
SECTION VI

LONG-RANGE PLANNING STRATEGY

GENERAL

The previous section of the Plan contains the individual evaluations of the most important problems, needs, concerns, and opportunities identified by stakeholders and prioritized by Circle "A" members. This section will incorporate these individual concerns into a long-range, comprehensive planning strategy that provides for the most efficient development of the port's navigation features and ensures that these features logically and effectively accommodate future use and growth. The following criteria were considered in the development of the planning strategy:

- Priority/Preference/Acceptability
- Costs
- Benefits
- Efficiency
- Environmental Impacts
- Completeness/Compatibility
- Effectiveness
- Funding/Cost-Sharing Capabilities

The priority/preference/acceptability criteria relate to the importance of each of the elements of the Plan to the stakeholders. They consider the workability and viability of the element with respect to the comprehensive long-range plan; its likely acceptance by Federal, state, regional, local, and private interests; and its compatibility with existing laws, regulations, and public policies.

Cost is always an important consideration in the formulation of long-range plans, especially in view of continuing funding constraints. In some cases, it may be practical to implement one or more of the lower costs elements of the Plan in the initial stages and defer the more costly elements until later.

Like costs, beneficial impacts are almost always important considerations in the formulation of long-range plans. Benefits attributable to the Navigation Management Plan could result from transportation savings from the use of larger vessels, more efficient use of existing vessels, reduction in transit time, lower cargo and tug assistance costs, and improved safety of operations. Both the magnitude and the wide-spread nature of the beneficial effects are important considerations in combining the elements into a long-range, comprehensive plan.

Efficiency is the extent to which the elements of the Plan are the most cost-effective means of addressing the specified concern and realizing the specified opportunities, consistent with protecting the region's environment. A measure of efficiency can be determined by comparing the prospective benefits of the planning element with its estimated costs.

Both favorable and unfavorable environmental effects must be considered in combining the elements of the Plan into a long-range, comprehensive planning strategy. Beneficial effects are favorable changes in the ecological, aesthetic, and cultural attributes of natural and cultural resources, while adverse environmental effects are unfavorable changes. Significant beneficial and adverse impacts, as they relate to the specific elements of the Plan, have been incorporated into the decision making process in developing the overall Plan for the port.

Completeness and compatibility are the extent to which the elements of the Plan provide and account for all necessary investments and other actions to ensure the realization of the planned effects. They also require relating the planning elements to other types of public and private actions to obtain optimum results.

Effectiveness is the extent to which the elements of the Plan alleviate the specified problems and achieve the specified opportunities.

The final criteria deal with funding and cost-sharing capability. The combining of the elements into a long-range, comprehensive Plan for the port requires active participation by all relevant Federal, state, local, and private interests. The costs of implementing the Plan are shared between Federal and non-Federal interests in accordance with the provisions of water resources development laws, specific requirements of acts authorizing projects and, in some cases, administrative instructions. The implementation of the elements of the Plan requires the availability of adequate and timely funding from Federal and non-Federal sources and the willingness and ability of non-Federal interests to participate in appropriate cost sharing.

LONG-RANGE STRATEGIC PLAN ELEMENTS

The long-range, strategic plan is divided into two general categories: new construction elements and ongoing strategic elements. The new construction element section is further separated into channel elements and other elements. Channel elements include the various channel deepening considerations for the Norfolk Harbor Channel, the Channel to Newport News, the approach channels, the Elizabeth River Channel, the Southern Branch Channel, and the widening of the turning area at the Sewells Point Anchorage. Other new construction elements include the extension of the life of Craney Island Dredged Material Area and potential port development of the Craney Island Dredged Material Area. Ongoing strategic elements include maintenance dredging, funding, and water quality. Channel elements are discussed in the following paragraphs in order of their priority of implementation. The new construction elements associated with extending the useful life and port development of Craney Island Dredged Material Area and the ongoing strategic elements would be accomplished concurrently with the implementation of the channel elements of the Plan.

NEW CONSTRUCTION ELEMENTS

Channels

Inbound Channels to 50 Feet Deep.

- **Norfolk Harbor Channel** - The first element of the Plan considered for implementation is the deepening of the inbound lane of the Norfolk Harbor Channel from 45 feet to 50 feet to Lamberts Point. Although this is ranked as Concern Number 5 in the previous section, its selection as the top priority element for implementation is valid for the following reasons. Concern Number 1, maintenance dredging, is an ongoing strategic element that is accomplished concurrently with new channel construction. Concerns Number 3 and 4, which are associated with the use and development of the Craney Island Dredged Material Area, will also be accomplished concurrently with new channel construction elements. Concern Number 2, the 55-foot-deep outbound element of the Norfolk Harbor Channel, is a new channel construction element; however, its ranking has been overcome by events and superseded by Concern Number 5. Subsequent to the identification and ranking of the concerns, discussions were initiated in November 1998 between representatives of the Corps of Engineers and the VPA regarding the accomplishment of the PED phase for the 50-foot-deep inbound channel. This effort should be completed by September 2002, with the initiation of construction planned in May 2003. As shown in Section V, the cost of Concern Number 5 is \$20,936,000; however, this figure does not include costs for two PED-related specialized efforts that have been completed, the Long-Term Disposal Study and the Navigation Management Plan. The combined cost of these specialized efforts is \$5,538,000, and it will be cost shared with the non-Federal sponsor. This brings the total cost of Concern Number 5 to \$26,474,000. One other specialized effort that has not been completed, Southern Branch PED, will be applied to the next major element of channel improvement to be constructed after that special effort is completed. The cost of the Southern Branch effort, \$3,360,000 as of the end of Federal Fiscal Year 1999, will also be shared with the non-Federal sponsor. Based on experience with the maintenance of the 50-foot outbound element, it is anticipated that there will be no significant incremental increase in average

annual operation and maintenance costs for Concern Number 5. While the benefits expected from provision of this element have not been quantified, based on the increasing size of container ships as described in Section V, beneficial impacts are likely to be substantial. Detailed studies, which will be accomplished in the PED phase, will clearly show the relationship of average annual benefits and average annual costs, demonstrating the economic efficiency of this element. Also, all NEPA and related requirements will be updated prior to construction. This element of the Plan will provide the navigation features, i.e. a 50-foot-deep inbound channel, which will permit the port to accommodate large container ships safely and efficiently. It will require investments by non-Federal interests to provide commensurate depths for access channels and berthing areas to provide the capability to take full advantage of the 50-foot main channel depths. Investments will also be required at terminals to ensure that transfer facilities are adequately upgraded to accommodate larger vessels. The accomplishment of all the features of this element will provide the most effective means of alleviating the problems involved with this concern. The cost-sharing requirements for this element are discussed in the previous section. Its implementation will require adequate and timely funding from both Federal and non-Federal sources. The Commonwealth of Virginia, acting through its statutory agent, the VPA, is the local sponsor for this element, and it is believed that the Commonwealth possesses both the ability and willingness to provide the appropriate items of local cooperation, including cost sharing.

- **Widening Turn at Sewells Point (K-1) Anchorage** - This element of the Plan is considered for implementation following the previously discussed element. It consists of deepening the K-1 Anchorage Area and relocating the existing anchorage area to an alternative site. (The small section of the adjacent channel would have already been deepened to 50 feet during the construction of the 50-foot inbound portion of the Norfolk Harbor Channel.) This relocation would necessitate the deauthorization of the existing anchorage site and the consideration of a newly authorized area to be evaluated in a comprehensive anchorage analysis for the entire port. This analysis could be conducted as part of the PED phase of a major channel deepening or as a separate investigation. Although this is ranked as Concern Number 10 (tie) in Section V, its selection as the next

element to be constructed is believed to be valid because it would provide a complete, one-level channel at the 50-foot depth, thus permitting a safer and more efficient turn to facilitate the maneuvering of large vessels from one channel to the other. As shown in the previous section, the total construction cost of this element of the Plan is \$27,046,000. While no monetary benefits have been quantified for implementing this element of the Plan, it would permit large vessels to make the turn from one channel to the other with reduced tug assistance and would enhance navigation in the port by providing additional safety, effectiveness, and efficiency of operations. It is expected that the element would be economically efficient with average annual benefits exceeding average annual costs. With respect to environmental impacts, all NEPA and related requirements will be fully satisfied prior to construction. The provision of this element of the Plan would complete the 50-foot channel system within the port. It would provide the most effective means of alleviating the problems associated with the difficult channel turn in the vicinity of the K-1 Anchorage. The cost-sharing requirements for this element are discussed in the previous section. It is believed that the Commonwealth of Virginia has the ability and willingness to provide the appropriate cost sharing required for implementation of this element of the Plan.

Outbound Channels to 55 Feet Deep.

- **Norfolk Harbor Channel and Channel to Newport News** - The deepening from 50 feet to 55 feet of two channels--the Norfolk Harbor Channel and the Channel to Newport News--ranks as Concerns Number 2 and 9, respectively, in the previous section. These elements of the Plan are considered concurrently. The combined total cost of implementing the 55-foot-deep outbound channels is estimated at \$140,474,000. The cost-sharing requirements for each of these two elements are shown separately in Section V; however, the following table shows the combined requirements. The incremental increase in average annual operation and maintenance costs is estimated at \$1,220,000 for the combined elements. The Commonwealth of Virginia would also share in the incremental increase in average annual operation and maintenance costs associated with this element estimated at \$550,000; the Federal share would be \$670,000. The most recent estimate of benefits, as discussed in Section V, was based on 1989 price

levels. Average annual benefits were estimated at \$22.2 million, clearly exceeding average annual costs and demonstrating the economic efficiency of this element. As with all the elements associated with deepening the port's main channels, all NEPA and related requirements have been fully satisfied but will be updated prior to construction. The combining of these two elements for both the southside and northside of the Hampton Roads harbor includes all of the elements of the 55-foot outbound channel project and provides a complete and compatible plan. The completeness of the Plan requires investments by non-Federal interests to provide commensurate depths for access channels and berthing areas to take full advantage of the 55-foot-deep main channels. When combined with the other elements of this grouping, they provide the most effective means of alleviating the problems involved with these concerns.

Table VI-1. COMBINED IMPLEMENTATION COSTS FOR CONCERNS NUMBER
2 AND 9

<u>Item</u>	<u>Total (\$1,000)</u>	<u>Federal (\$1,000)</u>	<u>Non-Federal (\$1,000)</u>
Dredge Atlantic Ocean Channel	16,255	6,502.0	9,753.0
Dredge Thimble Shoal Channel	28,121	11,248.4	16,872.6
Dredge Norfolk Harbor Channel	24,814	9,925.6	14,888.4
Dredge Channel to Newport News	26,144	10,457.6	15,686.4
Dredge Hampton Roads Anchorage F (1)	9,510	3,804.0	5,706.0
Dredge Sewells Point Anchorage	18,141	7,256.4	10,884.6
Remove wrecks	<u>868</u>	<u>347.2</u>	<u>520.8</u>
Subtotal	123,853	49,541.2	74,311.8
Engineering and design (2%)	2,477	990.8	1,486.2
Supervision and administration (4%)	<u>4,954</u>	<u>1,981.6</u>	<u>2,972.4</u>
Total	131,284	52,513.6	78,770.4
Relocate/replace 36-inch water main	5,006	0.0	5,006.0
Construct Thimble Shoal tunnel cover	<u>4,184</u>	<u>0.0</u>	<u>4,184.0</u>
Total	9,190	0.0	9,190.0
Grand total	140,474	52,513.6	87,960.4

(1) Please see anchorage designations for (F), etc., on National Ocean Service Nautical Charts (Appendix B, Table B-1).

- **Widening Turn at Sewells Point (K-1) Anchorage** - This element of the Plan is considered for implementation following the previously discussed element. Although it is ranked as Concern Number 15 in order of priority, including it as part of the 55-foot-deep outbound system is believed to be valid, since it is the provision of the 55-foot-deep channels that creates the need to address this specific concern. Implementation of an earlier element of the Plan, the widening of the turn at Sewells Point K-1 Anchorage to a depth of 50 feet, would have been previously accomplished, so that the requirement to address this specific concern would consist of deepening the turning area an additional 5 feet. As shown in Section V, the total construction cost of this element of the Plan is \$18,632,000, with an incremental increase in average annual operation and maintenance costs of \$240,000. While no benefits have been quantified for implementing this element of the Plan, the additional 5 feet of depth would permit the largest bulk coal carriers and container ships to safely and efficiently maneuver the turn area. It is estimated that the increased efficiency and safety of operations would provide sufficient economic benefits to justify the implementation of this element. With respect to the environmental effects, all NEPA and related requirements will be fully satisfied prior to construction. The provision of this element of the Plan following the construction of the 55-foot-deep outbound channels would be an important and needed adjunct to the deepened channels, thus, permitting the deep-draft vessels to maneuver in the turning area between the Norfolk Harbor Channel and the Channel to Newport News. The cost-sharing requirements of this element are discussed in Section V. It is believed that the Commonwealth of Virginia has the ability and willingness to provide the appropriate cost sharing required for implementation of this element of the Plan.

Elizabeth River Channel (Port Norfolk and Town Point Reaches) and Southern Branch Channel (Lower and Middle Reaches) to 45 Feet Deep. The deepening from 40 feet to 45 feet of two channels in these reaches--the Elizabeth River Channel and Southern Branch Channel--ranks as Concerns Number 6 and 10 (tie), respectively, in the previous section. These elements of the Plan are considered concurrently to include the entire existing 40-foot project reach from Lamberts Point to the Norfolk Southern Railroad bridge. It would not be possible to address the Southern

Branch element without first addressing the Elizabeth River element. The combined total cost of implementing these combined elements is estimated at \$23,510,000. The cost-sharing requirements for each of these two elements are shown separately in Section V; however, the following table shows the combined requirements. The incremental increase in average annual operation and maintenance costs is estimated at \$150,000 for the combined elements, all of which would be paid by the Federal Government. The most recent estimate of benefits, as discussed in Section V, was based on October 1986 price levels and indicated an average annual value of over \$15 million. The project was economically justified at the time, but an updated economic analysis will be required prior to initiating construction to reflect changes in the quantity and type of commodities being currently transported on the channel. Although extensive environmental investigations have already been accomplished, it is expected that additional studies will be required to support the preparation of appropriate NEPA documents prior to construction. The combining of these two elements provides a complete and compatible plan for this portion of the harbor. The completeness of the Plan requires investments by non-Federal interests to provide commensurate depths for access channels and berthing areas in order to take full advantage of the 45-foot-deep main channel. The deepening of these two elements to 45 feet provides the most effective means of alleviating the problems involved with this concern.

Table VI-2. COMBINED IMPLEMENTATION COSTS FOR CONCERNS
NUMBER 6 AND 10 (TIE)

<u>Item</u>	<u>Total (\$1,000)</u>	<u>Federal (\$1,000)</u>	<u>Non-Federal (\$1,000)</u>
Dredge Elizabeth River Channel (Port Norfolk and Town Point Reaches)	9,842	6,397.3	3,444.7
Dredge Southern Branch Channel (Lower and Middle Reaches)	7,209	4,685.9	2,523.1
Craney Island tolls	<u>4,840</u>	<u>3,146.0</u>	<u>1,694.0</u>
Subtotal	21,891	14,229.2	7,661.8
Engineering and design (2%)	438	284.7	153.3
Supervision and administration (4%)	<u>876</u>	<u>569.4</u>	<u>306.6</u>
Total	23,205	15,083.3	8,121.7
Remove cables	<u>305</u>	<u>0.0</u>	<u>305.0</u>
Grand total	23,510	15,083.3	8,426.7

Southern Branch Channel to 40 Feet Deep (Upper Reach). This element of the Plan is ranked as Concern Number 12 priority and consists of deepening a portion of the Upper Reach of the Southern Branch Channel from 35 feet to 40 feet from the Norfolk Southern Railroad bridge to the Gilmerton Bridge. Although this is ranked Concern Number 12 in Section V, its selection as the next element to be constructed is believed valid, since it will complete the Southern Branch project. As shown in Section V, the total construction cost of this element of the Plan is \$20,430,000, with an incremental increase in average annual operation and maintenance costs of \$200,000. The most recent estimate of benefits, as discussed in Section V, was based on October

1988 price levels and indicated an average annual value of \$31 million. The project was economically justified at that time, but an updated economic analysis will be required prior to initiating construction to reflect potential changes in the quantity and type of commodities being currently transported on the channel. Although all NEPA and related requirements have been fully satisfied, they will require updating prior to construction. This element of the Plan will provide the navigation features, i.e. a 40-foot-deep channel that will benefit deep-draft vessels in the coastwise and foreign trade, which transport petroleum, grain, general cargo, and miscellaneous dry and liquid bulk commodities to and from terminals on the Southern Branch. It will require investments by non-Federal interests to provide commensurate depths for access channels and berthing areas to provide the capability to take full advantage of the 40-foot-deep main channels. Investments will also be required at adjacent terminals to ensure that transfer facilities are adequate to accommodate larger vessels. The accomplishment of all of the features of this element will provide the most effective means of alleviating the problems and obtaining the opportunities associated with this concern. The cost-sharing requirements for this element are discussed in Section V. Its implementation will require adequate and timely funding from both Federal and non-Federal sources. Final cost sharing and financing will be coordinated with the VPA in accordance with the WRDA 86, as amended, and other relevant policies.

Inbound Channels to 55 Feet Deep. The deepening from 45 feet to 55 feet in the Norfolk Harbor Channel and from 50 feet to 55 feet in the Channel to Newport News ranks as Concerns Number 7 (tie) and 14, respectively, in Section V. Although these elements of the Plan are considered concurrently, it is likely that no action would be required to provide the Channel to Newport News element, since the outbound channel would have been deepened earlier over its full authorized width of 800 feet in accomplishing the higher-prioritized 55-foot-deep outbound element of the Plan. With regard to Concern Number 7 (tie), the Norfolk Harbor Channel would have already been deepened from 45 feet to 50 feet in accomplishing the higher-prioritized Concern Number 5; therefore, Concern Number 7 (tie) considers here the deepening from 50 feet to 55 feet only. The cost of implementing these elements, separately, is shown in

Section V for comparative purposes; however, there would be no additional dredging requirements for the inbound Channel to Newport News due to the implementation of related elements previously. The following table, therefore, shows the total cost of implementing this element of the Plan, assuming that earlier, higher priority elements are in place. The incremental increase in average annual operation and maintenance costs is estimated at \$600,000. The Commonwealth of Virginia would also share in the incremental increase in average annual operation and maintenance costs associated with this element estimated at \$300,000; the Federal share would be \$300,000. While benefits attributable to the provision of this element have not been quantified, a 55-foot-deep inbound channel would permit appropriate under-keel clearances for the largest container ships providing for efficiency and safety of operations. Detailed studies would be accomplished to demonstrate the economic efficiency of this element prior to initiating construction. Also, all NEPA and related requirements will be updated at the time. Implementation of this element will require investments by non-Federal interest to provide commensurate depths for access channels and berthing areas to provide the capability to take full advantage of the 55-foot main channel depths. Investments may also be required at terminals to ensure that transfer facilities are adequate to accommodate larger vessels. The accomplishment of all the features of this element will provide the most effective means of alleviating problems and providing opportunities, and it will complete the 55-foot channel deepening for the port.

Table VI-3. COMBINED IMPLEMENTATION COSTS FOR CONCERNS
NUMBER 7 (TIE) AND 14

<u>Item</u>	<u>Total (\$1,000)</u>	<u>Federal (\$1,000)</u>	<u>Non-Federal (\$1,000)</u>
Dredge Atlantic Ocean Channel	16,276	6,510.4	9,765.6
Dredge Thimble Shoal Channel	13,917	5,566.8	8,350.2
Dredge Norfolk Harbor Channel	24,599	9,839.6	14,759.4
Dredge Channel to Newport News	<u>(1)</u>	<u>(1)</u>	<u>(1)</u>
Subtotal	54,792	21,916.8	32,875.2
Engineering and design (2%)	1,096	438.4	657.6
Supervision and administration (4%)	<u>2,192</u>	<u>876.8</u>	<u>1,315.2</u>
Total	58,080	23,232.0	34,848.0

(1) This channel was dredged to its full width during the construction of the 55-foot outbound element.

Other

Extend Life of Craney Island Dredged Material Area. Extending the life of Craney Island Dredged Material Area is ranked as Concern Number 3 in Section V. Stakeholders recognize the importance to the port of providing long-term economical placement capability for future dredging operations. This element of the Plan is directly related to the new construction channel elements and to maintenance dredging; its implementation will be considered concurrently with the highest prioritized elements of the comprehensive Plan. As discussed in Section V, a reconnaissance study completed in March 1999 determined there is a Federal interest in proceeding to a feasibility study to evaluate the potential eastward expansion of Craney Island Dredged Material Area and other potential alternative long-term placement areas. This study is scheduled for

completion in March 2002 and will provide detailed analyses regarding construction costs, operation and maintenance costs, benefits, environmental impacts, and appropriate cost sharing between Federal and non-Federal interests for recommendations to increase the dredged material placement capacity in the Hampton Roads area.

Port Development of Craney Island Dredged Material Area. Immediately after extending the life of Craney Island Dredged Material Area is a directly-related concern, Port Development of Craney Island Dredged Material Area, which is ranked as Concern Number 4. These two concerns must be considered together due to their integral relationship. As discussed in Section V, the use of a portion of the Craney Island Dredged Material Area for future port development would help provide for continued port growth and would help keep the Port of Hampton Roads, as well as the nation, competitive in world trade. The previously mentioned feasibility study would also address the potential expansion of the Craney Island Dredged Material Area for port development.

ONGOING STRATEGIC ELEMENTS

Maintenance Dredging

The Corps of Engineers' program to provide maintenance dredging of the main channels of the port at appropriate intervals to ensure that proper dimensions are available for efficient, effective, and safe navigation is ranked as Concern Number 1. Stakeholders recognize the importance of maintenance dredging in supporting substantial port industry and military activities within the region. Obviously, maintenance dredging activities are accomplished concurrently and continuously with all other elements of the Plan. Proper and timely maintenance dredging will continue into the future, as it has in the past, depending on appropriate funding levels and the continued availability of the Craney Island Dredged Material Area or similar alternative placement site.

Funding

As discussed in Section V, funding is always a concern, since there are seldom sufficient funds to accomplish all that is desired. Ranked as Concern Number 7 (tie), the availability of appropriate funds at the proper time is the key to implementing all the concerns discussed in this Plan. A primary objective of this Plan is to assist decision makers in arriving at more informed judgements regarding the port's future navigation problems, needs, concerns, and opportunities by establishing priorities of action. It is anticipated that the Plan will help in the budgeting and allocation of available funds to the highest prioritized concerns. Also, implementation of the elements of the Plan require, in many instances, appropriate cost sharing between Federal and state interests, as well as coordinated investments by private interests to fully accomplish each element's objectives. The Navigation Management Plan will help facilitate the necessary planning and other actions to coordinate the proper timing of funding so that implementation may be accomplished in an effective manner.

Water Quality

Stakeholders recognize water quality and related environmental preservation actions (ranked as Number 13) as important aspects of port operation, use, and maintenance. It is an ongoing element of the Plan and is given full consideration in the implementation of the other elements, which comprise the comprehensive Plan. Section III discusses two studies, the Elizabeth River Environmental Restoration Study and the proposed Lynnhaven River Restoration Study, which will assist in addressing water quality problems and needs within the area. Federal, state, and local programs currently address water quality concerns within the port. Section V discusses the role of the Virginia DEQ in developing and implementing policies, programs, and procedures to assure the proper use and management of the Commonwealth's water resources. The implementation of the elements of the Plan requires that, at a minimum, all water quality and other environmental requirements are fully complied with by both private and governmental interests. Implementation of voluntary innovative and restorative measures to improve water quality would greatly assist in addressing this concern. Information

regarding various award and financial incentive programs for environmental stewardship may be found in Appendix H.

SUMMARY

The following table shows a summary of the elements of the comprehensive Plan, indicating the proposed order of implementation, Circle "A" priority ranking, current status, estimated future action required for implementation, and estimated time frame for accomplishing the future action required.

INSERT Table VI-4, page 1

INSERT Table VI-4, page 2

INSERT Table VI-4, page 3

CONCLUSIONS

This section of the Plan incorporates the individual concerns of stakeholders into a logical, comprehensive plan based on the priorities established by Circle "A" members. The Plan is developed for planning purposes and to give appropriate decision makers information from which implementation and funding decisions may be made. The Plan is, of necessity, flexible and sensitive to the passing of time and events, and it will require periodic updating to keep it current and viable. It is likely that the future of the port will reflect the past and there will never be enough resources to accomplish all that is desired. The Navigation Management Plan will assist Federal, state, local, and private investors to better allocate scarce port resources based on the prioritized concerns established by port users and interests.