairing, maintaining, developing and operating" the port (23). The Corps representative agreed that by publishing the possible effects of a worst case scenario, the public may become more frightened of the project. He felt that people would not understand the difference between risk and probability (24) which must both be considered as part of the CEQ requirement.

It is uncertain whether the local public would oppose

a project solely on the grounds that it would present potential environmental damage, especially if one considers the number of people currently employed by the Port and the additional jobs that would be created by its expansion. The Galveston area has a long-standing reputation for being pro-development. In regard to industrial development versus pollution, one author writes:

> "The citizens... do not seem to recognize their own interests. Because the Bay lacks scenic appeal, and because it has been unable to offer the types of aquatic recreation found in other estuaries, the people in the Galveston Bay area have shown very little interest in its ecological preservation." (25)

The decision document identifies the following as supporters of the project: (then) Texas Governor William P. Clements, U.S. Senator John Tower, and all concerned state Congressmen. Mayor E. "Gus" Manuel of Galveston "strongly support(ed) the project and has urged the community to support it".

Environmental degradation associated with a major oil spill would affect two important local industries-- tourism and shrimping. Potential economic losses to these two trades are likely to play a greater part in shaping public opinion than are environmental concerns. Although the real impacts of spilled oil on the local tourist trade have not been established (26), a causal relationship between the two is commonly assumed. Local newspaper articles have discussed the economic impacts of oil on Galveston beaches. For instance, members of the local community were reported to

have lost more than one million dollars per day in diverted tourist trade as a result of the spill from the British tanker Alvenus (27). Fear of lost tourist trade was responsible for concentrating the initial cleanup response to the Ixtoc blowout almost exclusively on heavily visited beach resort areas. The fact that all of the major spills in the Gulf of Mexico occurred between the time the EIS was prepared and when the case was brought to court presents an interesting explanation of why the Corps may have expected unchallanged public support for the project. It also explains why the organization may have thought they could get by without performing the analysis. The FEIS was written in 1978 and issued in 1979. 1979 was the worst year in Texas' history for oil spills. The suit brought by the Sierra Club in 1981 was likely triggered by the increased awareness of environmental hazards created by recent spills. Prior to these spills, it might have been easier for the Corps to claim environmental protection as a goal without any substantive change in practice. In terms of the model, the irrationality of claiming a goal and not acting in accordance with it stood a better chance of going unchallenged. Although a system of values that favors public support and local political backing for a project is not documented in any of the laws or policies governing agency action, it is common practice, and well documented in the case of the Corps. In this instance, it appears as though these factors were so strong as to prevail over both economic and

catastrophic impacts. They relied on the economics of changing oil import demands. They hoped to delay the project to the point where it was no longer economically viable. Many industry representatives believe that that time has come. From an economic standpoint, the most pressing reason for the inclusion of the analysis is to eliminate costly project delay. If the decision whether to include or not to include a worst case analysis had been based only on economics, the rational deductive model would favor its inclusion. Since the model's projections are contrary to the Corps' action, it indicates that either the decision weighed considerations other than economics and environment more heavily and /or the decision was not rational.

Notes for Chapter 5

1. Sharon Stewart. Telephone Interview. October 20, 1984.

2. Daniel Bragg, A Survey of the Economic and Environmental Aspects of an Onshore Deepwater Port at Galveston, Texas, Part One: Economic Effects (College Station: TAMU/Sea Grant, 1974).

3. Ibid.

4. Most of this and the following discussion was taken from the Corps' FEIS.

5. FEIS p.viii.

6. Ibid. p. 4-82.

7. This type of subjective opinion was presented throughout the EIS. The appeals court in Sigler discussed the questionable objectivity of this EIS. The statement was prepared by the same consulting firm that would be responsible for construction of the port. Both of these points have been a general criticism of Corps statements in the past (see Chapter Two).

8. Eugene Poe, Jr., Deputy Director of Port Affairs. Telephone Interview, October 25, 1985.

9. NEPA 101(b)(5).

10. 40 C.F.R. 1502.22.

11. F.R. Anderson, NEPA in the Courts: A Legal Analysis of the National Environmental Policy Act (Baltimore: Resources for the Future, 1973) p. 54.

12. 33 C.F.R. 320.

13. FEIS p. viii.

14. NRDC v Calloway 524 F 2d. 79 2nd Cir. 1974.

15. Jake Bouy, LOOP. Telephone Interview, July 19,1985.

16. Baker, Kaming and Morrison, p. vii.

17. U.S. Corps of Engineers, Draft Environmental Impact Statement (Galveston:U.S. Army Corps of Engineers, 19780 p. 7-50.

18. Jake Bouy, LOOP. Telephone interview. July 19, 1985.

19. Robert Johansen. Phillips Petroleum. Telephone

interview. July 19,1985.

20. Harbaugh.

21. James Tripp, Council for Environmental Defense Fund. Telephone Interview, October 22, 1984; Sharon Stewart. Telephone Interview; Herman Rudenberg. Telephone Interview.

22. Andrews; Harbaugh. Telephone Interview. July 19,1985.

23. FEIS p.4-82.

24. Harbaugh.

25. Lynton Caldwell, Lynton Hayes and Isabel MacWhirter, Citizens and the Environment (Madison: University of Wisconsin Press, 1976).

26. Rai Freeman, Stephen Holland and Robert Ditton, "Measuring the Impact of the Ixtoc I Oil Spill on Visitation at Three Texas Public Coastal Parks", Coastal Zone Management Journal, Vol. 13, No. 2, 1985.

27. Anne Marie Kilday and Joe McQuade, "State Sues Tankers, Operators", Houston Post, Sunday, August 5, 1984.

CHAPTER VI

CONCLUSIONS AND IMPLICATIONS

A study of the decision by the Corps of Engineers not to include a worst case oil spill analysis in the Galveston deepwater port EIS requires the integration of a variety of disciplines and factors. This study has grouped the considerations into environmental (including conservation, esthetic, and fish and wildlife values) and economic (or development) categories. Broadly construed, these two systems encompass all of the involved groups. The major controversy over port development took place between groups representing these two interests. Chapter Three presented the justification for this separation. Reasons include the lack of overlap between the individuals and groups involved in EIS preparation who are concerned with environmental impacts and those who are interested in economic impacts, and the incompatibility of the methods for evaluating economic and environmental costs and benefits. In general, economic interests favored port construction whereas environmental interests made up the opposition.

Given the ecological and economic significance of the Galveston Bay area to the state of Texas as well as the economic and environmental impacts associated with the import and export of oil, the construction of a deepwater port was of concern to many people and groups. The potential for environmental damage to biota due to spilled oil was the

major concern of environmental groups. The number of previously proposed port projects as well as the number of people employed indicate the economic importance of the port.

In addition to environmental damage to biota, spilled oil would also negatively impact both commercial and sport fisheries. To include a worst case oil spill analysis in the EIS, the plaintiffs argued, would help prepare for-- and therefore protect against-- potentially catastrophic impacts.

In not doing the analysis, the Corps left themselves open to a lengthy and costly court suit. At the time the EIS was issued, it was projected that construction of the port would begin in 1980 or 1981. It was brought to court first in 1981, the trial court ruled in 1982, and the case was appealed in 1983. The supplemental EIS, with a worst case analysis, is still being prepared (early 1986).

If, as quoted in Chapter Three, "much can be learned from an attempt to relate the two worlds of academic and political (and administrative) reflection", that relationship needs to be explored. Although the rational-deductive approach has served as a useful framework in which to study the Corps' decision in an academic setting, problems with the approach in practice are well documented in the literature of decision theory. Problems in obtaining an exhaustive data base, dealing with conflicting values, and determining the relative significance of different values lessen the utility of the model as a practical tool. These problems in applying the model are more easily overcome by limiting the

scope of the problem, an option available to an academic researcher, but not usually to an administrator. By only looking at the worst case question, and more importantly, by considering opposing interests separately, the problem of determining relative weights for conflicting values is sidestepped. Also, the model is more appropriately applied to larger policy questions. The case studied here is an example of implementing an existing policy, rather than of policy formulation. The worst case analysis is a very small component of the overall decision by the Corps to issue permits for port construction. It is the latter question that would more appropriately be addressed by the rational-deductive approach; the decision whether or not to issue permits would justify the comprehensive information gathering by the Corps required by the method.

However, the agency's stated approach to decision making conforms closely with the rational approach. By establishing the relevant statutes and agency intent and goals, the agency attempts rational decision making. In contrast to the incremental approach, a distinction is made between the goals or objectives and a consideration of alternatives.

The EIS process allegedly serves as the rational-deductive model's requisite means-end analysis. Through this process, the appropriate action is chosen to meet the stated goals. The comprehensiveness of this process by the Corps was discussed in Chapter Two. Among federal agencies, the Corps has demonstrated outstanding procedural performance.

The evidence, including the stated actions, applicable statutes, length of the EIS and duration of the EIS process, indicates the Corps' decision was intended to be rational and comprehensive.

However, within this model, there are many points where rationality dictates a course of action different from the one chosen. By the agency's own admission, both environmental and economic considerations were important in the decision process. The application of the rational-deductive method to both the environmental and economic value systems, however, concluded that the worst case analysis should have been included in the EIS. This points up the fact that different, even conflicting goals can both benefit or both lose from the same policy decision.

Possible explanations for the exclusion of a worst case oil spill analysis in the FEIS include ignorance of the CEQ regulation, misunderstanding or denial of the its applicability to the Galveston project, and misunderstanding over the extent to which the regulation was subject to review. Given the newness of the regulation, the Corps had no guideposts from which to determine how strictly the requirement would be upheld. However, there is significant evidence that the Corps was aware of the existence of the regulations and furthermore properly understood them. The Corps Statement of Policy (33 CFR 320) makes specific reference to them. The regulations are also expressly mentioned in the FEIS: "The statement has been prepared under

the new Council on Environmental Quality procedures published in the Federal Register Wednesday, 29 November 1978". By claiming to follow the regulations, and then not including a worst case analysis, the Corps' actions deviated from the rational model.

Another possibility is that the Corps was aware of the regulations, but thought that the worst case analysis was unnecessary. In fact, this was an answer given by the Corps when asked why the analysis was not done (1). In the FEIS, however, the Corps stated that the new CEQ guidelines including the worst case analysis requirement would be followed in the EIS preparation. It was not legally necessary for the guidelines to be followed, since they had not been approved yet. They were still guidelines at that point and not the requirements they would become, although voluntary compliance was urged. However, since the Corps claimed to have followed the guidelines, a worst case analysis should have been included. The behavior of the organization, in the context of the model, is not consistent; standards were established, and then they were not pursued.

The political impact of public perception explains in large part why the worst case analysis was not done. Public perception is important in this and other development projects because construction and maintainance required the sale of revenue bonds. Although the resolution to issue the bonds specifically forbade the imposition of taxes to the public for repayment, the passage of the resolution was

dependent on public support. In addition, there is a strong dependency of Corps' projects on support from local Congresspersons, whose support, in turn, often reflects the attitudes of the local public. Although the "pork-barrel" (3) politics of Corps projects usually involve federal funds for a project, the close ties between Congress and the Corps are likely to affect permitting of projects at a local level. It is possible that the scare factor associated with disclosing the worst case impacts, especially on the tourist and shrimping trade, would have prevented the public from approving the project. However, given the general pro-development sentiment in the Galveston area, other industries and individuals were either strongly in favor of the port, or at least indifferent to its environmental impact. Knowing the pro-development attitude of the area, yet fearing diminished support from the important fishing and tourism interests would be good reason for not publicizing the effects of a catastrophic oil spill associated with the project. This is a critical point -- it indicates that regardless of the economically or environmentally preferred choice, the potential for lost public support was of overriding concern. This credits the Corps with rationality -- the choice served the desired end -- but it was based on a value system other than that which the agency claimed to pursue. Again, the short-term goal of saving the project from opposition was achieved at the expense of the project.

One additional rational explanation concerns the

relationship between the Corps and its constituent industries. If the Corps was primarily concerned with maintaining its relationship with these groups, at least the appearance of pursuing their development goals is more important than the actual long term benefits of the project. Although the Corps has recently been credited with a willingness to incorporate new (specifically environmental protection) mandates, the Galveston district has less local opposition, and therefore less reason to change old agency operating procedures. By promoting the project in a generally pro-developmemt region the Corps may have been pursuing a calculated appeasement strategy. The agency's major constituents could be satified while avoiding political costs. Again, the decision is rational based on maintaining these relationships, but not on stated goals.

From the research carried out for this study, the exclusion of the analysis appears to be intentional rather than accidental. Proof that the Corps was aware of the CEQ regulation, its applicability to this case and of the potentially catastrophic impacts of a massive spill were found in the EIS, responses to comments in the DEIS and confirmed in interviews. Perhaps the greatest discrepancy can be found in the Corps' response to questions concerning their awareness of these points. This leads to the conclusion that the Corps contemplated performing the analysis, then intentionally decided to leave it out. It established the CEQ regulation as the appropriate standard

and then chose not to follow it. The values are identified, the options are considered, and the choice is not made based on the options! The Corps has an admirable recent record of procedural compliance; therefore, it was significant to find them guilty of this kind of oversight. As discussed in Chapter Two, it is easier to attack procedural non-compliance than it is to target substantive agency decisions in court. This inconsistency supports the assumption that the Corps feared that the results of disclosing the worst case analysis would be worse than the effects of procedural non-compliance.

Can these non-rational decisions be explained by the alternative incremental model? According to Lindbloom, an incremental decision maker does the following: 1) ignores important possible outcomes, 2) ignores important alternative policies, and 3) ignores important affected values. Incrementalism is exhibited at various points in the Corps' decision. Reasons why the problem was approached incrementally include agency conservatism (the Galveston district, in particular), political pressure, and perhaps, to let this case serve as a trial.

For example, in considering oil spill possibilities and impacts, the Corps used past spills as the basis for their analyses. Because the possibility of a total cargo loss was remote, the Corps made the argument that a worst case analysis was not required. In fact, this was the ruling of the district court in the trial case. However, this was exactly the type of scenario at which the regulation was

aimed. Comments from the Department of Interior regarding the inclusion of a worst case analysis were given the following response: "If all those assumptions (total rupture of all tankage, poor weather conditions, maximum recreational activity and migration of important species) are made, the probability of them occurring in that way become so small to be speculative at best". The regulations explicitly separate impact from probability, i.e., first the impacts of a catastrophic amount of spilled should be considered and then the probabilisty of such a spill. This treatment was incremental in that the Corps chose to look at oil spill impacts and probabilities similar to those that had already occurred at the time the EIS was issued.

Another possibility is that the Corps may have thought that they could get by without the analysis. The fact that oil spill hazards on the Texas coast were only brought to the public's attention after the EIS was prepared supports this concept. The worst case regulation had never been the subject of litigation before, so the Corps may have assumed that these regulations were not going to be taken seriously. Since the CEQ had only issued guidelines in the past, there may have been some misunderstanding over the regulations and the force with which they were to be applied. However, prior legislation had given recently issued CEQ guidelines "substantial deference" (2). It is significant to note that regardless of the impacts of the worst case scenario, the Corps need not necessarily have withheld the permits. As

discussed above, the worst case requirement is a small component of the EIS; the EIS, in turn, is only one component of the District Engineer's decision. The final decision document, which is a public interest review of permit applications, is based on an evaluation of the "probable impacts". Since the worst case event is by definition one of low probability, by its own permitting standards, the effects of a worst case analysis would not have stopped the project.

The Corps' limited commitment to environmental protection was demonstrated in Chapter Four. The incremental approach allows important affected values to be ignored. This, together with the fact that the worst case was not part of the traditional EIS process, point to the incremental method as playing an important part in the decision.

The reason that the decision turned out to be wrong in terms of project viability is not only because of flaws in decision making logic, but because of changes in external circumstances (e.g oil prices and availability). Also, given the newness of the regulation and the agency's understandable reticence to apply it for fear of the public's reaction, the Galveston project may have provided the agency with an ideal test situation. In this case, the Corps could omit the worst case analysis from the EIS for a private project and see if and how strictly the requirement was going to be enforced. It could test the new rule in this case without jeopardizing either their own project or their relationship with the permittees.

A combination of the rational-deductive and the incremental models is necessary to explain the Corps' decision. However, there is an irrationality in the overall process. The Corps claims to perform a comprehensive analysis and relies on statutes and statements promoting rational and comprehensive decision making. Therefore, the agency's stated approach conforms with the rational model, yet some of the most important aspects of the decision were approached incrementally.

Lessons and Implications of the Study

In addition to understanding the agency's decision making process, other themes may be generalized from this study. Sigler presented agencies preparing EIS's with their first example of the worst case rule applied. From this, and subsequent cases citing Sigler, agencies will be better able to gauge how the requirement applies to their situation.

Many of the lessons learned from the Sigler case reinforce existing case law and custom. Whether the "intent" of NEPA is primarily substantive or merely procedural, litigation most often centers on the latter. No responsible official would or should overlook procedural requirements, especially requirements they profess to follow. In this case the procedural requirement of the worst case analysis was used by the opponents to achieve their goal of halting the project. The general principle demonstrated by Sigler is the effectiveness of NEPA in transferring political power. Prior to NEPA, it would have been

difficult, if not impossible, for an environmental group to thwart a powerful bureaucracy and its consitituents.

Sierra Club v. Sigler demonstrated that NEPA case law is still emerging. The court's interpretation of scientific uncertainty and the need to consider the consequences of low probability, catastrophic impacts have been applied in subsequent cases.

With the uncertain future of the worst case regulation, it remains to be seen how the precedent set in Sierra Club v. Sigler will fare. The current CEQ has threatened to modify or withdraw the regulations completely because of misunderstanding or misuse (see Chapter Two-Westway project). Since the worst case regulation was meant to codify previous case law and also to simplify the EIS process, the requirement may continue in practice, if not by name. In other words, the substantive arguments for the worst case analysis may continue, regardless of what happens to the procedural CEQ requirement. The proposed revisions would not likely affect cases like Sigler.

In some respects, the Corps may deserve more credit than it is commonly given by environmentalists. Given the gross conflict between the Corps original development mission and the environmental quality considerations required by NEPA, reconciliation of the two is a difficult task. Although recent accounts of and by the Corps make it evident that changes have occurred in the Corps' environmental consideration of projects, the integration of these two value

systems is still not refined. Significantly, however, if the Corps decision is based on an internal set of values that are subject to local political climate, rational and consistent explanations of agency behavior are not possible. If the actual value system on which decisions are made is inconsistent with the stated goals, administrative behavior is difficult to pattern and even more difficult to anticipate.

One additional significant implication of this study concerns the time scale of administrative decision making. Two forces pull the decision maker in opposite directions. The first force is that of careful consideration and deliberation over relevant factors for decision. The other force is that of expediency. This case specifically points up the importance of timely decisions. Rules and regulations change -- often quickly, as evidenced by the threatened withdrawal of the worst case regulation. It should be emphasized, though, that the purpose of the regulation is to speed up the decision-making process. This is partially in recognition of changing economic realities. For the Galveston project, changes in oil usage and importation are likely to make the need for the project obsolete before it ever gets built. Long term projections are necessarily more speculative than short term; therefore, it is more pressing that a project with professed long term benefits become operational as soon as possible, thereby assuring its operation when conditions are still predictable.

From another vantage point, the administrative delay caused by the Sigler litigation may in fact have been a blessing in disguise, saving the industries involved from an unwise long term investment.

Summary

The application of the rational-deductive approach to both environmental and economic considerations leads to the conclusion that a worst case analysis should have been included in the original EIS. The environmental analysis relied primarily on substantive arguments based on the environmental protection that would result from better oil spill control and countermeasure plans. The economic savings that result from preparedness outweigh the minimal costs associated with contingency planning and equipment. The costs of litigation and, more importantly, of project delay argue strongly in favor of including the analysis. These economic arguments rely more heavily on the procedural obligation imposed by the CEQ worst case regulation.

There are many possible reasons for the disagreement between the choice suggested by the rational model and the decision made by the Corps. Fear of losing needed public support for the project is the favored explanation. The port is a major employer and therefore receives a great deal of political attention. The fact that oil spills on the Texas coast became highly publicized only after work began on the EIS may help explain why the Corps chose to exclude the worst

case analysis. Given the changes in the economics of oil importation, the choice to exclude the worst case analysis has probably postponed the project too long for it to remain an economically viable one.

Notes for Chapter 6

1. C.R. Harbaugh, Environmental Resources Division, Galveston District, USCE. Telephone Interview. September 21, 1984.

2. Andrus v. Sierra Club 442 U.S.C. 356

3. From George Laylock, The Dam Builders (Garden City: Doubleday, 1970), pp.6-7 : "Congressmen... need the Corps to build their pork barrel projects, and the Corps needs Congress to keep it in business. The Corps, although a branch of the Defense Department, draws its life blood from Congress. The symbiotic relationship between Congress and the Corps is of long duration". See also, Mazmanian and Nienaber, Can Organizations Change: Environmental Protection, Citizen Protection and the Corps of Engineers (Washington, D.C.: The Brookings Institution, 1979) p.12.

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