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CONCEPTUAL PLAN FOR HARBOR AND PORT DEVELOPMENT STUDIES

National Council for Marine Resources & Engineering Development

PREPARED BY
INTERDEPARTMENTAL AD HOC TASK GROUP
FOR
COMMITTEE ON MULTIPLE USE OF THE COASTAL ZONE
NATIONAL COUNCIL FOR MARINE RESOURCES
AND ENGINEERING DEVELOPMENT

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CONCEPTUAL PLAN FOR HARBOR AND PORT DEVELOPMENT STUDIES

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CONCEPTUAL PLAN
FOR
HARBOR AND PORT
DEVELOPMENT STUDIES

INTRODUCTION

The broad purpose of comprehensive harbor and port development studies would be to develop and provide information for those concerned with Federal, local, public, and private investments in such developments. The overall objective of the studies would be to provide for the best use, or combination of uses, of water and related land facilities to meet contemporary and long-range needs for safe, efficient, and convenient water transportation at the lowest practicable cost in a manner consistent with other national goals and objectives. Studies pertaining to the development of a region's harbors must be definitive and yet leave sufficient flexibility so that formulated plans can be modified or adjusted over time to fit changing conditions. The studies must provide detailed analyses of, and recommend solutions for, specific problems generated by rapidly changing transportation and cargo-handling technology and by conflicting demands for the development, utilization, and conservation of marine resources. A major objective of the comprehensive study would be consideration of alternative solutions, taking into account costs and effects on economic, environmental and social structures. Specific study objectives might include, but not be limited to, the following:

a. Determination of the optimum number, type, and spacing of deep-draft harbors which will be required for prospective foreign and domestic waterborne commerce.

b. Development of practical economic solutions to problems imposed by rapidly changing vessel and cargo-handling technology including identification and evaluation of technically feasible alternatives to conventional harbor and channel modifications, with minimum disruption of the natural environment.

SCOPE

Subject studies would be comprehensive multi-agency studies encompassing engineering, economic, social, and environmental aspects relative to marine transportation-port facility requirements. While focused on developing technically feasible solutions to problems associated with super-ships, hazardous cargoes, port congestion, etc., studies would also include evaluations of the interrelationship between water transportation and other modes serving specific ports and hinterland areas. Studies would include, but not be limited to, detailed investigations and analyses of trends in commodity movements and fleet compositions; identification of implications, by regions, of projected traffic movements and vessel dimensions; analyses of port and ancillary facilities required to effectively accommodate such traffic, evaluation of alternative transport and cargo-handling systems based on foreseeable technological developments; and consideration of appropriate financial participation by Federal and non-Federal entities, including States, political subdivisions thereof and/or other local interests.

These studies would be performed as a coordinated effort among the various Federal departments, states, municipalities, ports and maritime

associations, and other local, public and private interests expected to participate in advisory as well as information-providing capacities. Supporting work would be performed through the Sea Grant program of the National Science Foundation and by contract with private consultants, universities, or research organizations, with maximum use made of existing information, to integrate studies currently underway or contemplated under other separate authorities, and to limit work to the amount and degree of refinement needed to satisfy study objectives. The intent is to draw on available expertise and organizations rather than to establish new or duplicate groups.

ACTIVITIES

For purposes of illustrating the extent of potential planning activity, a "Planning Matrix" showing principal study subjects and likely participants for each study activity is inclosed as Exhibit I. Fifteen major study events have been identified but may logically be grouped into four principal study categories as follows:

a. Data Base items include basic data and supporting studies pertaining to Economic Base, Commodity Flow, and Transportation Economics.

b. Transportation System events include investigations and analyses of Inter-Modal Transportation; Harbors and Channels; Port Facilities; and Vessels.

c. Limiting Factors include consideration of such significant but less tangible items as National Security, Policy, Financing, and Regulatory Aspects, and Health and Port Safety.

CONCEPTUAL PLAN FOR HABOR AND PORT DEVELOPMENT STUDY

LEGEND:
Study Area Coordinator -----*
Contributing ----------x

PLANNING MATRIX

Study Areas	Defense					Commerce							Transportation					Interior					HUD						Agriculture		Labor				Other						
	Army			Navy																															Federal				Non-Federal		
	CE	MTMTS	AMC	MSTS	NMC	MARAD	BOC	OBE	EDA	BDSA	ESSA	BIC	CG	FHWA	FRA	FAA	OST	FWLS	FWPCA	BOM	BOR	OIA	GS	FHA	RAA	HAA	LFDA	OPSC	OS	ERS	CCC	BES	BLS	BWP	BLSTD	AEC	HEW	FPC	SI	States	Municipal	Private
Economic Base	x					x	x	*	x	x		x					x			x																					
Commodity Flow	x	x				x	*					x					x			x	x									x	x		x				x			x	
Transportation Economics	x	x		x		x		x						x	x	x	*													x							x				x
Inter-Modal Transport	x	x	x		x	x								x	x	x	*																						x	x	x
Harbor & Channels	*										x		x									x																	x		x
Port Facilities	x	x	x	x	x	*			x				x				x										x														x
Vessels	x			x		x							x				*																						x	x	x
National Security	*	x	x	x	x	x				x			x				x																		x						x
Policy, Financing, & Regulatory Aspects (1)	*	x	x	x	x	x			x		x		x	x	x	x	x		x			x						x	x	x				x	x				x	x	x
Health & Port Safety	x					x							*																												
Pollution	x					x					x		x						*																x	x			x	x	x
Urban Development	x					x																	x	x	x	x	*				x	x	x					x	x	x
Marine Ecology, F&WL.	x										x		x					*																				x	x	x
Aesthetics	*																x			x				x		x	x										x	x		
Recreation	x												x							*				x													x	x		

(1) Study Area Coordinator to be determined prior to implementation of plan.

EXHIBIT I

d. Environmental subjects will embrace evaluation of relationships between navigation and port facility requirements and Urban Development; Pollution; Aesthetics; Recreation; Marine Ecology, and Fish and Wildlife. Each of the study categories identified above and listed in the lefthand column of Exhibit I are described in the Glossary, appended herewith.

PARTICIPATING AGENCIES

Based on an appraisal of statutory or program responsibilities of various Federal agencies, and non-Federal interests, likely participants or contributing agencies for each study category are indicated by the matrix in Exhibit I. One of these participating agencies would be designated the Study Coordinator for each activity. For example, the coordinator for Economic Base data and economic projections would likely be the Office of Business Economics, Department of Commerce, with participation by Corps of Engineers, Bureau of Mines, Economic Research Service, and others. A description of agency functional responsibilities and activities in the field of water and related land resources planning and development is given in the appended Glossary.

COORDINATION

Conduct of in-depth harbor and port development studies will require drawing on highly specialized technical skills and knowledge, and the study must be conceived as a coordinated partnership among Federal agencies and non-Federal interests.

A conceptual organization chart has been prepared and inclosed as Exhibit II. This chart indicates the broad relationship between basic elements of the study organization and the task groups for specific subjects, drawn from Exhibit I.

ORGANIZATION

Since it is recognized that harbor and port development studies must be performed as a coordinated effort among the various Federal departments, states, municipalities, ports and maritime associations and other local, public and private interests expected to participate, these studies would be accomplished in accordance with the principles of the Water Resources Planning Act (P.L. 89-80).

The regional study groups, including representatives of the key agencies who would be assigned full time to study work, would develop detailed plans of surveys and accomplish or coordinate base studies on commodity movements, industrial projections, and shipping technology forecasts--necessary to delineation of shipping regions. Work associated with definition of study regions would require 12 to 15 months to accomplish.

HARBOR AND PORT DEVELOPMENT STUDY
CONCEPTUAL ORGANIZATION

COORDINATING COMMITTEE AND ADVISORY AGENCIES

FEDERAL

Dept. of Army
Dept. of Navy
Dept. of Transportation
Dept. of Interior
Dept. of Agriculture
Atomic Energy Commission
Federal Power Commission
Dept. of Health, Education, and Welfare
Dept. of Commerce
Dept. of Housing and Urban Development
Dept. of Labor

NON-FEDERAL ADVISORY AGENCIES

Public and Private Interests
Industry Associations
Maritime Associations
Port Association
Consultants

REGIONAL PORT STUDY GROUPS

Study Activities for Each Regional Study

Economic Base
Commodity Flow
Vessels
Transportation Costs and Rates
Pollution
Urban Development
Policy, Financing and Regulatory Aspects
National Security
Harbors and Channels
Port Facilities (Incl. Offshore)
Inter-Modal Transport
Marine Ecology and Fish and Wildlife
Aesthetics
Recreation
Health and Port Safety

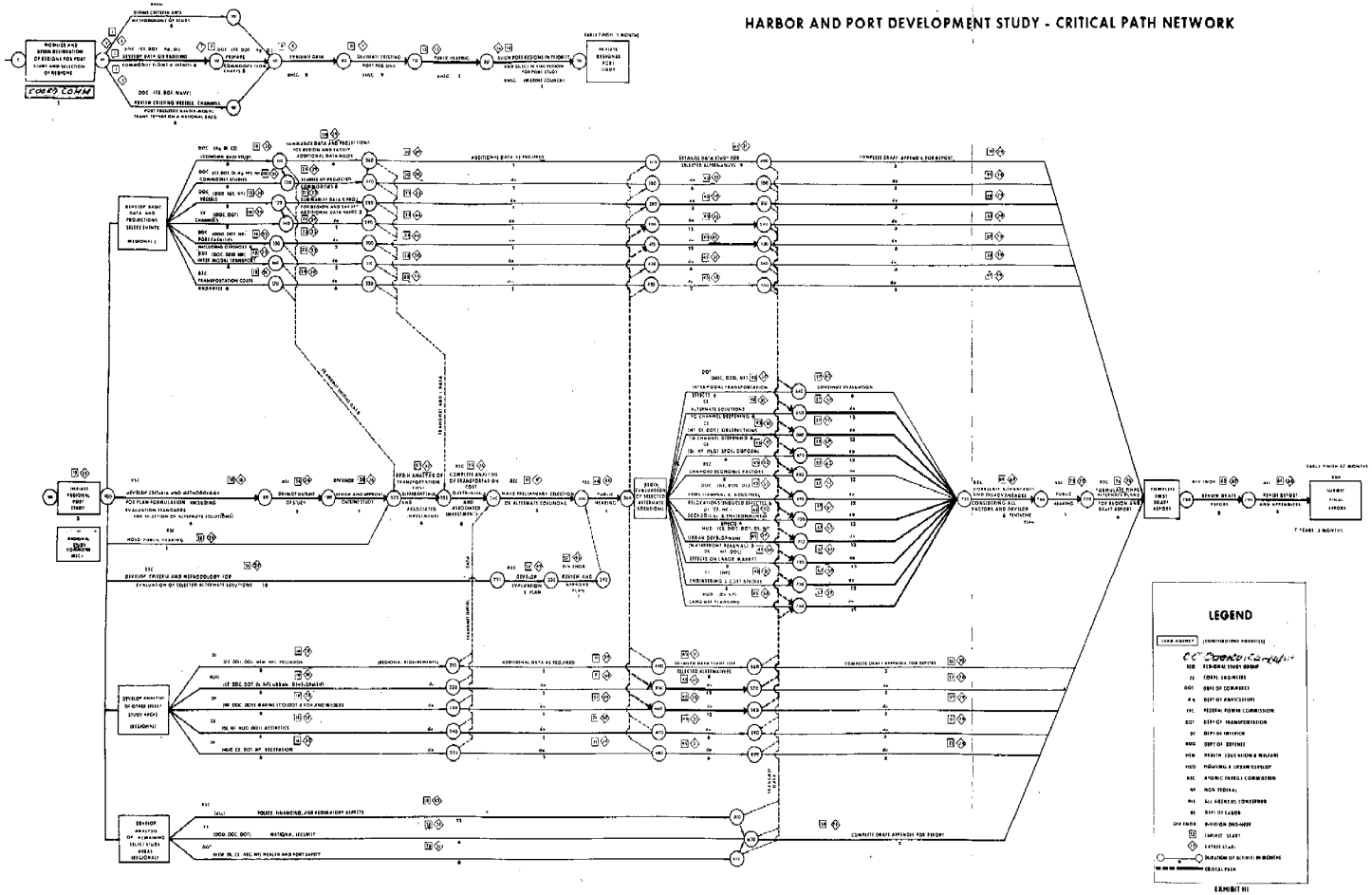
EXHIBIT II

SCHEDULE

Comprehensive harbor and port development studies can be planned and coordinated by use of PERT (Performance Evaluation and Review Technique). The essential part of the PERT analysis is the determination of the critical path, since this path represents the longest, in time, of all the various sequences of activities to be covered in the study. Obviously, if time established for events on the critical path are not met, the overall study will not be completed on schedule even though other events or activities are finished on time or ahead of schedule.

The critical path for major work activities of participating agencies in an overall regional port study is depicted on Exhibit III, as an example of such planning. The chart depicts broadly each job or activity essential to the study from start to finish, including work required to properly delineate and select regions for study, and identifies activities critical to maintaining study progress on schedule. The time interval for performing each activity is expressed in months. Organizational elements expected to participate in a particular activity have been identified. Accompanying the chart is a tabulation showing the time duration of each study activity numerically coded in sequence and associated times at which each study activity must be started and completed.

HARBOR AND PORT DEVELOPMENT STUDY - CRITICAL PATH NETWORK



CONCEPTUAL PLAN FOR HARBOR AND PORT DEVELOPMENT STUDY

CRITICAL PATH NETWORK

INTERVAL		DESCRIPTION	LEAD AGENCY	DURATION	MONTH OF EARLIEST START	MONTH OF LATEST START	MONTH OF EARLIEST FINISH	MONTH OF LATEST FINISH	MONTHS OF SLACK
0	10	Begin delineation of regions for port study.	CC	1	0	0	1	1	0
10	15	Develop policies and guidelines.	CC	6	1	3	7	9	2
10	20	Define criteria and methodology of study.	CC	2	1	7	3	9	6
10	30	Develop data on existing commodity flows and trends.	DOC	6	1	1	7	7	0
10	40	Review existing vessels, channels, port facil., etc.	DOC	6	1	3	7	9	2
30	50	Prepare commodity flow charts.	DOC	2	7	7	9	9	0
50	60	Evaluate data.	CC	2	9	9	11	11	0
60	70	Delineate existing port regions.	CC	2	11	11	13	13	0
70	80	Public hearing.	CC	1	13	13	14	14	0
80	90	Align port regions in priority and select initial region	CC	1	14	14	15	15	0
90	100	Initiate regional port study.	RSG	3	15	15	18	18	0
100	110	Economic base study.	DOC	6	18	21	24	27	3
100	120	Develop basic commodity studies.	DOC	6	18	21	24	27	3
100	130	Develop basic data on vessels	DOC	3	18	24	21	27	6
100	140	Develop basic data on channels.	CE	3	18	24	21	27	6
100	150	Develop basic data on port facilities incl offshore.	DOC	4	18	23	22	27	5
100	160	Develop basic data on inter-modal transport.	DOT	4	18	23	22	27	5
100	170	Develop basic data on transportation costs & rates.	RSG	6	18	21	24	27	3
100	180	Develop criteria & methodology for plan formulation.	RSG	6	18	18	24	24	0
100	210	Develop basic data on pollution.	DI	3	18	38	21	41	20
100	220	Develop basic data on urban development.	HUD	3	18	38	21	41	20
100	230	Develop basic data on marine ecology & fish & WL.	DI	3	18	38	21	41	20
100	240	Develop basic data on aesthetics.	CE	3	18	38	21	41	20
100	250	Develop basic data on recreation.	RSG	3	18	38	21	41	20
100	330	Hold public hearing.	RSG	1	18	26	19	27	8
100	610	Develop basic data on policy, financing and regulatory aspects.	RSG	12	18	45	30	57	27

EXHIBIT III

INTERVAL		DESCRIPTION	LEAD AGENCY	DURATION	MONTH OF EARLIEST START	MONTH OF LATEST START	MONTH OF EARLIEST FINISH	MONTH OF LATEST FINISH	SLACK
100	620	Develop basic data on port safety.	DOT	6	18	51	24	57	33
100	630	Develop basic data on national security.	CE	6	18	51	24	57	33
110	260	Summarize data and projections for region (ECON).	DOC	6	24	29	30	35	5
120	270	Studies of projected commodities.	DOC	6	24	29	30	35	5
130	280	Summarize data and projections (Vessels).	DOC	2	21	33	23	35	12
140	290	Summarize data and projections (Channels).	CE	1	21	34	22	35	13
150	300	Summarize data and projections (Port Facilities).	DOC	2	22	33	24	35	11
160	310	Summarize data and projections (Inter-Modal Transp).	DOT	2	22	33	24	35	11
170	320	Summarize data and projections (Trans. Costs & Rates).	RSC	6	24	29	30	35	5
180	190	Develop outline of study.	RSG	2	24	24	26	26	0
190	330	Review and approve outline of study.	RSG	1	26	26	27	27	0
210	440	Additional data as req'd (Pollution).	DI	1	21	50	22	51	29
220	450	Add'l data as req'd (Urban Development).	HUD	1	21	44	22	45	23
230	460	Add'l data as req'd (Marine Ecol. & fish & WL).	DI	1	21	44	22	45	23
240	470	Add'l data as req'd (Aesthetics).	CE	1	21	50	22	51	29
250	480	Add'l data as req'd (Recreation).	DI	1	21	50	22	51	29
260	370	Add'l data as req'd (Economic base study).	DOC	1	30	50	31	51	20
270	380	Add'l data as req'd (Commodity studies).	DOC	1	30	50	31	51	20
280	390	Add'l data as req'd (Vessels).	DOC	1	23	53	24	54	30
290	400	Add'l data as req'd (Channels).	CE	1	23	44	24	45	21
300	410	Add'l data as req'd (Port facilities incl offshore).	DOC	1	24	44	25	45	20
310	420	Add'l data as req'd (Inter-modal transport).	DOT	1	24	50	25	51	26
320	430	Add'l data as req'd (Transportation Costs & Rates).	RSG	1	30	54	31	55	24
330	335	Begin anal. transp cost differentials & assoc. invest.	RSG	8	27	27	35	35	0
340	350	Make preliminary selection of alt. solutions.	RSG	3	41	41	44	44	0
350	360	Hold public hearing.	RSG	1	44	44	45	45	0
360	640	Evaluate intermodal transportation effects.	DOT	6	45	57	51	63	12
360	650	Evaluate alternate solutions to chnl. deepening.	CE	6	45	51	51	57	6

INTERVAL		DESCRIPTION	LEAD AGENCY	DURATION	MONTH OF EARLIEST START	MONTH OF LATEST START	MONTH OF EARLIEST FINISH	MONTH OF LATEST FINISH	SLACK
360	660	Evaluate obstructions to channel deepening.	CE	6	45	51	51	57	6
360	670	Evaluate spoil disposal.	CE	6	45	51	51	57	6
360	680	Evaluate changed economic factors.	RSG	3	45	60	48	63	15
360	690	Evaluate port terminal & industrial reloc (Induced).	DOC	6	45	51	51	57	6
360	700	Evaluate ecological & environmental effects.	DI	6	45	51	51	57	6
360	710	Evaluate urban development (Waterfront Renewal).	HUD	3	45	54	48	57	9
360	720	Evaluate effects on labor market.	DL	3	45	54	48	57	9
360	730	Evaluate engineering & cost studies.	CE	6	45	51	51	57	6
360	740	Evaluate land use & planning.	HUD	3	45	54	48	57	9
370	490	Detailed data study for selected alternatives (Econ).	DOC	6	45	51	51	57	6
380	500	Det. data study for select. alt. (Commodity Studies).	DOC	6	45	51	51	57	6
390	510	Det. data study for select. alt (Vessels).	DOC	3	45	54	48	57	9
400	520	Det. data study for select. alt. (Channels).	CE	12	45	45	57	57	0
410	530	Det. data study for select. alt. (Port Facilities).	DOC	12	45	45	57	57	0
420	540	Det. data study for select. alt. (Intermodal Transp.).	DOT	6	45	51	51	57	6
430	550	Det. data study for select. alt. (Transp. Costs & Rates).	RSG	2	45	55	47	57	10
440	560	Det. data study for select. alt. (Pollution).	DI	6	45	51	51	57	6
450	570	Det. data study for select. alt. (Urban Development).	HUD	12	45	45	57	57	0
460	580	Det. data study for select. alt. (Mar. Ecol. & Fish & WL).	DI	12	45	45	57	57	0
470	590	Det. data study for select. alt. (Aesthetics).	CE	6	45	51	51	57	6
480	600	Det. data study for select. alt. (Recreation).	DI	6	45	51	51	57	6
490	780	Complete draft appendix (Economic Base Study).	DOC	3	51	79	54	82	28
500	780	Complete draft appendix (Commodity Studies).	DOC	3	51	79	54	82	28
510	780	Complete draft appendix (Vessels).	DOC	3	48	79	51	82	31
520	780	Complete draft appendix (Channels).	CE	3	57	79	60	82	22
530	780	Complete draft appendix (Port Facilities).	DOC	3	57	79	60	82	22
540	780	Complete draft appendix (Intermodal Transport).	DOT	3	51	79	54	82	28
550	780	Complete draft appendix (Transportation Costs & Rates).	RSG	3	47	79	50	82	32
560	780	Complete draft appendix (Pollution).	DI	3	51	79	54	82	28

INTERVAL		DESCRIPTION	LEAD AGENCY	DURATION	MONTH OF EARLIEST START	MONTH OF LATEST START	MONTH OF EARLIEST FINISH	MONTH OF LATEST FINISH	SLACK
570	780	Complete draft appendix (Urban Development).	HUD	3	57	79	60	82	22
580	780	Complete draft appendix (Marine Ecol. & Fish & Wl).	DI	3	57	79	60	82	22
590	780	Complete draft appendix (Aesthetics).	CE	3	51	79	54	82	28
600	780	Complete draft appendix (Recreation).	DI	3	51	79	54	82	28
630	780	Complete draft appendix (Policy, Finan. & RegionAspects, Nat. Sec., Port Safety).	RSG	3	30	79	33	82	49
640	750	Continue evaluation (Intermodal Transp. Effects).	DOT	6	57	63	63	69	6
650	750	Continue evaluation (Alt. Sol. to Chnl Dpng).	CE	12	57	57	69	69	0
660	750	Continue evaluation (Obstructions to Chnl Dpng).	CE	12	57	57	69	69	0
670	750	Continue evaluation (Spoil Disposal).	CE	12	57	57	69	69	0
680	750	Continue evaluation (Changes Economic Factors).	RSG	6	57	63	63	69	6
690	750	Continue evaluation (Port Term. & Ind. Relocations).	DOC	12	57	57	69	69	0
700	750	Continue evaluation (Ecological & Environ. Effects).	DI	12	57	57	69	69	0
710	750	Continue evaluation (Urban Develop-Waterfront Renew).	HUD	12	57	57	69	69	0
720	750	Continue evaluation (Effects on Labor Market).	DL	12	57	57	69	69	0
730	750	Continue Engineering and Cost Studies.	CE	12	57	57	69	69	0
740	750	Continue evaluation(Land Use Planning).	HUD	12	57	57	69	69	0
750	760	Correlate advantages & disadvantages and develop plan.	RSG	6	69	69	75	75	0
760	770	Hold public hearing.	RSG	1	75	75	76	76	0
770	780	Formulate final alt. plans for region and draft report.	RSG	6	76	76	82	82	0
780	790	Review draft report.	RSG	2	82	82	84	84	0
790	800	Revise report and appendices.	ALL	3	84	84	87	87	0
335	340	Complete anal. of transp. costs & assoc. invest.	RSG	6	35	35	41	41	0
100	225	Develop criteria and methodology for eval. sel. alter. solut.	RSG	18	18	24	36	42	6
225	235	Develop evaluation plan.	RSG	1	36	42	37	43	6
235	245	Review and approve evaluation plan.	RSG	1	37	43	38	44	6

The determination of the study schedule encompasses an organized sequential development of study requirements as generally envisioned at this time. It not only shows the duration of specific tasks, but portrays the points at which each activity must be completed before the next activity can begin. Activities completed prior to established target dates will have slack time. This procedure permits flexibility in scheduling work and provides for optimum utilization of available manpower and funds during the course of the overall study.

COSTS

Because of their magnitude and complexity, costs for the comprehensive studies cannot be determined with any degree of precision at this time. Ultimate study costs, comprehensiveness, and schedule would obviously be affected by budgeting and manpower limitations as well as certain technical constraints. It is also recognized that study costs would be a direct function of such variables as (a) the extent and nature of commodity flow patterns for individual regions, and number and type of ports therein; (b) scope and degree of in-depth investigations required to meet specified study objectives; (c) availability of suitable data through existing Federal or non-Federal entities from previous, ongoing, or contemplated studies and programs funded under other specific authorities or for other purposes; and (d) indeterminate need for contractual services of consultants, research institutions, or other private organizations having recognized expertise in certain fields allied to ocean shipping, navigation and port facilities, intermodal transportation, or technical proficiency in systems analysis. In the

latter connection, certain research activities or studies which have a direct bearing on development, conservation, or economic utilization of marine resources may qualify for funding support by the National Science Foundation's Sea Grant Program.

Based on a cursory review of costs actually experienced or currently estimated for several completed and on-going comprehensive river-basin studies involving interagency participation, and examination of pre-authorization study costs for a number of individual port surveys conducted by the Corps of Engineers, the cost for a prototype regional port study can be tentatively estimated at $4 million. Considering the variability of factors previously enumerated it is reasonable to expect that costs for one regional study could range from a minimum of $2.5 million up to $6.0 million. Assuming six years would be required to study and prepare plans for a system of regional port developments the following funding schedule for a single region is considered illustrative:

Year	FY Funds
First	$ 500,000
Second	700,000
Third	1,000,000
Fourth	1,000,000
Fifth	500,000
Sixth	300,000
Total	$4,000,000

As an illustration of how study funds of about $4,000,000 for a single region might be distributed, Exhibit IV has been developed based on a computerized procedure to allocate funds to study activities assigned to each agency. As shown in Exhibit I, "Planning Matrix," study areas are

FUNDING ALLOCATION MATRIX
CONCEPTUAL PLAN FOR HARBOR AND PORT DEVELOPMENT STUDY

M - Millions of Dollars
K - Thousands of Dollars

PLANNING MATRIX

Study Areas	DEFENSE $1.2 M					COMMERCE $1.1 M							$898 K TRANSPORTATION					INTERIOR $340 K					
	Army			Navy																			
	CE - $797 K	MTMTS - $128 K	AMC - $41 K	MSTS - $154 K	NMC $41 K	MARAD - $396 K	BOC - $232 K	OBE - $205 K	EDA - $18 K	BDSA - $24 K	ESSA - $132 K	BIC - $56 K	CG - $257 K	FHWA - $112 K	FRA - $112 K	FAA - $106 K	OST - $311 K	FWLS - $125 K	FWPCA - $34 K	BOM - $96 K	BOR - $38 K	OIA - $38 K	GS - $8 K
Economic Base $430 K	40					10	20	140		20		20								60			
Commodity Flow $572 K	36	36				36	212					36					36			36		36	
Transportation Economics $563 K	65	16		32		60		65						65	65	65	130						
Inter-Modal Transport $285 K	35	10	10		10	45								35	35	35	70						
Harbors & Channels $568 K	370										95		95										8
Port Facilities $575 K	130	55	20	55	20	150			10				20				40						
Vessels $142 K	20			35		50							25										
National Security $141 K	25	8	8	25	8	8				4			25	10	10	4	6						
Policy, Fin., & Reg. Aspects $149 K	11	3	3	7	3	12			3		12		12	2	2	2	5		11			2	
Health & Port Safety $143 K	6					22							45										
Pollution $72 K	14					3							14						23				
Urban Development $72 K	10								5								10						
Marine Ecology, F&WL $178 K	4										25		9					105					
Aesthetics $75 K	19																14				18		
Recreation $72 K	12												12					20			20		

EXHIBIT IV

PLANNING MATRIX

Study Areas	HUD $92 K						$168 K AGRICULTURE		LABOR $166K				OTHER $165 K							
													Federal				Non-Federal			
	FHA - $8 K	RAA - $19 K	HAA - $3 K	LFDA - $30 K	OPSC - $30 K	OS - $2 K	ERS - $108 K	CCC - $60 K	BES - $17 K	BLS - $59 K	BWP - $5 K	BLSTD - $85 K	AEC - $63 K	HEW - $16 K	FPC - $36 K	SI - $50 K	NSF - *	States	Municipal	Private
Economic Base							60	60												
Commodity Flow							36			36					36					
Transportation Economics																				
Inter-Modal Transport																				
Harbors & Channels																				
Port Facilities				19								56								
Vessels													12							
National Security																				
Policy, Financing, & Regulatory Aspects					2	2	12		12			12	12	7						
Health & Port Safety										23		17	30							
Pollution													9	9						
Urban Development	8	3	3	3	20				5		5									
Marine Ecology, F&WL																50	*			
Aesthetics		8		8	8															
Recreation		8																		

*Sea Grant Program
No special funding required.

EXHIBIT IV

listed as economic base, commodity flow, transportation economics, etc., totaling 15 in number. Across the top of the matrix are the various departments and agencies within the departments who would be considered as participating in the development of the regional port study. This is a preliminary approximation based on considered judgements made in advance of more detailed task descriptions or their pricing out by responsible agencies.

As noted above, the overall cost of this study program would be dependent on a number of variable and presently indeterminate factors. Assuming that at least five comprehensive regional studies would be undertaken, the total cost for completing such studies may range from $12 to $15 million, depending on their depth. A sum of this magnitude, while large, is relatively small when compared with the enormous public and private investments likely to be committed for future harbor and port development projects and with the tremendous national monetary and social benefits to be realized.

APPENDIX A

GLOSSARY OF EVENTS AND AGENCY FUNCTIONS

A. EVENTS

1. Economic Base - Analysis and projections of population, employment, natural resources, industrial and agricultural production and consumption.

2. Commodity Flow - Analysis of principal oceanborne commerce with future projections. Data will include origin and destination of commodity, port of entry/exit, and mode of transportation utilized within continental United States. Includes how far from port areas traffic originates or terminates, volume by railroads, by trucks, barges and pipelines, concentration of traffic origins and destinations, predominant export-import commodities, and ports through which most commodities are shipped.

3. Transportation Economics - Study of land and ocean operating costs and freight rates to establish cost and rate differentials for routings.

4. Inter-modal Transport - Analysis of present water, rail, highway and air transportation facilities serving portal areas. Projections of future developments in each mode and possibilities for consolidation in port and hinterland areas.

5. Harbors and Channels - Inventory of present navigable ports, waterways, cost data for enlarging (depth and width) present channels or provisions of new ones.

6. Port Facilities - Analysis of present waterfront cargo handling and passenger facilities - projections for future needs, including type, size and configuration, including offshore loading/unloading alternatives.

7. Vessels - Analysis and projections of vessel dimensions, cargo handling configurations, propulsion modes and maneuvering capabilities.

8. National Security - Assurance of the fulfillment of national defense requirements in port areas including the security of the whole land and water environment.

9. Policy, Financing, and Regulatory Aspects - Inventory and analysis of Federal, State, and municipal programs and activities bearing on navigation, terminal location and/or relocation, cargo handling, transportation facilities, spoil areas, and related matters. Analysis of various financing procedures, both public and private, for planning, construction, and maintenance of harbor and port facilities, and recommendations for financing procedures which will best assist transition to the port systems envisioned in the regional studies.

10. Health and Port Safety - Analysis of present navigational and environmental hazards in port areas. Projections for future based on anticipated hazardous cargoes, waterway alterations, and potential effects of nuclear vessel propulsion, including contemporary methods for handling quarantine activities, provision for effective detection and destruction of disease vectors.

11. Pollution - Control pollution to enhance the quality and value of water resources and to assure the fulfillment of a national policy for the prevention, control and abatement of water pollution.

12. Urban Development - Coordination of existing urban development and port development planning. Projections for future needs to assure inter-program compatibility.

13. Marine Ecology, Fish and Wildlife - Effects of planned harbor alterations on marine life, aquifers and land drainage patterns. Protection and enhancement of both land and water fauna for sport and commercial use, wildlife conservation and related esthetic benefits.

14. Aesthetics - Enhancement of the natural and scenic beauty of port and harbor areas.

15. Recreation - Maximization, preservation, protection, restoration and development of port and harbor areas for recreational purposes.

B. DEPARTMENTS AND AGENCY FUNCTIONS

DEPARTMENT OF DEFENSE

CE - Army Corps of Engineers - Under Civil Works program is authorized to investigate, plan, and provide water and related land resources developments and has primary Federal responsibility for planning, construction, operation and maintenance of harbors and channels in the interest of navigation.

MTMTS - Military Traffic Management and Terminal Service - Responsibility for military traffic management, land transportation and common-user ocean terminal service in the Department of Defense.

AMC - Army Materiel Command - Provides Army materiel, its distribution and transportation.

MSTS - Military Sea Transportation Service - Provides ocean transportation for personnel and cargo of the Department of Defense.

NMC - Navy Materiel Command - Provides materiel support for the Navy and Marine Corps.

DEPARTMENT OF COMMERCE

MARAD - Maritime Administration - Administers program for development, promotion and operation of the U. S. merchant marine. Has responsibility for promotion and development of ports and related transportation facilities including the investigation of territorial region and zones tributary to ports taking into consideration the economies of transportation by rail, water, highway, and pipeline, advising communities regarding type and appropriate location and advantages of port improvements for the most economic transfer of cargo between carriers, all in connection with the land and water flow of inland and ocean commerce.

BOC - Bureau of the Census - Collects, processes, and provides basic statistical data pertaining to population, agriculture, manufactures, mineral industries, business transportation, and U. S. foreign trade. Conducts surveys and provides data processing and advisory services to others.

OBE - Office of Business Economics - Prepares current and historical data and provides economic measures of the national economy, present and future. Conducts analyses of U. S. balance of international payments, and of factors affecting regional economic development, and performs economic research.

EDA - Economic Development Administration - Responsible for long-range economic development and programming for areas and regions of persistent unemployment through the creation of new employment opportunities by developing new and expanding facilities and resources in such areas and regions.

BDSA - Bureau of Defense Services Administration - Provides active assistance to business and industry in areas involving the industry and commerce of the United States. Collects, analyzes, and disseminates data on industrial requirements, technological developments, economic trends, and potential impact on business and the economy of contemplated or effected Government actions.

ESSA - Environmental Science Services Administration (Coast and Geodetic Survey and Weather Bureau) - Conducts comprehensive programs with respect to meteorology, climatology, hydrology, surveying, cartography and oceanography. Processes and issues data on river stages, coastal tides and currents.

BIC - Bureau of International Commerce- Promotes the foreign trade of the United States for the primary purpose of increasing U. S. exports. Provides information on marketing, investment, and economic conditions in foreign countries to determine export potentials and is the primary source for analyses of trade statistics of other nations.

DEPARTMENT OF TRANSPORTATION

OST - Office of Secretary of Transportation - Responsible for analysis of transportation systems, transportation economics, and econometric modeling. On-going projects include forecasts of ship

technology, analysis of intercity intra-urban interface, research of intercity transport effectiveness, and methodology to forecast demand for transportation of transoceanic cargo. Provides leadership in the formulation and execution of our balanced national and international transportation objectives, policies and programs; stimulates and promotes research and development in all modes and types of transportation, with special emphasis on transportation safety. Coordinates various transportation programs of Federal Government and encourages maximum private development of transportation services. Determines need for and role of marine transportation in relation to other forms of transportation.

CG - U.S. Coast Guard - Provides search and rescue services, a merchant marine safety program, aids to navigation, port security, enforcement of Federal laws on high seas and U. S. waters. Provides safety and law enforcement facilities for benefit of and service to maritime commerce and recreational boating.

FHWA - Federal Highway Administration - Responsible for matters relating to the highway mode of transportation and coordination of highway transportation with other modes. Investigates programs which affect highways and road facilities and insures adequate replacement for highway transportation facilities rendered inadequate by relocations or construction of water resources projects, waterfront renewal, and port terminal relocation. Evaluates economic cost for highway adjustments caused by waterfront renewal programs.

FRA - Federal Railroad Administration - Provides unified national policy for rail transportation to fulfill present and future requirements.

FAA - Federal Aviation Administration - Regulates, promotes and controls the operation, development and use of aircraft in the interest of safety and efficiency.

DEPARTMENT OF INTERIOR

FWLS - Fish and Wildlife Service - Maintains the fishery and wildlife resources, commercial and sport, of the United States and determines probable effects of water resource projects on fish and wildlife. Recommends measures for preventing or reducing damages to these resources. Investigates effects of pollution on fish and wildlife.

FWPCA - Federal Water Pollution Control Administration - Administers national program to enhance the quality and value of the Nation's water resources and assures the fulfillment of a national policy for prevention, control and abatement of water pollution. Concerned with propagation of fish and aquatic life and wildlife, recreation, agriculture, industry, and other uses.

BOM - Bureau of Mines - Projects anticipated requirements of energy and mineral resources for national economic growth and development, including economic and statistical studies of domestic and foreign production, distribution and consumption.

BOR - Bureau of Outdoor Recreation - Coordinates federal planning and activities relating to outdoor recreation resources, cooperating with states, political subdivisions and private interests.

OIA - Oil Imports Administration - Controls and regulates the imports of petroleum and its products in the United States.

GS - Geological Survey - Collects and interprets, and disseminates data on mineral and water resources and the physical features of the country. Responsible for furnishing physical data needed for planning, design and operation of water resources development projects.

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

FHA - Federal Housing Authority - Administers loan and mortgage insurance program for various housing programs and land development consistent with a comprehensive plan for an area.

RAA - Renewal Assistance Administration - Responsibility for slum clearance and urban renewal programs including grants for neighborhood renewal, community renewal, open-space land, urban parks and central city parks, and urban beautification.

HAA - Housing Assistance Administration - Responsibility for low rent public housing programs.

LFDA - Land and Facilities Development Administration - Responsibility for metropolitan incentive grants, sewer and facility grants and advance acquisition of open-space land for housing.

OPSC - Office of Planning Standards and Coordination - Responsibility for urban planning assistance program and comprehensive planning affecting the programs of other Federal agencies.

OS - Office of the Secretary of Housing and Urban Development - Overall responsibility for all activities embraced by the Department.

DEPARTMENT OF AGRICULTURE

ERS - Economic Research Service - Responsibility for research and statistical analysis in field of agricultural economics and marketing, both foreign and domestic.

CCC - Commodity Credit Corporation - Procurement and exportation of agricultural commodities.

DEPARTMENT OF LABOR

BES - Bureau of Employment Security - Responsibility for public employment system service, Federal unemployment compensation programs and special programs designed to relieve the effect of unemployment.

BLS - Bureau of Labor Statistics - Responsibility for fact finding in the field of labor economics and manpower, costs and standards of living.

BWP - Bureau of Works Program - Responsibility for "Operation Mainstream," program for employment in community betterment and beautification.

BLSTD - Bureau of Labor Standards - Service responsibility to state labor officials in improving working conditions. Promotes industrial safety and health, develops standards in the field of labor legislation.

OTHER AGENCIES (FEDERAL AND NON-FEDERAL)

HEW - Department of Health, Education and Welfare - Conducts research in the medical and related sciences including health services and dissemination of medical knowledge. Prevents the introduction of communicable diseases into the United States, and promotes the application of new knowledge for the prevention and control of disease.

AEC - Atomic Energy Commission - Provides national policy for development, use and control of atomic energy. Administers programs and encourages private participation in such programs. Responsible for directing or participating in programs related to vessel propulsion, port safety as well as legal and institutional constraints.

NSF - National Science Foundation - Responsible for programs to strengthen basic research and education in the sciences including programs aimed at strengthening research, education, and training in oceanography and exploitation of marine environment.

FPC - Federal Power Commission - Administers study plans for porposed Federal and non-Federal dams to be constructed and makes recommendations concerning the installation of facilities for the development of hydroelectric power. Assists in coordinating the development and utilization of water and related land resources. Makes studies on the potentialities for power development, the market for the potential power, and the value of the power.

SI - Smithsonian Institution - (Office of Oceanograph and Limnology) Responsible for service operations for marine biologists and geologists associated with the Smithsonian Institution. Arranges for projects under PL 480 - Excess Currency Act, and various cooperative research programs. Participates in aspects of the national oceanographic program. Coordinates research in many estuaries of the United States and other parts of the world.

States - Individual state government agencies.

Municipal - County, city or township agencies

Private - Non-governmental associations and commercial interests.

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