Note: Appendices are under review at HQUSACE. Pages with revised references will be distributed when review is complete.

CHAPTER 4

PROJECT PURPOSES

SECTION I - OVERVIEW

4-1. Purpose. This chapter provides policy and planning guidance for project purposes of navigation, flood damage reduction, ecosystem restoration, hurricane and storm damage reduction, hydroelectric power, recreation and water supply. It covers Federal interest as defined by law and Army policies, types of improvements, specific policies, Federal and non-Federal participation and special considerations where applicable.

4-2. Project Purposes. The term project purpose, as used above and elsewhere in this chapter, means a type or kind of project, the purpose for which it is undertaken. For example, flood damage reduction is a project purpose, as is navigation. Project purpose is also a convenient shorthand description; there may be a number of associated implications, such as a cost sharing formula, typically constructed features, a general notion of the type of outputs, and a legislative and institutional history. There also may be policies concerning individual project purposes. The term does not necessarily imply exclusive use of a particular kind or category of economic benefits however. Corps projects are formulated for specific project purposes, that is to produce specific outputs. This does not necessarily mean all project outputs will be exclusively those for which formulation occurs. Thus, a project formulated only for navigation (project purpose) could also have damage reduction benefits and recreation benefits.

4-3. General Policies.

a. Plan Recommendations.

(1) NED Plan. Ordinarily the plan maximizing net benefits, known as the NED plan, is recommended. Another plan may be recommended if it qualifies for a categorical exemption (immediately below), or if a specific Secretarial exception from ASA(CW) is sought (4-3b(4) and 4-3b(5) below).

(2) Categorical Exemption. If the non Federal sponsor identifies a constraint to maximum physical project size or a financial constraint due to limited resources, and if net benefits are increasing as the constraint is reached, the requirement to formulate larger scale plans in an effort to identify the NED plan is suspended. The constrained plan may be recommended. If the NED plan is identified at a physical size or cost which is less than the constraint, the NED plan requirement is satisfied and the NED plan should be recommended.

b. Cost Sharing.

(1) Applicability. Unless otherwise specified, the cost sharing provisions of Title I of the WRDA of 1986, as amended and as interpreted in subsequent guidance, applis to all projects and separable elements thereof. For example, for harbor projects Section 101 applies and for flood control Section 103 applies.

(2) Separable Element. A separable element is any part of a project which has separately assignable benefits and costs, and which can be implemented as a separate action (at a later date or as a separate project). Separable elements so considered are similar to the planning concept of last added increments, with the added idea of separation or detachment of the increment from the whole. The Corps has used a separable element concept for many decades; the term itself was coined in the WRDA of 1986 to assist in the transition to new cost sharing formulas. The WRDA definition was more complex, yet more ambiguous than that above.There is little continuing need for that definition. For cases where the WRDA definition (see section 103(f)) appears necessary consult HQUSACE; otherwise use the definition above. Separable elements usually must be incrementally justified.

(3) Waivers for Territories (Section 1156 of the WRDA of 1986). Local cost sharing requirements for all studies and projects in American Samoa, Guam, the Northern Mariana Islands, the Virgin Island, and the Trust Territories of the Pacific Islands, will be reduced by up to $200,000 for each study and project. Cost sharing for each study will first be established using the general cost sharing criteria; then the non-Federal share will be reduced by $200,000, or to zero if the non-Federal share is less than $200,000. A similar procedure will be followed for the non-Federal implementation cost share.

(4) Exceptions to the NED Plan. When the ASA(CW) grants an exception to selection of the NED plan, the costs for the granted exception will be shared on the same percentage basis as the NED plan.

(5) Locally Preferred Plans. Local interests may prefer a plan that is larger or smaller than the NED plan. A locally preferred plan may generally be recommended, except that in the geographic areas covered in (3) above a larger than NED plan may not be recommended. The incremental cost between the Federally supportable plan (NED) and a larger locally preferred plan is entirely a non-Federal responsibility. Recommended plans smaller or less costly than the NED plan will normally be granted an exception to NED plan selection, and cost shared on the same percentage basis as the NED plan. If there is a separable ecosystem restoration component of a plan that the non-Federal partner elects not to participate in (such as a beneficial use of dredged material) this will be dropped from the plan in favor of the base plan.

c. Financing of Non-Federal Share of Project Costs. Guidance on the financing of the non-Federal share of project costs including payment options, deferral of payments, method of payments, source of non-Federal funds, and the rate of interest for deferred payments is contained in ER 1165-2-131.

d. Limitations on Corps of Engineers Participation in Recreation Projects. Department of Army policy generally precludes using Civil Works resources to implement recreation oriented projects in the Civil Works program. Exceptions are: (1) A project is formulated for other primary purposes and recreation benefits are less than 50% of total benefits. (2) A project is formulated for other primary purposes and average annual recreation benefits are less than 50% of the average annual benefits required for justification. This is equivalent to saying the recreation benefits which are required for justification must be less than an amount equal to 50% of project costs. There may be additional recreation benefits if they are not required for justification. (3) In addition, for multiple purpose projects recreation may be included as a primary purpose if there is a non-Federal sponsor. For cases 1 and 2, recreation benefits are considered incidental; cost sharing (and cost allocation, if any) is based on the formula for the primary purpose only.

e. Credit for LERRD. Specific guidance on crediting the value of LERRD toward the non-Federal share of project costs is contained in ER 1165-2-131.

f. Replacement Costs. Repair, replacement and rehabilitation costs must be identified and included in the estimated cost of operation and maintenance.The entity responsible for project operation and maintenance is responsible for all rehabilitation and replacement costs (except for some inland navigation projects, see navigation section below).

g. Fish and Wildlife Mitigation. Detailed discussion of the following policies can be found in Chapter 7, Section III of this regulation.

(1) Allocating Costs. Fish and wildlife mitigation costs incurred after 17 November 1986 shall be allocated to the authorized purposes causing the need for mitigation in the same proportions as other allocable costs are allocated to those purposes. Procedures for allocating costs are contained in Chapter 6.

(2) Mitigation LERRD. When lands, easements, rights-of-way, relocations or disposal areas (LERRDs) are a non-Federal responsibility for a project purpose, any LERRDs associated with mitigation for that purpose is likewise a non-Federal responsibility.

h. OMRR&R. Non-Federal sponsors will be responsible for all costs of operation and maintenance (including “monitoring”), repair, rehabilitation, and replacement of mitigation

measures except for: (1) inland navigation projects and harbor projects with depths up to 45 feet, which have no requirement for non-Federal sharing of these costs and (2) harbors with depths over 45 feet which require a 50 percent non-Federal share for those costs assigned to increments in excess of a 45-foot project.

i. Hazardous, Toxic and Radioactive Waste (HTRW). Policy is to avoid expenditure of Civil Works funds for HTRW remediation by avoiding contaminated areas where practicable. For water resource studies, emphasis should be placed on early problem identification. Reconnaissance and feasibility studies will include a phased and documented review to provide for early identification of HTRW potential. Efforts to determine the existence and extent of HTRW problems will be treated as study cost and shared accordingly. Design and construction of remediation measures will be the responsibility of the project sponsor and the cost will not be considered a project cost. For non cost shared projects HTRW cost will be a project cost. ER 1165-2-132 provides details on HTRW at Civil Works projects.

SECTION II - NAVIGATION

4-4. Federal Interest. The Federal interest in navigation derives from the Commerce Clause of the Constitution, and is limited to the navigable waters of the United States. Federal navigation improvements must be in the public interest and thus must be open to the use of all on equal terms. As a matter of law and policy a distinction is made between general navigation features and other features or facilities serving navigation. The Corps participates financially in general navigation features and Special Navigation Programs only (see below); all other features and facilities (e.g., piers) are non-Federal responsibilities.

4-5. Types of Improvements. General navigation features include channels, jetties or breakwaters; locks and dams; basins or water areas for vessel maneuvering, turning, passing, mooring or anchoring incidental to transit of the channels and locks; and sediment basins. These are eligible for development as general navigation features of harbor or waterway projects. Special Navigation Programs include removal of wrecks and obstructions; snagging and clearing for navigation; drift and debris removal; bridge replacement or modification; and mitigation of project-induced damage.

a. Harbor and Waterway Projects.These projects are specifically authorized by Congress, except for Continuing Authorities. Financial responsibility for project components is specified in Public Law 99-662. Harbors and waterways have separate cost sharing formulas.

(1) Harbors. Harbors are places that offer vessels shelter from weather. They are primarily places for vessels to put in as needed, although they may serve incidentally as connecting waterways. They are ports if they also offer port facilities. Provision of harbors offering only shelter (Harbors of Refuge) was historically an active Corps program; no new projects have been authorized in many years. Many of the existing harbors of refuge continue to be maintained however. While the terms "inland harbor" and "deep draft harbor" may be used in legislation, it is harbor depth and use which determine cost sharing, not location.

(2) Waterways. Waterways are routes used by vessels. They are rights-of-way enabling and aiding vessel movement; vessels also may stop and stay at facilities along waterways. Waterways may simply connect bodies of deep or shallow water, or they may be parts of riverine or coastal waterway systems.

(a) The waterways described in Public Law 95-502 as amended, and such other waterways that subsequently may be determined to be parts of the inland waterway system referred to in Public Law 99-662, are exempt from non-Federal cost sharing of studies.

(b) By action of Congress, construction (including PED) for PL 95-502 defined waterways or

other waterways may be 100 percent Federal, the Inland Waterway Trust Fund may be used to fund all or part of the construction, and the waterway may be made subject to waterway fuel taxes. All other waterways are treated as harbors for cost sharing purposes.

b. Special Navigation Programs. These navigation improvements are for specific purposes, and may be projects, elements of projects, or simply Corps activities. They are initiated and/or implemented on Congressional authority (specific or continuing). They are usually subject to program or project expenditure limits, with cost sharing as specified in the original authority or as amended. The following program expenditure limits and cost sharing are as amended by Public Law 99-662 unless otherwise stated.

(1) Removal of Wrecks and Obstructions (Section 19, River & Harbor Act of 3 March 1899). The Corps may remove sunken vessels and similar objects if they are determined to be obstructions to navigation. The cost is 100 percent Federal; it is recoverable from the vessel or object owner. Abandonment by the owner is not a bar to cost recovery. Sunken vessels and objects that are not obstructions to navigation but may be nuisances or otherwise undesirable, are treated as drift and debris removal.

(2) Snagging and Clearing for Navigation (Section 3, River & Harbor Act of 1945). Cost-sharing for this continuing authority is according to whether it is a harbor or inland waterway. There is no project limit, but the current program limit is $1,000,000 annually.

(3) Drift and Debris Removal (Section 202, Water Resources Development Act of 1976). The Corps has continuing authority to study and undertake projects to remove and dispose of derelict objects such as sunken vessels, waterfront debris and derelict structures, and other sources of drift that may damage vessels or threaten public health, recreation, or the environment at publicly maintained commercial boat harbors. The harbor need not be, but usually is a Corps project. Congressional authorization is required for projects with Federal costs of $400,000 or more. Cost sharing for the cleanup is one third non-Federal. Non-Federal sponsors are required to recover cleanup costs if there is an identifiable owner of the source. The recovery costs do not become part of the local share but can be applied to reduce total project cost. All costs of any disposal facility or area and its operation are cost shared according to project depth.

(4) Navigation Projects Under the Continuing Authorities Program. Refer to Chapter 3, Sections I, II and III for additional guidance concerning policies, procedures and authorities pertaining to navigation projects conducted under the CAP.

(a) Small Harbor and Waterway Projects, Section 107, River & Harbor Act of 1960. Small harbor or waterway projects constructed under this authority must be complete and capable of producing benefits as separate projects. They cannot be constructed in lieu of authorized

elements of another navigation project. The requirements for study cost sharing, construction, and operation and maintenance are generally the same as those for specifically authorized studies and projects. Project and annual program Federal expenditure limits are $4,000,000 and $35,000,000.(These limits do not include operation and maintenance costs; see paragraph 3-22c for the O&M limitations).

(b) Mitigation of Shore Damage Due to Federal Navigation Projects (Section 101 of WRDA '86 and Section 111, River and Harbor Act of 1968 as amended by Section 940 of WRDA '86). The Corps can recommend measures for the prevention or mitigation of erosion or shoaling damages attributable to Federal navigation works.Costs are shared in the same proportion as is applicable to the project which causes, or is projected to cause, the erosion or shoaling. The non-Federal interests shall agree to be responsible for O&M, in accordance with Section 101 of the WRDA of 1986.There are no program expenditure limits for this Continuing Authorities Program, but projects with Federal expenditures over $2,000,000 require Congressional authorization. Detailed guidance for Section 111 projects costing less than $2,000,000 is presented in Chapter 3, Section III.

c. Ecosystem Restoration.

(1) Existing navigation projects. Section 204 of WRDA 1992 authorizes ecosystem restoration projects using dredged material. These projects utilize operations and maintenance funds and are of limited scope. They are administered under the Continuing Authorities Program. The substantive and procedural requirements of this authority are addressed in Chapter 3, Section V. Ecosystem restoration in connection with completed navigation projects can also be accomplished under Section 1135 of WRDA 1986. To qualify the proposed ecosystem restoration must be linked to a Corps civil works project and can not exceed $5,000,000 total Federal cost. Section 1135 is also administered as a CAP and is addressed in detail in Section 3 of Chapter 3.

(2) New dredging projects. Guidance for conducting ecosystem restoration activities connected with new work dredging is discussed in Section VIII of this Chapter.

(3) Modification of Bridges that Obstruct Navigation (Public Law 67-647, the Bridge Alteration Act). The Bridge Alteration Act (1941), commonly called the Truman-Hobbs Act, applies only to existing highway and rail bridges. It provides authority to require bridge modification or replacement if a bridge causes an unreasonable obstruction to navigation, and it sets the apportionment of costs among the bridge owner, the Federal government, and non-Federal sponsor (if any). In 1966 responsibility for administration of the act was transferred from the Army to the Department of Transportation; the Secretary of the Army retains authority to determine whether a bridge causes unreasonable navigation obstruction.

(a) The bridge owner must bear the part of the cost attributable to direct and special benefits accruing to the owner; the remainder is apportioned between the U.S. and non-Federal sponsor (if any) according to the cost sharing that would apply at the harbor or waterway involved. (For details of cost sharing see the Act.) The bridge owner is required to absorb the cost of betterments and an apportionment of costs representing the expired service life of the obstructing bridge.

(b) Truman-Hobbs cost sharing applies as well when a new project or project improvement would cause an existing bridge to become an obstruction to navigation. The cost of constructing new bridges or replacing existing bridges over non-obstructed channels is 100 percent non-Federal. New bridges required because of land cuts for new or realigned channels are treated as general navigation features of those projects and cost shared accordingly.

4-6. Specific Policies.There may be many components necessary to make a navigation project work, but there is Federal financial responsibility for only some of them. The components that are a Federal responsibility are cost-shared according to the project benefits and type of project (harbor, waterway) as shown in a subsequent paragraph. All other components are wholly non-Federal responsibilities.

a. General Application. For most project components, the responsibility and cost sharing has been determined by legislation, precedent, or practice. These components are described below.

(1) General Navigation Features. This category of structural components of harbors and waterways contains most of those components in which the U.S. will financially participate. The components may be constructed by the project sponsor with reimbursement for the Federal cost share if authorized by Congress under Section 204 of the WRDA of 1986.

(a) Locks and dams and river training works on coastal and inland waterways.

(b) Offshore, approach, and harbor entrance channels, which may have associated protective works such as breakwaters or jetties.

(c) Mainstem, or main and branch channels that are either waterways, or that connect harbor entrances with local facilities areas.

(d) Basins, areas, or widened channels for vessel maneuvering, turning, passing, or anchoring or mooring incidental to transit of locks or channels, and sediment basins.

(e) Bridges that are required by new or realigned channels that cut fast land. It is Corps

policy to not recommend new navigation channels cutting fast land however.

(f) Ice control structures.

(2) Aids to Navigation. These are buoys, lights, ranges, markers, and other devices and systems required for safe navigation or to achieve the project benefits. Aids to navigation are provided by the Coast Guard, and are a Federal cost included in economic justification, but are not subject to project cost sharing. Absent sufficient Coast Guard funding, or adequate justification for the navigation aids, non-Federal interests may be required to provide them.

(3) Local Service Facilities. These are the responsibility of non-Federal interests, and they may be required as part of project cooperation agreements if they are necessary for project benefits to accrue. Example are:

(a) Piers, wharfs, floats, and other structures or devices at or near the shoreline, where vessels can moor or be held for the purpose of loading and unloading cargo and passengers, fueling, repairs and other servicing, or to await orders or use.

(b) Berthing, mooring, and anchorage areas where vessels can stay whatever time is required without obstructing the channels or other water areas provided for the movement of vessels.

(c) Open areas, structures, or equipment on the shore for receiving, storing, and transferring cargo and passengers (port facilities); for providing fuel, water, ice, provisions, repairs, and other services to vessels (harbor facilities); or for launching boats via ramps or equipment, storing boats on land, parking vehicles, and public access areas and restrooms (recreation facilities).

(d) Utility services such as telephone, water and power, and public services such as police and fire protection.

(e) Land access via roadways or railroads.

(f) Access channels or, main or branch channel extensions providing access to facilities usable only by exclusive private interests, i.e., not open to the general public on equal terms.

(4) LERRD. Non-Federal sponsors are required to provide all lands, easements, rights-of-way, and relocations for a navigation project or a harbor of any kind, and for waterways that are treated as harbors for cost sharing purposes. LERRD for "inland waterways" are 100 percent Federal, and may be funded up to 50 percent from the Inland Waterways Trust Fund for construction when so authorized by Congress.

b. Special Cases. Special cases that require a determination of policy, Federal responsibility, or cost sharing are described below.

(1) Access Channels. Subsidiary channels may be needed to connect main harbor channels or inland waterways with anchorages, mooring, or berthing areas not located adjacent to the primary channel. An access or connecting channel can be a Federal responsibility only if it provides access to two or more areas; or if access is provided to a single area it, must contain two or more facilities with separate owners, or a facility owned by a public entity. For a harbor project the cost shares are determined by the depth of the access or interior channel. If an access channel serves an inland port or port facility it is cost shared based on its own depth, unless the channel is in an area included in the inland waterway system as described in Public Law 95-502, as amended, or as determined by Congress.

(2) Deeper Depths in Entrance Channels. Where an entrance channel is deeper than interior channels because of the more adverse navigation conditions of the entrance channel, cost sharing is the same as the deepest reach of the more protected interior channels.

(3) Barge Fleeting Areas. Barge fleeting areas are defined as mooring areas or temporary anchorages used for assembling tows, making barge transfers between tows, transferring supplies, awaiting arrival of additional barges or serving as a barge holding area. Barge fleeting areas should generally not be recommended for Federal participation. Moorages or temporary anchorage areas may be recommended if necessary to implement a non structural efficiency improvement, for example if reconstitution of tows is necessary to implement a “ready to serve” lockage policy. These areas should then be understood not to be fleeting areas in the traditional sense.

(4) Single Owner Situations and General Versus Special Interest Considerations. Section 2 of the River and Harbor Act of 5 June 1920 provides that the Chief of Engineers shall make a determination of the general versus the special interest in an improvement, and recommend an appropriate sharing of costs between Federal and non-Federal interests. When there is a general interest the cost sharing prescribed by Public Law 99-662 will be the basis for recommendations. If there is no general interest there is no Federal financial participation. The determination of general interest requires consideration of the number and type of properties served by a proposed project.

(a) Single Owner Situations. The Corps will not recommend Federal cost participation, establishment, or expansion of a Federal navigation project where the improvement would serve only property owned by a single firm, corporation or individual, or club or association with restrictive membership requirements. A single-owner situation exists when restrictive conditions

of any sort permit the single property owner exclusive present and future enjoyment of project benefits. An example of exclusive benefits would be a privately owned port, even though used by several shippers. However, the Corps may recommend Federal cost participation where the improvement would serve only property owned publicly by a single state county, municipality or other duly appointed public entity. Table 1 in ER 1165-2-123 summarizes single-owner situation policy for a variety of Federal project purposes and types of improvement.

(b) Initial Single Non-Public-Owner, Later Multiple-Owner Situations. Federal participation may be recommended in a significant increment of improvement when the improvement would initially serve property by a single non-public-owner when reasonable prospect exists for the improvement to later serve multiple properties with different owners. A significant increment is defined as one involving major increases in project length, depth, or width.

(i) The test for reasonable prospect is controlled by factors such as availability, ownership, and suitability of adjacent waterfront land for development and location by other industries and users, availability of land transport and other essential services; the area's economic potential; the intent of the land owner or the potential developer; and the determination that no restrictive conditions exist that would prohibit the improvement from serving/benefiting two or more single-owner properties (and property owners) in the foreseeable future.

(ii) In these situations non-Federal sponsors shall contribute annually, until such time as multiple properties/owners are served by the general navigation facility, 50 percent of the annual charges for interest and amortization of the Federal first cost of the improvement, exclusive of aids to navigation. For new channels or extensions to existing channels, the required annual contribution shall also include 50 percent of the operation and maintenance costs of the improvement until such time as multiple properties/owners are served. The requirement for annual contributions may end when the Secretary of the Army determines that the improvement is actually serving/benefiting at least two properties that are owned by at least two different owners. These cash contribution requirements are in addition to the other regular established requirements of non-Federal cooperation for commercial navigation projects.

(c) Progressive Development. The Federal interest is satisfied and the regular cost sharing requirements apply where the improvement serves/benefits two or more properties having different owners or one publicly-owned property at the outset, or if new properties/owners would be served immediately after project completion. A principle of progressive development also applies. Progressive development includes situations where the last small increment of a channel serves a non-public owner. The last property owner served may be "at the end" in terms of length, depth, or width, necessitating some project investment in his service alone. This is treated as a multiple-owner situation unless a disproportionate incremental investment is required.

(4) Project Purpose and Benefits. Navigation projects may produce both recreational navigation outputs including sport fishing, and commercial navigation outputs including commercial fishing. Current Army policy precludes budgeting Army Civil Works resources for new recreation orientated projects. Civil Works funds may normally be used to support recreation~~al~~ development where the level of commercial navigation benefits is equal to or exceeds 50 percent of the average annual project cost.

(5) Entrance Channels Cost Sharing. Increased depths provided in entrance channels for transit of vessels between protected interior channels and the wave action zone, e.g., across an outer bar, will be cost shared the same as the deepest protected interior channel. Breakwaters, jetties and channel width increases are cost shared in the same manner.

(6) Navigation Versus Hurricane and Storm Damage Reduction. Some measures serving navigation may also reduce hurricane and storm damage and vice versa. The following policies apply to cost sharing of measures affecting one or both of the navigation, and hurricane and storm damage reduction purposes.

(a) Measures resulting in increases in net income of commercial navigation activities or in decreases in commercial transportation costs will be evaluated and cost shared as navigation measures (harbor). This includes measures to prevent wave induced damages to berthed commercial vessels and to docks, piers and slips used in commercial navigation activities. Measures to prevent wave induced damages to berthed non-commercial (recreational) vessels and measures to prevent wave damages to docks, piers, slips and other shoreline facilities not used for commercial navigation are to be evaluated and cost shared under the hurricane and storm damage reduction provisions of sections 103(c)(5) and 103(j) of Public Law 99-662. Measures to provide for safe and efficient movement of commercial and recreational vessels into and within a harbor, and measures to prevent loss or damage to vessels in transit (harbors of refuge) will continue to be evaluated and cost shared as navigation measures (harbor). The Corps does not financially participate in provision of docks, terminal or transfer facilities, or berthing areas (see paragraph 4-6 above).

(b) Above policy applies to existing berthed vessels and shoreline facilities and to vessels and facilities that would exist in the future without project condition at the project or an alternative location. For vessels that would not be present at any location in the without project condition, but would be present in the future as a result of the project, benefits are evaluated as commercial or recreational navigation benefits, as appropriate.

(c) Where measures serve both hurricane and storm damage reduction and navigation, an allocation of multiple purpose joint costs must be made and the joint costs shared in accordance with the purpose to which they are allocated, along with any specific costs for features which serve only one purpose. This cost allocation must include operation, maintenance, repair and

replacement and rehabilitation responsibility under the hurricane and storm damage reduction purpose. No cost allocation is required where a measure is formulated to serve a single purpose but results in incidental benefits.

(7) Federal Assumption of Maintenance. Section 204(f) of the WRDA of 1986, as amended, and implemented by ER 1165-2-124, provides the basis for the Federal assumption of maintenance of navigation projects constructed by non-Federal interest. (Section 204(f) was previously Section 204(e). It was redesignated by Section 303(b)(1) of the WRDA of 1990.) Section 204(f) provides that a non-Federal project must be approved by the Secretary of the Army prior to construction for Federal assumption of maintenance. In view of the provisions of Section 204(f) and in recognition of budgetary constraints, the Corps will not seek study funding or authorization for Federal maintenance of existing non-Federal navigation projects. Only assumption of maintenance under provisions of Section 204(f) will be considered. This policy does not apply to traditional study, authorization and construction of improvements to non-Federal harbors, which may include subsequent Federal maintenance.

4-7 Federal and Non-Federal Participation.

a. Harbors and Waterways. Cost sharing is as modified by the Water Resource Development Act of 1986 (Public Law 99-662), as amended.

(1) Studies, Planning, Engineering, and Design. See Table 4-1.

(a) Section 105 of Public Law 99-662 specifies a 50 percent non-Federal cost share for all feasibility studies, except for studies of "inland waterway system" improvements. The law does not define that system, and current Army policy is to limit the exemption to the waterways subject to waterway fuel taxes.

(b) Section 105 required cost sharing of post-feasibility preconstruction engineering and design. Preconstruction engineering and design, also known as PED, is all engineering, design, and planning, if any, accomplished after the feasibility phase. All preconstruction engineering and design for all projects authorized in or subsequent to Public Law 99-662 is to be cost shared at the project construction percentage.

(2) Construction, Operation, and Maintenance. Sections 101, 102 and 103 of Public Law 99-662 specify the cost sharing for commercial harbor, inland waterway and recreational navigation projects.

(a) Harbors. See Table 4-2. Section 101 specifies cost shares for general navigation features that vary according to the channel depth: (20 feet or less, greater than 20 feet but not

more than 45 feet, and greater than 45 feet). For general navigation features not changing depths, such as breakwaters, locks, channel widening, etc., cost sharing shall be at the percentage applicable to the authorized or existing depth, whichever is greater. The resulting percentage ~~of~~ applies as well to mitigation and other work cost shared the same as general navigation features. The above cost share is paid during construction. Section 101 also requires the project sponsor to pay an additional amount equal to 10 percent of the total construction cost for general navigation features. This may be paid over a period not to exceed thirty years, and LERRDs may be credited against it.

(b) Waterways. Section 102 of PL 99-662 and subsequent legislation specify 100 percent Federal operation and maintenance on those parts of the inland waterways system paying fuel taxes, and direct that 50% of the cost of construction is to come from the general fund of the treasury and 50% from the Inland Waterways Trust Fund. All other inland waterway construction is cost shared as commercial or recreational harbors depending on purpose. See the tables below and ER 1165-2-131, Appendixes F and G, for cost sharing percentages. If a project crosses cost share depth ranges, use each applicable range to determine overall cost share. Overdepth dredging is a maintenance strategy; cost sharing is at the nomimal depth.

Table 4-1

NAVIGATION
Non-Federal Share: Studies, Preconstruction Engineering and Design (PED)

Preconstruction Work	Commercial Navigation	Recreational Navigation	Inland Waterways
Reconnaissance Study	-0-	-0-	-0-
Feasibility Study	50%	50%	-0-
Preconstruction Engineering and Design (PED)	(Same percentages as for construction of general navigation features)		

Table 4-2

NAVIGATION
Non-Federal Share, Construction, Operation, and Maintenance

	Commercial Navigation			Recreation Navigation	Inland Waterways
	to 20'	>20 to 45'	>45'		
Construction					
Gen`l Nav.Features	10+10%1/	25+10%1/	50+10%1/	50%2/	-0-
Aids to Navigation	-0-	-0-	-0-	-0-	-0-
Service Facilities	100%	100%	100%	100%	-0-
LERRD	100%	100%	100%	100%	-0-
Operation & Maint.					
Gen'l Nav. Features (incl mitigation)	-0-	-0-	50%	100%	-0-
Aids to Nav.	-0-	-0-	-0-	-0-	-0-
Service Facilities	100%	100%	100%	100%	100%
LERRD	100%	100%	100%	100%	-0-

1/ Ten percent (10%) post-construction contribution may be reduced by credit for LERR.

2/ May be reduced by credit for LERR.

b. Recreation. Section 103 sets the non-Federal share of construction cost at 50 percent and O&M cost at 100 percent for recreation projects.For navigation projects these cost shares apply to separable recreation costs and costs allocated to recreation. For multi-purpose projects joint use costs allocated to recreation are 100 percent Federal (PL 89-72, Section 2).

c. Special Navigation Programs. See Table 4-3. Cost sharing is in accordance with program authorizations as amended by Public Law 99-662. Section 940 of Public Law 99-662 shifts all responsibility and costs For operation and maintenance of shore damage mitigation projects to a non-Federal public agency. Section 939 of Public Law 99-662 increases Corps authority to recover the cost of removing wrecks and obstructions from vessel owners, lessees, or operators.

Table 4-3

NAVIGATION
Non-Federal Share, Special Navigation Programs

Program	Study	Construction	O&M
Removal of Wrecks, Obstruction	-0-	100% recoverable	NA
Snagging and Clearing	50%	10+10% (<20')	NA
Drift & Debris Removal	50%	one-third	100%
Small Navigation Projects			
Commercial navigation	50%	10+10 (<20')	-0-
Recreational navigation	50%	50%	100%
Modification of Bridges	-0-	project % (after cost apportionment to bridge owner)	100%
Project Induced Damages			
Project damage only	-0-	project %	100%
Additional Purposes	50%	purpose %	100%
Beneficial Uses of Dredged Material for Ecosystem Restoration			
(section 204)	Same as base plan		100%
(Section 1135)	25%		100%

d. Land Creation or Enhancement at Inland Harbors. Federal participation in inland waterway harbor improvements under the Civil Works program is not warranted when (1) resale

or lease of lands used For disposal of excavated material can recover the cost of the improvements or (2) the acquisition of land outside the navigation servitude is necessary For construction of the improvements and would permit local interest to control access to the project. The latter case is assumed to exist where the proposed improvement consists of a new channel cut into fast land.

e. Land Creation at Harbors (Other Than Inland Harbors). Formulation and cost sharing of harbor projects that include land creation benefits must be in accordance with the following procedures.

(1) The NED plan relies on navigation benefits exclusively (land creation is not considered in the net benefit evaluation). Special cost sharing is required; it is based on the magnitude of land creation benenfits relative to total benefits. The cost sharing formula is as follows:

(a) Assign LERRD to non-Federal sponsor. (Full Credit of LERRD toward 10% of GNF)

(b) Special non-Federal (GNF) cost sharing equal to:

$$\frac{\text{Land Creation Benefits For this plan}}{\text{Total Benefits For this Plan}} \times \text{(GNF Costs)}$$

(c) Remaining GNF costs shared in accordance with Section 101 of PL 99-662, as amended, as described in paragraph 4-7a.

(2) Non-Federal requests For modification of the NED Plan formulated using navigation benefits may be allowed provided all additional implementation costs are non-Federal and the incremental navigation benefits equal or exceed the incremental O&M costs For the GNF. No additional cost sharing will be required for the land creation benefits associated with the project modifications beyond the NED Plan which are requested and paid for by non-Federal interests. The cost sharing formula by which this policy is to be applied is as follows:

(a) The non-Federal share shall be the non-Federal costs determined in paragraph d.(1) above plus 100 percent of the difference between the NED Plan and the cost of the requested modified plan; or all costs not assigned to the Federal government under paragraph d.(2)(b) below, whichever is greater.

(b) The Federal share shall be the Federal costs determined in paragraph d.(1) above; or, when the modified NED Plan results in a cost For GNF that is less than the cost For GNF For the NED Plan, the Federal share of costs will be limited to the Federal percentage of the total GNF

derived in paragraph d.(1) above times the cost of the GNF For the modified NED Plan.

f. Land Creation Requirements. Reports proposing land creation, where the lands are necessary for development of port facilities to accommodate traffic, shall require the non-Federal sponsor to ensure the lands are retained in public ownership for uses compatible with the authorized purposes of the project. The non-Federal sponsor shall regulate the use, growth and development on such lands for those industries whose activities are dependent upon water transportation.

4-8. Special Considerations.

a. Study Authorities.

(1) Navigation Facilities Replacement. Continuing authority to study the replacement, reconstruction, or rehabilitation of Congressionally authorized navigation improvements is contained in Section 4 of the River & Harbor Act of 1884 as amended by Section 6 of the River & Harbor Act of 1909. This study authority is no longer used.

(2) Review of Completed Projects. Continuing authority to study completed projects and report thereon to Congress, when advisable due to changed physical or economic conditions, is contained in Section 216 of the River & Harbor and Flood Control Act of 1970. Although seldom used historically, this authority is becoming more important as Corps projects age and economic and social conditions change.

(3) Special Programs. Continuing authority to study certain small or special purpose projects is contained in the legislation cited in "Special Navigation Programs" earlier in this section. Those study authorities are used routinely.

(4) Specific Authorization. All other projects require specific authorization in the form of legislation or resolutions by the appropriate committees of Congress.

b. Shoreline Changes. Pursuant to Section 5 of the River & Harbor Act of 1935 each investigation on navigation improvements potentially affecting adjacent shoreline will include analysis of the probable effects on shoreline configurations. A distance of not less than ten miles on either side of the improvement should be analyzed.

c. Charter Fishing Craft, Head Boats, and Similar Recreation-Oriented Commercial Activities. Section 119 of the River and Harbor Act of 1970 (Public Law 91-611), states, "The Chief of Engineers, For the purpose of determining Federal and non-Federal cost sharing relating to proposed construction of small-boat navigation projects, shall consider charter fishing craft as

commercial vessels." This Act applies only to cost allocation and cost apportionment and does not involve project evaluation in any way. Particularly, it does not determine consistency with Corps primary missions. This depends on whether the benefits are commercial navigation or recreation. Only if benefits to charter fishing craft are based on change in net income to the owner/operators of vessels which would exist and operate in the without project condition can commercial navigation benefits be claimed.

e. Subsistence Fishing. This is fishing, primarily for personal or family consumption, by those whose incomes are at or below the minimum subsistence level set by the Department of Commerce. For cost allocation purposes subsistence fishing is considered commercial fishing. Subsistence fishing is not a high priority output however.

f. Coast Guard Coordination. The U.S. Coast Guard is responsible For Federal aids to navigation and enforcement of navigation regulations. In addition to enforcing its own regulations, the Coast Guard also administers and enforces speed limits, anchorage areas, and other regulations issued under Corps authority. Corps districts should confer directly with the Coast Guard concerning establishment or alteration of aids to navigation, and the regulation of lighterage areas, anchorages and channels.

g. Permit Coordination. Formulation should consider whether associated or ancillary sponsor activities (or project user activities) are required to achieve project benefits, and whether Department of the Army (DA) permits are necessary. Examples are provision of mooring/berthing areas, dredge material containment areas and landside infrastructure. Once activities are identified, a preliminary determination of whether they require DA permits, and of what types (i.e., an individual permit, a letter of permission, an existing general permit or a nationwide permit), will be made by the district regulatory element.

(1) When an activity likely will necessitate a DA permit it should be addressed in the environmental documentation of the project as required by NEPA, the Section 404 (b) (1) guidelines and other appropriate environmental statutes. It may be assumed that more detailed analysis for permitting purposes will proceed concurrent with PED studies.

(2) DA permitting activities should be discussed at public meetings or workshops held during planning or during PED. Public notices announcing meetings/workshops shall identify sponsor activities that could require DA permits. Public meetings or workshops should be coordinated with regulatory staff; coordination is particularly important if there is or will be an abbreviated processing procedure or a special management plan.

(3) Normally, Coastal Zone Management (CZM) concurrence or Section 401 water quality certification for an abbreviated processing procedure or special area management plan

should be obtained concurrently with those required for the Corps project. It remains the responsibility of the project sponsor (or users) to obtain all required state and/or local permits.

h. Placement of Dredged Materials on Beaches. Construction and maintenance dredging of Federal navigation projects shall be accomplished in the least costly manner possible (ER 1130-2-307). When placement of dredged material (beach quality sand) on a beach is the least costly acceptable means for disposal, then such placement is considered integral to the project and cost shared accordingly. In cases were placement of dredged material on a beach is more costly than the least costly alternative, the Corps may participate in the additional placement costs when (1) requested by the state; (2) the Secretary of the Army considers it in the public interest; and (3) the added cost of disposal is justified by hurricane and storm damage benefits (see Section IV). When all local cooperation requirements are met the Corps may cost share the additional costs 50 percent (Section 933, WRDA 1986, as amended). In cases where the additional costs for placement of the dredged material is not justified, the Corps may still perform the work if the State requests it, and the state or other sponsor contributes 100 percent of the added cost. If the State requests, the Corps may enter into an agreement with a political subdivision of the State to place the sand on its beaches, with the subdivision responsible for the additional costs. The Corps should consider and accommodate to the degree reasonable and practicable a state's or subdivision's schedule for providing its cost share. Each placement event should be supported by a separate decision document. Subsequent decision reports may be supplements to the original Section 933 decision document.

4-9. Dredged Material Management Plans. All Federally maintained navigation projects must demostrate that there is sufficiant dredged material disposal capacity for a minimum of 20 years. A preliminary assessment is required for all Federal navigation projects to document the continued viability of the project and the availibility of dredged material disposal capacity sufficient to accomodate 20 years of maintenance dredging. If the preliminary assessment determines that there is not sufficient capacity to accomodate maintenance dredging for the next 20 years, then a dredged material management study must be performed.

a. Policy.

(1) General.

(a) Sound management of dredged material is a priority mission of the Corps.

(b) The Corps is committed to conducting dredging and managing dredged material in an environmentally sound manner.

(c) The interests of economic development and environmental sustainability will best be served when dredged material placement proceeds according to a management plan. Therefore each existing and proposed navigation project will have a dredged material management plan that ensures warranted and environmentally acceptable maintenance of the project.

(d) Beneficial uses of dredged material are powerful tools for harmonizing environmental values and navigation purposes. It is the policy of the Corps that all dredged material management studies include an assessment of potential beneficial uses for environmental purposes including fish and wildlife habitat creation, ecosystem restoration and enhancement and/or hurricane and storm damage reduction. Districts and MSCs will make every effort to ensure that sponsors and other interests understand the valuable contributions that beneficial uses can make to management plans and will maximize use of regional forums to share experiences of opportunities for benefical uses.

(e) Dredged material management goals are to be achieved by District and Division Commanders within existing delegations of authority. Exceptions to this principal are when problems arise that are of such significance that HQUSACE or Administration commitment is required such as changes in dredged material management practices that require substantial capital investment.

(2) Requirements. Dredged Material Management Plans (Management Plans) shall be prepared, on a priority basis, for all Federal navigation projects, or groups of inter-related harbor projects, or systems of inland waterway projects (or segments).

(a) priority will be given to projects for which existing dredged material disposal sites, including existing confined disposal facilities, are expected to reach capacity or to no longer be available sometime in the next 10 years, or

(b) existing and projected navigation usage of the project indicates that continued maintenance of the project, or of any substantial increment thereof, may not be warranted.

(c) Management Plans shall identify specific measures necessary to manage the volume of material likely to be dredged over a twenty year period, from both construction and maintenance dredging of Federal channel and harbor projects. Non-Federal, permitted dredging within the related geographic area shall be considered in formulating Management Plans to the extent that disposal of material from these sources affects the size and capacity of disposal areas required for the Federal project(s). In those cases where two or more Federal projects are physically inter-related (e.g., harbors which share a common disposal area or a common channel) or are

economically complementary, one Management Plan may encompass that group of projects.

(3) Base Plan. It is Corps of Engineers policy to accomplish the disposal of dredged material associated with the construction or maintenance dredging of navigation projects in the least costly manner that is consistent with sound engineering practice and meeting all Federal environmental standards including the environmental standards established by Section 404 of the Clean Water Act of 1972 or Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972, as amended (see reference 2.a.). This constitutes the base disposal plan for the navigation purpose. Each management plan study must establish this "Base Plan", applying the principles set forth below.

(4) Development of Dredged Material Management Plans. Requirements for developing dredged material management plans are provided in Chapter 5 and in Appendix__.

b. Management Plan Development Principles.

(1) Existing Projects.

(a) Process. Management Plans are intended to cost effectively and expeditiously support environmentally acceptable channel and harbor maintenance. Plan development shall employ a phased process determining the appropriate scope and detail of required assessment. This process will:

(i) establish the Base Plan for the project;

(ii) include an assessment of the potential for beneficial uses of dredged material which is proposed to be undertaken as separate plan elements pursuant to separate authority; and,

(iii) establish the Management Plan for the project, or if approval by higher authority is required elsewhere in this guidance, the District Commander's recommended Management Plan.

(iv) demonstrate continued maintenance is economically warranted based on high priority (non-recreation) benefits. If it cannot be demonstrated based on high priority benefits but would otherwise be warranted considering recreation benefits, recommendations will state that project is economically warranted using recreation benefits.

(b) Phases. Management Plan development shall proceed in the following phases:

(i) preliminary assessment. Preliminary assessments establish whether more detailed study is required to establish a management plan, and, if so, provides information to justify the study

and permit its prioritization in the budgetary process. For many projects with readily available maintenance and usage information, a preliminary assessment, based on indicators such as annual O&M costs per ton of cargo, volume and frequency of traffic, and vessel dimensions, may establish the Base Plan and confirm that continued maintenance appears to be warranted . Where these conditions are met, the findings of the Preliminary Assessment would complete the requirement for a Management Plan. Where these conditions are not met, the Preliminary Assessment will recommend a Management Plan Study.

(ii) Management Plan Studies. In those cases where basic indicators are inconclusive, where attempts to define the Base Plan disclose significant problems or where a major new investment or other significant increase in maintenance costs (for example, the provision of new confined disposal facility or use of more distant ocean disposal site) is required, a Management Plan Study shall be required to establish the Base Plan and the recommended Management Plan. Management Plan studies shall be conducted in two phases: initial and final. The initial phase concentrates on developing a detailed scope of work, and the final phase executes that scope of work.

(2) Proposed Projects. Feasibility and Preconstruction Engineering and Design (PED) studies for proposed projects shall include a Management Plan in accordance with the criteria and procedures herein, as applicable.

c. Study Authority. Preliminary Assessment and Management Plan studies shall be conducted pursuant to existing authorities for individual navigation project feasibility studies, PED, construction, or O&M, as provided in Congressional Committee study resolutions and public laws authorizing specific projects. These specific study and/or project authorities are supplemented by general authorities relating primarily to beneficial uses of dredged material, as set forth in paragraph 8.b., below. Where Management Plan studies disclose the need to consider expanding or enlarging existing projects, such studies may only be pursued under specific study authority or under authority of Section 216 of the Flood Control Act of 1970.

d. Responsibilities.

(1) Existing Projects. Operations functional elements have program management responsibility for administering Dredged Material Management Plan preparation efforts for existing Federal projects. Those responsibilities include prioritizing and budgeting studies and providing subject matter expertise and guidance as members of the interdisciplinary study team. Planning functional elements have study management responsibility for conducting the studies required to implement effective dredged material management. Both elements have joint functional responsibility to ensure efficient use of shared resources.

(2) Proposed Projects. Planning functional elements are responsible for administering and conducting Management Plan studies for proposed projects. The Operations functional elements are essential participants and assume on-going responsibility for dredged material management following project completion.

e. Study Components.

(1) Alternatives. Management plan studies shall consider the full range of measures for dredged material management including: management of existing disposal sites to extend their life; various combinations of new disposal sites involving different disposal methods, disposal area locations, and periods of use; and, measures to reduce dredging requirements, including reduced dimensions. The Federal interest in continued O&M of an existing project for its navigation purpose is defined by that project of maximum scale and extent, within project authorization, for which continued maintenance is warranted in terms of vessel traffic and related factors.

(2) Beneficial Uses. Each Management Plan study shall include an assessment of potential beneficial uses of dredged material, for meeting both navigation and non-navigation objectives, including fish and wildlife habitat creation and restoration, hurricane and storm damage reduction, and recreation. Where a beneficial use is part of the Base Plan, it shall be treated as a general navigation O&M component. Beneficial uses which are not part of the Base Plan shall be considered separable elements of the management plan, and will be pursued in accordance with guidance implementing other available authorities. (See paragraph f., Cost Sharing and Financing, below.) However, even though funded from different sources, the beneficial use planning effort must be pursued in conjunction with the overall management plan effort to assure the timely availability of dredged material for the beneficial use project and the availability of the beneficial use project site to meet maintenance dredging disposal needs.

(3) Study Involvement and Coordination. District Operations and Planning functions must jointly ensure appropriate involvement of all resources and affected non-Federal interests in Management Plan studies, as follows:

(a) Interdisciplinary Analysis. The relevant professional disciplines needed to ensure sound professional decisions are to be involved.

(b) Partnership. Project sponsors, local governments, port authorities, and other project users and beneficiaries are partners in dredged material management, and have a key role as the project proponents in building local consensus for the Management Plan. Another potentially key role is played by the state governor in mediating sometimes competing state environmental, regulatory and economic objectives. All those having a partnership interest must be informed and involved throughout the course of all management plan studies.

(c) Review and Consultation. Federal, State and other public agencies with legal review, consultation, or other regulatory responsibilities are to be involved. Dredged material disposal is a multi-faceted issue which involves both the water resources development and regulatory responsibilities of the Corps; the regulatory, water quality, hazardous, toxic, and radiological waste responsibilities of the U.S. Environmental Protection Agency (EPA) and state agencies; the environmental resources protection and management responsibilities of the National Marine Fisheries Service, the U.S. Fish and Wildlife Service and various state agencies; and the economic and regional economic development interests of states, local governments, port authorities, maritime users and shippers.

(d) Public Involvement. Members of the public who are interested, likely to be affected, or otherwise have a stake in outcomes are to be kept informed and appropriately involved.

(4) Environmental Consistency. Management Plans shall be consistent with protecting the Nation's environment, pursuant to national environmental statues, applicable executive orders, and other Federal requirements. Management Plan studies shall address the requirements of all applicable environmental statues for all disposal options considered, including the requirements of the National Environmental Policy Act, Section 404 of the Clean Water Act, Section 103 of the Marine Protection, Research and Sanctuaries Act, and the Coastal Zone Management Act. Any dredged material assessment to determine compliance with the Clean Water Act, Section 404(b)(1) guidelines, will be performed in accordance with the manual "Evaluation of Dredged Material Proposed for Discharge in Inland and Near Coastal Waters: Testing Manual". The manual "Evaluation of Dredged Material Proposed for Ocean Disposal: Testing Manual, commonly referred to as the "Green Book", will be used for assessing material proposed for ocean disposal under Section 102 of the Marine Protection, Research and Sanctuaries Act. Regional variations of these two manuals, where approved by both the Corps and EPA, may also be used.

f. Cost Sharing and Financing.

(1) Management Plan Studies.

(a) Existing Projects.

(~~I~~i) General. The cost of Management Plan studies for continued maintenance of existing Federal navigation projects are O&M costs and shall be Federally funded. For harbor projects, including inland harbors, such costs shall be reimbursable from the Harbor Maintenance Trust Fund, subject to the following:

(a) Project sponsors, port authorities and other project users, are partners in dredged material management and must pay the costs of their participation in the dredged material management studies including participation in meetings, providing information and other coordination activities.

(b) Budgeting priority for the navigation purpose is limited to the Base Plan. Therefore, the cost for any component of a management plan study attributable to meeting local or state environmental standards that are not provided for by the requirements of Federal laws and regulations, shall be a non-Federal cost.

(c) Study activities related to dredged material management for the Federal project but not required for continued maintenance dredging and dredged material disposal will not be included in dredged material management studies unless funded by others.

(d) Studies of project modifications needing congressional authorization, including dredged material management requirements related to the modification, will be pursued as feasibility studies under the authority of Section 216 of the Flood Control Act of 1970.

(ii) Beneficial uses. The cost of studies for beneficial uses that are consistent with, and part of, the Base Plan are Federal O&M costs. However, study costs for beneficial uses which are not part of the Base Plan, beyond those reconnaissance level studies needed to identify these potential uses as part of management plan studies, are either a non-Federal responsibility or are a shared Federal and Non-Federal responsibility, depending on the type of beneficial use, as follows:

(a) Environmental Improvement and Ecosystem Restoration. The incremental costs of studies beyond those required for the Base Plan for the use of dredged material to improve, restore and protect environmental resources, pursuant to Section 1135 of the Water Resources Development Act of 1986 (WRDA 86), as amended, and/or Section 204 of the Water Resources Development Act of 1992 (WRDA 92), are not navigation O&M costs. If a potential environmental improvement or ecosystem restoration beneficial use project exceeds the cost limitations of section 1135 or section 204, it may be pursued as a cost shared feasibility study leading to specific authorization, in accordance with existing procedures. These programs are discussed in detail in Chapter 3 of this ER.

(b) Placement of Materials on Beaches. The Corps of Engineers, under Section 933 of the Water Resources Development Act of 1986, may participate in the additional costs of placing clean sand or other suitable material, dredged by the Corps during construction or maintenance of Federal navigation projects, onto adjacent beaches or near-shore waters, if the added cost of placement is justified primarily by the benefits associated with the hurricane and storm damage

protection provided by such beach or beaches, and the beach involved is open to the public with public access. The non-Federal sponsor must provide 50 percent of the incremental study costs.

(c) Other Beneficial Uses. Other potential beneficial uses include placement of dredged material for land creation or land enhancement for development purposes, disposal of material on beaches not meeting the criteria for Corps participation, and environmental enhancement projects not meeting the criteria for Corps participation. In these cases all incremental study costs and implementation costs above those costs required for the Base Plan must be paid by non-Federal interests.

(b) Proposed Projects.

(i) General. Management Plan studies to be included with feasibility studies shall be subject to the cost sharing provisions set forth in the Project Study Plan. Study cost sharing for projects in PED shall be in accordance with the specific PED cost sharing requirements for that project as authorized.

(ii) Allocation of Study Costs. The costs of Management Plan studies will be allocated between the existing project and the feasibility study for the project modification. Costs will be allocated by first identifying all costs that would be associated with planning for dredged material management for the existing authorized Federal project at existing depths and widths. These costs will be allocated to maintenance of the existing project and be funded from the Operation and Maintenance (O&M), General, appropriation at 100% Federal cost. Increments of dredged material management study costs above those required for planning for continued maintenance of the existing project, and which are associated with disposal of dredged material from construction of the project modification or increments of new maintenance cost attributable to the project modification, shall be allocated as feasibility study costs. The definition of the required dredged material management studies and the allocation of the costs of these studies between the existing project and the feasibility study must be a carefully coordinated effort involving Planning and Operations elements and the non-Federal sponsor. While the costs for dredged material management are allocated between O&M and the feasibility study, the dredged material management studies will be conducted as a unified study within the context of the feasibility study.

g. Implementation.

(1) Operation and Maintenance.

(a) Existing Projects. Costs for implementing Management Plans for existing projects are O&M costs and shall be shared in accordance with navigation O&M cost sharing provisions

applicable to the project as authorized; except that dredged material disposal facility costs shall be shared in accordance with Section 201 of the Water Resources Development Act of 1996 (P.L. 104-303). The cost for any component of a Management Plan attributable solely to meeting state water quality standards which are more restrictive than those upon which the Base Plan is based, shall be non-Federal cost.

(b) Proposed Projects. Costs for implementing management plans for proposed projects are O&M costs and shall be shared in accordance with navigation O&M cost sharing provisions of the Water Resources Development Act of 1986.The cost for any component of a Management Plan attributable solely to meeting state water quality standards which are more restrictive than those upon which the Base Plan is based, shall be non-Federal cost.

(2) Beneficial Uses. Costs for beneficial uses consistent with, and part of, the Base Plan are O&M costs and shall be shared in the same manner as other navigation O&M costs. Where beneficial uses involve an incremental cost over the Base Plan, these incremental costs are either a non-Federal responsibility or are a shared Federal and non-Federal responsibility depending on the type of beneficial use, as follows:

(a) Environmental Improvement and Ecosystem Restoration. The incremental costs above the Base Plan for the use of dredged material to improve, restore and protect environmental resources, pursuant to Section 1135 of the Water Resources Development Act of 1986 (WRDA 86), as amended, and/or Section 204 of the Water Resources Development Act of 1992 (WRDA 92), must be shared in accordance with procedures set forth in Chapter 3 of this ER.

(b) Placement of Materials on Beaches. Under the authority of Section 145 of the Water Resources Development Act of 1976, as amended by Section 933 of WRDA 86, the additional cost, beyond the cost of the Base Plan, for the placement of materials on beaches must be shared 50 percent Federal and 50 percent non-Federal. The non-Federal sponsor must provide (without cost sharing) any necessary additional lands, easements, rights-of-way, and relocations.

h. Procedures.

(1) Existing Projects.

(a) Phased Plan Development Process. A phased process will be used to determine the need for, and to develop, Management Plans on a priority basis; to manage existing projects in the interim while Management Plans are being developed; and, to review, approve and implement the Management Plans. Figure 1 illustrates the phased plan development process.

(b) Preliminary Assessment. Preliminary assessments shall be undertaken for all navigation projects. Priority shall be given to projects for which maintenance is expected to be required within the next ten years. Preliminary assessments shall include the following components:

(i) An economic assessment to determine whether continuing O&M of the overall project and separable increments appears to be warranted;

(ii) A preliminary assessment of potential impediments to continuing maintenance;

(iii) An evaluation of the consistency of existing environmental compliance documents with ongoing O&M activities; and,

(iv) An assessment of need for Management Plan studies;

(v) Summary of Findings and Recommendations. Preliminary assessments will produce a summary of Findings and Recommendations, prepared in accordance with the format and guidance presented in Appendix A, and signed by the District Commander and, if applicable, a request for funds to initiate Management Plan studies in accordance with instructions in annual guidance for preparation of the program and budget request.

(c) Management Plan Studies.

(i) General Requirements. The purpose of Management Plan studies (studies) is to ensure timely and economical completion of quality reports that recommend implementable solutions to identified management problems, in the form of Management Plans. The Management Plan shall include sufficient detail to ensure unimpeded maintenance, with respect to dredging, for a 20-year time horizon. The study shall be conducted in two phases: initial and final. The initial phase shall be completed within 12 months of receipt of funds by the district, and shall produce a Scope of Work for the final phase of the study.

(ii) Scoping. Management Plan studies are intended to cost effectively and expeditiously support project maintenance. The scoping of the final phase of the study is the most important activity in the initial phase. The scope of the final phase is dictated by the study objective of formulating a plan for the continued O&M of the Federal project.

(a) The most important scoping factor, and therefore the focus of the initial phase, is the degree of engineering, environmental and economic risk and uncertainty associated with the project.

(b) Related activities, such as surveys of bottom sediments outside the limits of the Federal project, identification and elimination of sources of contamination, and control of non-point sources of pollution, shall be included only if these activities are funded by local, state or other Federal agencies.

(c) In some cases, the need for a project modification requiring Congressional authorization (for example the need to examine a large scale beneficial use project exceeding the limits of the Section 1135 program, or an enlarged project to meet increased shipping demands) may be identified. Studies to support recommendations for authorization of such modifications are outside the scope of Management Plan studies. In these cases a new feasibility study (General Investigations funded new start Reconnaissance) under authority of Section 216 of the Water Resources Development Act of 1970 should be sought through the budget process, and O&M study funding terminated unless there is an immediate need for additional planning for continued maintenance of the existing project pending the project modification.

(iii) Scope of Work. A Scope of Work (SOW) shall be prepared during the initial phase to ensure that the work required for the final phase has been carefully developed and considered.

(a) The SOW shall be the basis for estimating the total study cost and local share, if any, and shall allow not longer than 36 months to complete the final phase. The SOW will guide the allocation of study funds among tasks to assure that all interests are given adequate attention.

(b) As a minimum, the SOW should address: the work tasks, their milestones and negotiated costs, and responsibility for their accomplishment; Corps and other professional criteria to assess the adequacy of the completed work effort; the schedule of performance; the coordination mechanism betweetablen the Corps and non-Federal sponsor; and references to regulations and other guidance that will be followed in conducting the tasks.

(c) The SOW will address the level of technical and scientific detail required for the final phase. Technical studies and analysis should be scoped to the minimum level needed to establish project features and elements that will form an adequate basis for the plan implementation schedules and cost estimate. Risk and uncertainty should be sufficiently identified and addressed to provide the basis for appropriate contingencies.

(d)The SOW should include the work items typically necessary to support the review process from the signing of the report through approval. These items could include answering comments, attending Washington Level meetings (including the non-Federal sponsor), and minor report revisions as a result of review by higher authority. Any significant increase in study scope shall require HQUSACE approval in accordance with guidance provided as conditions of approval of the Scope of Work.

(iv) Management Plan Reports. Management Plan Reports (reports) should be complete decision documents that present the results of both study phases. The reports will:

(a) Provide a complete presentation of study results and findings, including those developed in the initial phase so that readers can reach independent conclusions regarding the reasonableness of recommendations;

(b) Indicate how compliance with applicable statutes, executive orders and policies is achieved; and

(c) Provide a sound and documented basis for decision makers at all levels to judge the recommended Management Plan.

The reports shall, at a minimum, address the subject matter outlined in Table 1, and shall identify all necessary agreements (Federal, sponsor, real estate, etc.) and procedural requirements (appropriate NEPA documentation, long-term permits, certifications, etc.) necessary to cover, at a minimum, the next twenty years of project maintenance. The reports shall include executed copies of all such agreements or schedules for obtaining them. District Commanders shall sign and submit Management Plan Reports to the Division Commander for appropriate action.

(v) Issue Resolution Conferences. Issue Resolution Conferences (IRC's) with HQUSACE and laboratory participation shall be held for all Management Plan studies whenever significant problems or issues require higher level guidance or concurrence during the course of

TABLE 1

Management Plan Report
Required Subject Matter Outline

Project Description(s) *[include project map(s)]*

Scope of Study *[indicate whether single project or group of projects; relationship to permittee dredging, etc.]*

Authorization and Development History *[include all project authorizations, Section 221 agreements, Project Cooperation Agreements (PCAs), other agreements entered into, easements obtained, fee acquisition, construction dates, etc.]*

Description of existing conditions

Projections of future conditions in the absence of a Management Plan

Concise statement of specific problems and opportunities

Alternative plans:

- Alternative disposal measures to address identified problems and opportunities
- Beneficial uses alternatives
- Reasons for selecting and combining measures to form alternative plans

Evaluation of Alternative Plans

Trade-off analysis

Selection of final plan *[discuss rationale for selection, sensitivity analysis, and risks and uncertainties]*

Description of selected Management Plan

- Plan components
- Implementation requirements and schedules
- Consistency with the Base Plan

NEPA documentation, as required

Results of coordination with local, state and Federal agencies

Recommendations

the study. Issue Resolution Conferences may be called by Division Commanders at their discretion. Upon review of the SOW, HQUSACE may call for an IRC to resolve pertinent issues. HQUSACE participation shall include at a minimum, senior staff of both CECW-0 and CECW-P. IRCs shall identify required follow-up actions and assign responsibilities for their execution. These actions and assigned responsibilities shall be documented explicitly.

(vi) Review and Approval. Division Commanders shall ensure full technical review of Management Plan reports, and may approve Management Plans except in those cases where one or more of the following conditions apply:

(a) Implementation of the Management Plan will require a non-recurring item of work or aggregate item of related work which qualifies as major maintenance as defined in the annual guidance for preparation of the program and budget request.

(b) Implementation of the Management Plan requires an adjustment to the District's funding targets (a Corps-wide Priority Incremental Request, CPIR) as defined in the annual guidance for preparation of the program and budget request.

(c) Implementation requires additional congressional authority.

Where one or more of the above conditions apply, the Division commander will transmit the final report and associated NEPA documentation by concurring endorsement to HQUSACE, CECW-01 for review and approval. Upon approval of report, the final NEPA documentation, if required, shall be filed by the Major Subordinate Commander who also shall prepare the draft Record of Decision following the completion of the final NEPA review.

(vii) Implementation.

(a) Project Cooperation Agreement and Financing Plan.

(1) For Management Plans that involve new capital investments (such as a new confined disposal facility), relocations, or acquisition of interests in real estate, and require the execution of a Project Cooperation Agreement (PCA), a draft PCA and financing plan shall be developed in connection with preparation of the Management Plan report and submitted therewith in accordance with procedures outlined in reference -------

(2) The full implication of PCA requirements should be discussed with the local sponsor. The first draft PCA is prepared by the District Commander in coordination with the local sponsor. However, no commitments relating to a construction schedule or specific provisions of the draft PCA can be made to the local sponsor on any aspect of the project until the Management Plan report and the draft PCA have been approved.

(3) Once the Management Plan has been approved, the District Commander shall begin final negotiations with the local sponsor and submit the PCA package for review by HQUSACE, attention CECW-A, and approval by the ASA(CW).

(b) Monitoring and Periodic Review. Division Commanders shall ensure monitoring and review of approved Management Plan implementation.

(c) Curtailment and Disposition. Curtailment refers to the indefinite discontinuance of maintenance of a project or a substantial portion thereof (e.g., segment or length, depth, width increment of channel or turning basin). Curtailment requires the development of a plan for disposition of the project. Disposition requirements and procedures generally are project specific; and guidance thereon should be obtained from HQUSACE. Where continued O&M of a project, or substantial portion thereof, is determined by the District Commander to no longer be warranted, the District Commander shall submit, subject to concurring endorsement by the Division Commander, a report recommending disposition of the project, to HQUSACE (attn: CECW-P).

(viii) Budgeting and funding.

(a) General Requirements. Study activities required to develop Preliminary Assessments for all eligible projects shall be funded from available project O&M funds in accordance with priorities established annually by HQUSACE. Requests for funding to accomplish Management Plan studies to cost no more than $150,000 to complete shall be included in project O&M funding requests, provided that a Summary of Findings and Recommendations has been completed in accordance with the requirements of paragraph 4-9h.(1)(b)(v), above. Requests for funding to initiate Management Plan studies to cost more than $150,000 will be considered on a national priority basis, commensurate with the urgency and significance of impediments to continued maintenance, upon HQUSACE review of submission documents, in accordance with annual budget guidance, as may be supplemented by guidance to be provided periodically by HQUSACE.

(b) Limitations. Preliminary Assessments shall be limited to an expenditure of $20,000 per project, or multiples thereof for assessments involving more than one deep draft project. If more than $20,000 (or multiple thereof) is required, written approval must be requested from

HQUSACE (attention CECW-O). The request must include sufficient information to justify the additional expenditure.

(ix) Ongoing Studies. Ongoing O&M studies for planning, managing or regulating dredging and dredged material disposal activities shall be phased into conformity with the procedures and guidance of this ER. This includes any O&M studies of disposal options including studies of alternative open water disposal sites or studies of sites for new confined disposal facilities. The following procedures shall be used to bring the existing studies into conformity with the new procedures.

(a) Review of Continuing Economic Justification. Continuation of ongoing dredged material management studies is conditioned on a confirmation that continued maintenance is warranted. Therefore, for each ongoing study, a review of indicators of continued economic justification will be conducted.

(b) Scope of Work. For each ongoing study, the district shall prepare a review of studies accomplished to date and a SOW for studies yet to be accomplished. This SOW, along with the results of the review of indicators of continued economic justification, will be included in the Preliminary Assessment or the Management Plan Report, as appropriate.

(c) Management Plan Report. The results of ongoing studies, when completed, will be presented in a management Plan report conforming with the guidance for preparation, review and approval of such reports as presented in this EC.

(2) Proposed Projects. Feasibility reports recommending Congressional authorization of new navigation projects or modifications of existing projects shall include a plan for management of dredged material associated with the construction and maintenance of the new project or project modification, consistent with the requirements for Management Plans for existing projects. This plan shall satisfy all identified dredged material management requirements associated with the project, to include construction dredging, projected maintenance dredging for the established project economic life, and other dredged material disposal requirements (for example dredging of berthing areas) needed to realize project benefits.

SECTION III - FLOOD DAMAGE REDUCTION

4-10. Federal Interest. The Flood Control Act of 1936 established the policy that flood control on navigable waters or their tributaries is in the interest of the general public welfare, and is therefore a proper activity of the Federal Government. It provided that the Federal Government, cooperating with state and local entities, may improve streams or participate in improvements "for flood control purposes if the benefits to whomsoever they may accrue are in excess of the estimated costs, and if the lives and social security of people are otherwise adversely affected." The 1936 Act, as amended, and more recently the Water Resources Development Act of 1986 and other acts, specify the details of Federal participation.

4-11. Types of Improvements.

a. Structural Measures. These include dams with reservoirs, dry dams, channelization measures, levees, walls, diversion channels, ice-control structures, and bridge modifications.

b. Nonstructural Measures. Section 73 of the 1974 Water Resources Development Act requires consideration of nonstructural alternatives in flood damage reduction studies. They can be considered independently or in combination with structural measures. Nonstructural measures reduce flood damages without significantly altering the nature or extent of flooding. They do this by changing the use made of the flood plains, or by accommodating existing uses to the flood hazard. Examples are flood proofing, relocation of structures, flood warning/preparedness systems, and regulation of flood plain uses.

(1) Permanent Relocation/Evacuation Plans. These plans provide for permanent evacuation and relocation/demolition of flood plain structures. There are no damages avoided claimable as benefits for the properties which are relocated or evacuated. Benefits accrue in four ways: a) the value of new use of the vacated land; b) reduction in damage to public property, such as roads and utilities; c) reduction in emergency costs; and d) reduction in the administrative costs of the National Flood Insurance Program and disaster relief. Benefits from future use of the vacated flood plain (usually recreation) will generally be the dominant NED benefit. Nonmonetary benefits accruing from ecosystem restoration may also be considered. For evacuation plans that are clearly formulated for flood damage reduction there is no limitation on the amount of recreation benefits, as may exist for structural projects. Thus for these plans the recreation benefits may exceed 50 percent of the benefits needed for justification. Separable costs for improvements necessary to achieve ecosysten and or recreation benefits are cost shared in accordance with specific cost-sharing provisions for those purposes.

(2) Floodproofing Measures. These are modifications of structures to minimize flood damages by such methods as elevating buildings, sealing walls, closing off openings, protecting

plumbing and utilities and installing pumps and valves. Corps participation in floodproofing plans is permitted as long as they address two or more structures.

(3) Flood Warning Systems.

(a) The typical flood warning system consists of methods for determining the flood threat, methods for disseminating the flood warning, and a preparedness plan detailing the response to that warning. The Corps involvement in development of methods for determining the flood threat and disseminating the warning can include selection, siting, installation, and calibration of gages and other equipment to collect, evaluate and disseminate pertinent data. In addition, the Corps can provide assistance and guidance to ensure that the preparedness plan is adequate and will provide the necessary response to minimize the possibility of loss of life, and to reduce damages. This includes coordinating with local officials, providing technical advice and planning guidance, and developing adequate mapping to identify flood threatened areas, evacuation routes, temporary shelters, etc.

(b) A flood warning system can be recommended as a stand-alone project or as a component of a more complex flood damage reduction plan. For example flood warning could be combined with levee closing devices or with a channel modification.In addition, a flood warning system can be proposed as an interim measure until other structural or non-structural measures can be implemented

(4) Regulation of Flood Plain Uses. Adoption and enforcement of regulations for flood plain management are entirely a local responsibility. However, the Corps can provide technical assistance and planning guidance in conjunction with a flood control project. Also, flood plain management planning assistance is continuously available through the Corps Flood Plain Management Services Program.

c. Major Drainage. Drainage projects are usually undertaken in rural areas to increase agricultural outputs. Some portions of drainage improvements may be considered flood control measures in accordance with Section 2 of the 1944 Flood Control Act. The typical drainage system consists of drainage ditches, dikes, and related work. An outlet structure is provided at the downstream end where the system empties into a larger channel. The Federal interest in these projects is normally limited to the outlet works. Drainage in urban areas can also qualify under the 1944 Act if the major outlet works do not substitute for works that are a local responsibility, such as municipal storm sewer improvements.

d. Groundwater. Section 403 of the WRDA of 1986 expands the definition of flood control to include flood prevention improvements for protection from groundwater induced

damages. Budget and authorization support is not available for a groundwater induced damage reduction program.

4-12. Specific Policies.

a. Without Project Condition.

(1) Assume flood plain communities belong to the National Flood Insurance Program administered by the Federal Emergency Management Agency. To participate in the program a community must preclude new development in the regulatory floodway, and require that new development outside the floodway, but within the 1% chance flood plain, be constructed with first floor elevations at or above the 1% chance flood level.

(2) Uncertainties in without project conditions must be explicitly considered. For example, for any particular damage reduction study there may be other Federal or non-Federal flood control or drainage plans, which are authorized or in various stages of planning, but which are not yet constructed. Whether or not some other project will actually be constructed can be quite uncertain; when present this uncertainty should be explicitly treated in Project Study Plans (PSP). Any such uncertainties potentially affecting study recommendations must be similarly addressed.

b. Flood Plain Management (E.O. 11988). This executive order was issued in 1977 and remains in effect. The intent is to avoid flood plain development, reduce hazards and risk associated with floods, and restore and preserve natural flood plain values (ER 1165-2-26). In the event there is no alternative to construction in the flood plain, as is the case with flood control projects, the Corps is required to minimize the adverse impacts induced by construction of the project. In considering adverse impacts, the following should be addressed:

(1) Induced new development in the flood plain or induced improvements to existing development in the flood plain that would increase potential flood damages; and,

(2) The detrimental effect of induced activities on natural flood plain values.

c. Project Performance and Risk Framework.

(1) Projects are analyzed and described in terms of their expected performance, not in terms of levels of protection. Contingencies are acknowledged and residual risk is not routinely reduced by overbuilding or by inclusions of freeboard. A levee, for instance, is described as having a probability of overtopping of x percent in any given year, without implication for level of protection. If there are particular floods of reference or interest, the levee is described as having a

probability y of containing the z percent flood, and so on. For example, a levee of a given height is described as having a (say) two percent chance of being overtopped in any year. If the one percent flood flow is of interest, the levee is said to have a (say) twenty-five percent chance of containing the one percent flow event, should it occur.

(2) There is no minimum level of performance or protection or size required for Corps projects. The smaller in size or the lower the level of performance however, the higher the residual risk. Residual risk must therefore be carefully analyzed and communicated. Departures from the NED plan may be considered options to manage this risk; in addition, explicit risk management alternatives may be formulated.

(3) Flood damage reduction studies are conducted using a risk-based analytical framework. Models, data, and measurement and many physical, social, economic and environmental conditions are subject to variation and uncertainty. This has been long known, if in the past incompletely acknowledged. Management by routine overbuilding and freeboard are not affordable. The risk framework captures and quantifies the extent of the risk and uncertainty, and enables quantified tradeoffs between risk and cost. Decision making considers explicitly what is gained at what cost.

d. Existing Levees/Dams. If there is any question about the reliability of an existing levee, reliability should be specifically included in the risk analysis (see ER 1105-2-101). The Corps is moving toward a risk-reliability framework for evaluation of dam reliability; methods development is just beginning. Downstream consequences are analyzed in a risk framework however.

e. Residual Damages. Levees interrupt interior drainage, and levee benefit analysis should reflect any residual damages. Interior damages can be mitigated by ponding areas or pumping. The amount and kind of recommended mitigation should be that which maximizes net benefits, unless other considerations override.

f. Induced Flooding. When induced flooding results in induced damages, mitigation should be investigated and recommended if appropriate. Mitigation is appropriate when economically justified or there are overriding reasons of safety, economic or social concerns, or a determination of a real estate taking (flowage easement, etc.) has been made. Remaining induced damages are to be accounted for in the economic analysis and the impacts should be displayed and discussed in the report.

g. Minimum Flows, Minimum Drainage Area and Urban Drainage. In urban and urbanizing areas provision of a basic drainage system to collect and convey local runoff is a non-Federal responsibility. Water damage problems may be addressed under flood control authorities downstream from the point where the flood discharge is greater than 800 cubic feet per second

for the 10 percent flood. Drainage areas of less than 1.5 square miles are assumed to lack sufficent discharge to meet the above criterion. Exceptions may be granted in areas of hydrologic disparity, that is areas producing limited discharge for the 10 percent event but in excess of 1800 cubic feet per second for the one percent event (See ER 1165-2-210).

h. Single Properties. The Corps will not participate in structural flood control for a single private property. Nor will it participate in nonstructural flood control measures, unless single property protection is part of a larger plan for structural or nonstructural measures benefiting multiple owners collectively The Corps may consider participation in structural and nonstructural flood control measures protecting a single, non-Federal, public property. Public facilities which are separable portions of larger protection plans must have their own distinct presentations in budget requests so that they compete for limited study and construction funds.

i. Recreation at Non-Lake Projects. Recreation activities must have a strong, direct relationship to the proposed flood control measures, for example trails along the channel or levee right-of-way. Constraints on development and requirements for participation are discussed in Section VI of this chapter.

j. Environmental Mitigation. There are adverse impacts associated with practically all flood control projects. If these impacts are significant, mitigation measures should be evaluated. If justified by tangible and intangible benefits, the measures can be included in the recommended plan. Specific policies and planning guidance for consideration of environmental mitigation are discussed in Chapter 7.

k. Agricultural Flood Protection. The Corps flood control programs apply to agricultural as well as urban flood damages. Usually the NED plan for agricultural areas provides only a low degree of flood prevention. The Food Security Act of 1985 (Public Law 99-198), as amended by the Federal Agriculture Improvement and Reform Act of 1996 (PL 104-127), contains so-called "Swampbuster" provisions (affecting conversion of wetlands) that may be triggered with implementation of a flood protection project. Details of the implications of this Act are contained in Chapter 6 and also Chapter 7.

l. Land Development. The following general policy principles apply to land development benefits at structural flood damage reduction projects.

(1) Projects or separable increments producing primarily land development opportunities do not reduce actual flood damages and therefore have low budget priority. Federal participation in these projects will not be recommended.

(2) The NED plan is formulated to protect existing development, but inclusion of vacant property interspersed with existing development is acceptable.The NED plan may also provide for the protection of vacant property that is not interspersed with existing development if it can be demonstrated that the vacant property would be developed without the project and benefits are based on savings in future flood proofing costs or reduction in damages to future development.

(3) If no project or separable project increment can be economically justified to protect existing development, interspersed vacant property and/or property that would be developed without the project, there no interest in expanding the area of protection to achieve land development (location) benefits even if net benefits are increased and economic justification can be achieved.

(4) A special case can be considered where the cost of protecting existing development can be substantially reduced if some vacant property not interspersed with existing development is included in the protected area. Such cases will be considered on their individual merits. Compatibility with Executive Order 11988 must be demonstrated.

m. Groundwater-Induced Damages. Prevention of groundwater induced damages is not a traditional mission; restricted budgets prevent taking on this new mission.

n. Flood Insurance Considerations. Flood damage reduction projects can greatly impact what is required of a local community for participation in the National Flood Insurance Program. In addressing these impacts, the following should be considered:

(1) During development of the Project Study Plan (PSP) in reconnaissance, and in concert with the sponsor, consideration should be given to including work items to develop flood maps and flood profiles depicting post-project conditions. The information should be in a form useful to FEMA in revising flood insurance rate maps.

(2) The appropriate FEMA Regional office should be notified of proposed flood protection works or of changes to established flood protection works.

4-13. Federal and Non-Federal Participation. As a general rule, a PCA must be executed between Federal and non-Federal participants prior to advertising and award of the contract.

a. Structural Measures. The 1986 and 1996 Water Resources Development Acts modified the basic requirements for non-Federal participation in flood control projects. The requirements for structural projects are essentially as follows:

(1) Provide a cash contribution equal to 5 percent of flood control construction costs.

(2) Provide all lands, easements, rights-of-way, relocations (except railroad bridges) and suitable borrow and dredged material disposal areas (referred to as LERRD).

(3) If the sum of the above two items is less than 35 percent of the costs assigned to flood control, non-Federal sponsors will pay the difference in cash. However, total non-Federal costs shall not exceed 50 percent of construction costs assigned to flood control. (Total contributions in excess of 30 percent may be reimbursed to the Federal government over a period not to exceed 15 years. Contributions in excess of 50 percent will be reimbursed by the Federal Government to the non-Federal sponsor).

(4) Operate and maintain the project after completion without cost to the United States in accordance with regulations prescribed by the Secretary of the Army.

(5) Hold and save the United States free from damages due to the construction or subsequent maintenance of the project except those damages due to the fault or negligence of the United States or its contractors.

(6) Prevent future encroachment or modifications which might interfere with proper functioning of the project.

(7) Participate in the National Flood Insurance Program and other applicable Federal flood plain management programs.

(8) Provide guidance and leadership to prevent unwise future development in the flood plain.

b. Nonstructural Measures.

(1) The non-Federal share is thirty-five percent of first costs; a five percent cash contribution is not required.

(2) Sponsor provides all LERRDs, credited to sponsor's share. If credited LERRDs are less than twenty-five percent, sponsor makes up the difference in cash. Payments during construction are preferred, but an option exists for payment beginning on construction completion, and extending over no more than fifteen years. Deferred payments require ASA(CW) agreement. If LERRDs are more than twenty-five percent, the excess is reimbursed by the Federal goverment.

(3) When LERRDs are more than twenty-five percent an agreement between the sponsor and the Federal government on the most efficient and practical means for acquiring the excess LERRDs is required.

(4) Sponsor will operate and maintain completed project including, for a flood warning system, development and adoption of a detailed response plan. This plan must be acceptable to the Corps.

(5) Sponsor must participate in the National Flood Insurance Program and other applicable Federal flood plain management programs.

(6) Non structural measures are always cost shared as non structural measures, even if they are mitigating for damages induced by structural measures of the same project.

(7) Other standard items included under structural measures will apply where appropriate.

c. Cost Sharing - Special Cases.

(1) Betterments. Non-Federal interests normally pay the incremental cost for all desired betterments. Examples include the cost of flood control channel covering not needed for safety (ER 1165-2-118), and the costs of departures from the NED plan not part of an exception granted by ASA(CW).

(2) Highway bridges. Alterations to highway bridges necessitated by a flood control project are considered part of LERRD and are a non-Federal responsibility. However, protection by reenforcement, underpinning or construction to ensure the structural integrity of the bridge foundations, piers, or abutments, are considered construction costs and subject to standard cost-sharing rules. But, if new piers, foundations or abutments are required for additional spans in the bridge crossing, the work will be considered a relocation and a non-Federal responsibility. Highway bridges over channel cuts in fast lands are highway relocations and part of LERRD.

(3) Railroad modifications. Railroad bridge relocations and alterations required as part of a flood control project are considered construction costs and not relocations for cost-sharing purposes. This is in accordance with the intent of Section 3 of the 1946 Flood Control Act. Any required modification to the bridge approaches can also be evaluated as a construction cost. However, for railroad lines that are not bridges, relocation or alteration is considered a non-Federal responsibility. An example is a rail line passing through a reservoir site. New railroad bridges over a channel cut in fast lands that are included in feasibility reports are to be recommended as a construction cost item.

(4) Abandoned Bridges/Buildings. Removal costs are considered construction costs unless non-Federal interests chose to dispose of them as part of LERRD.

(5) Covers for Flood Control Channels. If needed for safety the costs are considered construction costs. Otherwise the costs are non-Federal.

(6) Utility Lines Under Proposed Levees. All such relocations costs are considered LEERD, even those which might previously have been considered part of construction costs for cost sharing purposes due to concerns about structural integrity of the levee.

(7) Pedestrian Bridge Over Proposed Levee. A bridge provided because a levee interrupts pedestrian traffic is considered a relocation under LERRD.

(8) Relocation of Existing Recreation Facilities. If a proposed levee passes through an existing park and recreation facilities will be impacted, relocated facilities are a non-Federal responsibility under LERRD.

(9) Lands Needed for F&W Mitigation. There are no special rules for F&W mitigation costs. All land costs are LERRD and costs of plantings or other modifications are construction costs.

(10) Intercepted Interior Drainage. Interception and conveyance of drainage through or over a flood control work with measures such as intercepting ditches, ponding areas, pumping plants, gravity outlets, and pressurized conduits, are part of project construction, with the costs shared as construction costs. All lands associated with measures for interior drainage are part of LERRD. Any costs of increasing the size of the facilities to meet special local needs, as for betterments, are non-Federal costs.

(11) Stormwater/Sanitary Sewer Collection Systems and Interceptor Storm Sewers. Stormwater/Sanitary collection systems consisting of sewer pipes are utilities, and alterations of such systems are part of LERRD. Interceptor sewers and associated features may be more efficient than a number of separable sewer alterations, and such features are also LERRD. Efficient design may result in a single pumping plant and detention basin to accommodate blocked interior drainage and the requirements for stormwater/sanitary sewers collected via interceptors. In such cases, a fair share of the cost of the pumping plant and detention basin shall be assigned to non-Federal interests as part of the LERRD. The fair share is to be based on the costs associated with separable facilities. The costs of measures that provide for positive flood control, such as gated sewers outlets and gate well structures are project construction costs to be shared by non-Federal sponsors.

(12) Headwall Structures. Accommodation of pipes through the side slopes of channel projects may be accomplished along with project construction, but any identifiable added costs for end treatment of sewer pipes is part of LERRD.

(13) Levee Crossings. Where a levee or floodwall intersects a transportation facility, and a crossing structure is necessary, a closure structure or a ramp structure will be selected on the basis of efficiency and the appropriateness of a closure structure in view of the flood characteristics of the area. The closure structure or an appropriate section of the ramp structure along the line of protection (i.e., the volume of the ramp structure that would be a part of the flood control structure in the absence of a transportation feature) shall be classified as a construction item. Any additional work necessary to provide a ramp structure included in the selected plan shall be classified as a LERRD item.

(14) Credit for LERRD Specific guidance on crediting the value of LERRD toward the non-Federal share of project costs is contained in ER 1165-2-131.

(15) Windfall Benefits. Projects that provide land enhancement benefits of unconscionable magnitude to a few beneficiaries are subject to special cost sharing. Usually a cash contribution is required, equal to 50 percent of the cost allocated to the windfall benefits. In those cases where windfall benefits are minor and incidental to implementation of the project, no special cost sharing is required. Potential windfall benefit situations should be surfaced as early as possible in the planning process and addressed by higher authority but no later than the FRC.

(16) Other Special Cost Sharing. Section 2 of the 1920 River and Harbor Act indicates that every report submitted to Congress should discuss special or local benefits which accrue to localities with a recommendation as to what local cooperation should be required, if any, on account of such benefits. This authority may be used to recommend special cost sharing for reasons of equity. The act predates the "a-b-c" requirements of the 1936 Flood Control Act and the landmark cost sharing requirements of the WRDA 1986, but it remains relevant in that it signifies that Congress is concerned with, and directs the Corps to address, equity issues arising when identifiable localities or communities are benefiaries to a far greater degree than they are cost sharers.

(17) General Credit for Flood Control. Section 104 of the 1986 WRDA establishes guidelines for crediting local sponsors for constructing portions of an flood control project. ER 1165-2-29 outlines the procedures for crediting local constuction work. Local work must receive ASA (CW) approval prior to its construction to be eligible for credit. Work eligible for credit should be addressed in report recommendations, and recommendations must be supported by specific report documentation of compliance with the Economic and Environmental Principles and

Guidelines for Water and Related Land Resource Implementation Studies (for example, documentation of economic justification).

SECTION IV - SHORE PROTECTION

4-14. Federal Interest. Congress has authorized Federal participation in shore protection projects to prevent or reduce damages caused by wind and tidal generated waves and currents along the Nation's ocean coasts and Great Lakes shores.

4-15. Types of Improvements. The improvements are usually structural measures including such features as beachfill, groins, seawalls, revetment, breakwaters, and bulkheads. Nonstructural measures,such as property acquisition, may also be appropriate.

4-16. Specific Policies. These policies are presented in more detail in ER 1165-2-130.

a. Geographic Applicability. The shore protection authority is applicable to the shores of the Atlantic and Pacific Oceans, the Gulf of Mexico, the Great Lakes, estuaries, and bays directly connected therewith of each of the States, the Commonwealths of Puerto Rico and the Northern Mariana Islands, and the possessions of the United States. The authority extends only that distance up streams where the dominant causes of damage are storms or ocean tidal action (or Great Lakes water motion) and wind-generated waves. The program does not address damages caused by streamflows or vessels.

b. Beach Restoration and Protection and Historic Shoreline. Existing authority provides for restoration and protection of beaches. It does not provide for extending a beach beyond its historic shoreline unless the extension is desirable for engineering reasons, is environmentally acceptable, and is an economically justified means to prevent or reduce storm damage behind the historic shoreline.

c. Formulation and Establishing Corps Participation. Shore protection projects are formulated to provide hurricane and storm damage reduction. Recreation is incidental. The Corps participates only in those projects formulated exclusively for hurricane and storm damage reduction, and justified (BCR $\geq$ 1.0) based solely on damage reduction benefits, or a combination of damage reduction benefits plus (at most) a like amount of incidental recreation benefits. In other words, recreation benefits useable to establish Corps participation may not be more than fifty percent of the total benefits required for justification, which in turn means they may not exceed an amount equal to fifty percent of costs. If the criterion for participation is met, then all recreation benefits are included in the BCR. Costs incurred for other than the damage reduction purpose, i.e. to satisfy recreation demand, are a 100% non-federal resoponsibility.

d. Public Use and its Relation to Federal Participation. Federal involvement in shore protection developed historically in a beach context, generally with efforts to stabilize, create or restore beaches. It was intended that beaches receiving public aid should not provide exclusively private benefits, and therefore, whenever a hurricane and storm damage reduction project involves beach improvements, public ownership and use of the beach is required. (See paragraph 4-16 and table 4-4 below.) Items related to public use are discussed below.

(1) User Fees. Reasonable beach recreation use fees used to offset the local share of project costs are allowable.

(2) Parking. Lack of sufficient parking facilities for the general public (including nonresident users) located reasonably near and accessible to the project beaches may constitute a restriction on public access and use, thereby precluding eligibility for Corps participation. Generally, parking on free or reasonable terms should be available within a reasonable walking distance of the beach. The amount of parking should be consistent with the attendance used in benefit evaluation. In some instances non-Federal plans may encourage or direct substitution of public transportation access for private automobile access. Reports considering public transportation must indicate how the public transportation system would be adequate for the needs of projected beach users.

(3) Access. Provision of reasonable public access rights of way, consistent with attendance used in benefit evaluation and in accordance with local recreational use objectives, is a condition of Corps participation.

(4) Beach Use by Private Organizations. Federal aid to private shores owned by beach clubs and hotels which limit beach use to members or guests is contrary to the intent of Public Law 84-826.

(5) Public Shores with Limitations. Publicly owned beaches which limit use to residents of the community or a group of communities are not considered to be open to the general public and are treated as private beaches.

e. Shore Lines Owned by Federal Agencies. (1) Work to provide shore protection to lands under the jurisdiction of another Federal agency is accomplished only on a reimbursable basis, upon request from the agency. In the event protection has not been requested and such lands are within the study area, Civil Works funds may be used if including them in a project is more cost effective than excluding them.

(2) Protection of (non Civil Works) Department of the Army lands is accomplished with military funds, not civil works funds. If the lands are a minor part within the study area, Civil

Works funds may be used if including them in a project is more cost effective than excluding them.

f. Periodic Nourishment. Public Law 84-826 provides that Federal participation in periodic beach nourishment may be appropriate when it comprises a more suitable and economical remedial measure for shore protection than retaining structures such as groins. Under such conditions periodic nourishment can be considered construction for cost sharing purposes. Retaining structures may be recommended, but then any required periodic nourishment is not considered construction and is not cost shared by the Federal government. Projects with structures included to maintain a shore alignment, but not to materially prevent littoral drift (which may nourish downdrift beaches), such as low-profile groins and offshore breakwaters, are eligible for periodic nourishment.

(1) New Projects. Federal participation in periodic nourishment may be recommended to continue for the shortest of: (a) project economic life; (b) physical life of cooperating structural features; (c) fifty years.

(2) Existing Projects.

(a) General. When the authorized period of Federal participation in periodic nourishment at existing projects expires, it may be extended without further Congressional action for a period not to exceed 50 years after the date of initial construction. (Section 934 of Public Law 99-662). Reevaluation is necessary using current evaluation guidelines and policies. Prior to the expiration of the existing periodic nourishment period the sponsor must request the extension and express a willingness to cost share in accordance with Public Law 99-662. This Section 934 authority does not apply to projects using sand bypassing plants.

(b) Section 934 Studies.

(i) The basic purpose of a Section 934 study is to determine if continued Federal participation in the authorized project is economically justified given current conditions. Justification is determined using current evaluation guidelines and policies. The cost of Section 934 studies will initially be financed by the Federal government using construction general funds. If extension of periodic nourishment is feasible, the cost of the study will be shared in accordance with PL 99-662 cost sharing for hurricane and storm damage reduction projects. The non-Federal sponsor will reimburse its share of study costs to the Federal government when the first re-nourishment occurs.

(ii) Only an extension of periodic nourishment can be implemented under Section 934. Nevertheless, other alternatives should be evaluated as part of the Section 934 study. This

alternatives analysis should be similar in scope to an initial appraisal under Section 216 of the 1970 FCA.

(iii) If the analysis indicates that the NED plan formulated for hurricane and storm damage reduction differs from the authorized plan, additional studies should be considered. If additional studies are needed, the Section 934 study should place an appropriate time limit on the extension of Federal participation.

(iv) The basic purpose of a Section 934 study is to determine if continued Federal participation in the authorized project is justified given current conditions. Thus, the without project beach profile should reflect the conditions that existed just prior to initial construction. The following is required: estimate current benefits (new surveys or updating of recently estimated benefits but no indexing of benefits) of the existing project to determine justification and consistency with current policy; develop alternatives (size and timing) for nourishment; and recommend the most cost effective nourishment scheme for the authorized project.

(v) Environmental documentation requirements are determined by the likely impact that Federal action would have on the environment. The extent and nature of environmental studies therefore depends on what is expected to occur without Federal participation. If nourishment would occur anyway, as is likely for well justified projects, incremental effects due to Federal participation would appear less consequential. If nourishment would not occur there may be more substantial environmental differences in the without Federal participation and with Federal participation conditions. This would in turn require more substantial analyses. In either case the environmental documentation must be coordinated with Federal and State agencies and others. This coordination provides the opportunity to identify environmental concerns. Comments from the Fish and Wildlife Service (at a level commensurate with a Planning Aid Report), Environmental Protection Agency, National Marine Fisheries Service, the state's coastal agency and the state's water quality agency should be included.

(c) Reporting. Section 934 reevaluation reports with the division commander's recommendation will be forwarded to HQUSACE (CECW-P) for preparation of a recommendation to the Assistant Secretary of the Army for Civil Works (ASA(CW)). If ASA (CW) concurs in continued participation, an amended draft project cooperation agreement (PCA) should be developed. Extension or modification of any Section 221 agreement will require approval by the Secretary of the Army and the signature level will be determined at the time of approval.

g. Mitigation of Shore Damage Due to Federal Navigation Projects. Shore protection measures undertaken using the authority of Section 111, R&H Act of 1968 shall generally follow

the policies of this Section and in particular the guidance provided in Section II, par. 4-5b(4)(b) and Chapter 3, Section III.

h. Placement of Dredged Materials on Beaches. See paragraph 4-8h.

i. Outer Continental Shelf Mineral Resources. If mineral resources from the outer continental shelf are proposed for use in civil works projects, the Corps and Minerals Management Service (MMS) must enter into a memorandum of agreement. The sponsor must also negotiate a noncompetitive lease with the MMS which can require the sponsor to pay a fee for the use of outer contental shelf resources. These issues should be addressed in the project report, including any fee that may contribute to total project cost. The MOA and lease must be executed prior to PCA approval and execution. This is addressed in more detail in ER 1165-2-131.

4-17. Federal and Non-Federal Participation.

a. General Requirements.

(1) The Federal approach to participation in shore protection is similar to that for participation in riverine flood damage reduction. Highest priority is for reducing damages to existing development. Reducing flooding on or erosion to undeveloped lands is not high priority, and Federal participation in protection of private undeveloped shores is prohibited by law.

(2) In the past, particularly prior to Public Law 99-662, beach fill or beach restoration was frequently considered an erosion control measure, and erosion control was thought of, perhaps rather inexactly, as a project output or project purpose. As a result of enactment of the law, however, erosion control has no separate status as a project purpose or as a project output. Thus, erosion control measures (beaches) are purely means to the ends of hurricane and storm damage reduction or recreation, just as breakwaters or revetments are.

(3) Beaches can be a factor complicating analysis and decision making, however, for in addition to reducing damages they also provide for recreation, and are in themselves highly desired amenities. Because of these characteristics, when hurricane and storm damage reduction plans inlcude beach fill or restoration, Federal cost participation depends on shore ownership, use, and types and incidence of benefits. This is discussed below and summarized in Table 4-4.

(4) Construction costs are assigned, as appropriate, to the purposes of hurricane and storm damage reduction or recreation, and shared in the percentages designated in Section 103 of Public Law 99-662, with any adjustments required to reflect conditions of ownership as discussed below and summarized in Table 4-4.

b. Project Purposes.

(1) Hurricane and Storm Damage Reduction.
The Federal share is 65 percent of the costs assigned to hurricane and storm damage reduction. The non-Federal share is 35 percent. Participation in the National Flood Insurance Program and other applicable Federal floodplain management programs is required. Non-Federal interests must provide LERRD's; fair market value is credited to the non-Federal share. When the value of LERRD is less than 35 percent the difference must be provided in cash during construction. When the value is more than 35 percent the excess will be refunded. Note, however, that land needed for placement of project features, but that would be lost without a project, is not creditable.

Table 4-4
Shore Ownership and Levels of Federal Participation

Shore Ownership (4) and Project Purposes or Benefits	Maximum Level of Federal Participation Construction (2)	Operation Main,Repair,Replace Rehabilitation (OMRR&R)
I. Federally owned (1)		
HSDR on Developed Lands	100%	100%
HSDR to Undeveloped Lands	100%	100%
Recreation (Separable Costs) (7)	100%	100%
II. Publicly and privately owned (protection results in public benefits) (3)		
HSDR on Developed Lands	65% (8)	0%
HSDR to Undeveloped Lands		
Public lands (5) (6)	50% (8)	0%
Private lands	0%	0%
Recreation (Separable Costs) (7)	50% (8)	0%
III. Privately owned, use limited to private interests		
HSDR on Developed Lands (9)	65% (8)	0%
HSDR to Undeveloped Lands	0%	0%
Recreation (Separable Costs) (7)	0%	0%

(1) See paragraph 4-15e on protecting other Federal agency shores.
(2) Where appropriate, periodic nourishment is considered "construction."
(3) Privately owned shores under public control, as through a sufficiently long-term lease assuring realization of public benefits throughout the economic life of the project. See paragraph 4-15d concerning incidental protection of privately owned shores.
(4) The status of Indian shores depends upon the particular treaty provisions pertaining to the lands in question and will need to be examined in each instance. Specific cases should be referred to CECW-P for guidance.
(5) Non-Federal public shores dedicated to recreation or fish and wildlife purpose.
(6) Adjusted by the ratio of public to total shore protection benefits along the protected shore.
(7) Department of Army Policy precludes civil works funding of separable recreation measures at shore protection projects.
(8) The fair market value of LERRD is included in these cost sharing percentages, unless the land has no value.
(9) This is the parallel case to riverine flood damage reduction on developed private lands. Note that beach fill or restoration would not be an allowable measure due to the absence of public benefits.

(2) Recreation. Federal participation in separable recreation measures is not permitted by current budget policies. Recreation related or access facilities such as bathhouses, roads, ramps, toilets, parking areas and so on are a non-Federal responsibility. Costs for the facilities are not included as project costs unless they are required for recreation benefits claimed by the project, and the costs are not being "offset" by user fees. See Chapter 6 for discussion on economic evaluation.

c. Shore Ownership.

(1) Private Shores. All costs for hurricane and storm damage protection on privately owned shores (where use of such shore is limited to private interests) are non-Federal; except that benefits to private shores beyond project limits, if trivial in amount, are considered incidental for cost-sharing purposes.

(2) Losses of Undeveloped Private Lands. All costs for hurricane and storm damage reduction measures of any kind assigned to the prevention of losses of undeveloped private lands are non-Federal.

(3) Federal Shores. All costs assigned to the protection of Federally owned shores are Federal.

(4) Non-Federal Public Shores (Park and Conservation Areas). Park and conservation areas produce recreation outputs, and cost sharing established in law is a maximum 50 percent Federal share. Policy precludes participation in projects not principally justified by hurricane and storm damage reduction however.

4-18. Recommendations in Feasibility Reports.

a. Cost Sharing. In a shore protection feasibility report which includes measures for beach creation, restoration or preservation or for beach fill, recommendations on the percentage of construction costs to be borne by local interests or the Federal Government must be qualified as tentative since the final apportionment will be based on conditions of ownership and project purpose at the time of construction or subsequent nourishment.

b. Authorization Language. Authorization for shore protection projects that call for periodic beach fill will refer to an initial construction cost and an average annual cost for periodic nourishment as a part of construction. The recommendation wording should be as follows:

"The project for shoreline protection, (project name), as described in the Report (report to be cited for authorization), at an initial total cost of ($100,000), with an estimated Federal

cost of ($75,000) and an estimated non-Federal cost of ($25,000), and an average annual cost of ($600) for periodic beach nourishment over the (50) year life of the project, with an estimated annual Federal cost of ($450) and an estimated annual non-Federal cost of ($150).

Projects thus authorized would be subject to two cost limits in accordance with Section 902 of P. L. 99-662, as described in Appendix P.

SECTION V - HYDROELECTRIC POWER

4-19. Federal Interest. Hydroelectric power development may be included in formulation of water resources projects when certain criteria are met.

4-20. Types of Improvements.

a. New Federal Projects. Hydroelectric power development may be considered during planning for multipurpose projects involving dams and lakes and may be recommended if non-Federal development would be impractical. The Corps does not construct single purpose hydroelectric power projects.

b. Additions to Existing Projects. Existing Corps projects without hydroelectric power facilities may have them added, either through Congressionally authorized Federal development, or preferably through Federal Energy Regulatory Commission (FERC) licensed non-Federal development.

c. Pumped Storage. Federal involvement in pumped storage may be considered under certain conditions. See paragraph 4-22f.

4-21. Specific Policies.

a. Non-Federal Development Encouraged. Corps policy is to encourage non-Federal developement where feasible, and thus development should ordinarily proceed under FERC procedures. Pursue Federal action only when non-Federal development is impractical.

b. Practicability. A hydropower project is impractical for non-Federal development if there are compelling physical, operational, legal, competing use, institutional, environmental or economic reasons preventing development or operation, or if non-Federal development would be significantly less productive than Federal development (i.e., produce significantly fewer net NED benefits considering all project outputs).

c. Economic Justification Requirements. Corps development of single purpose hydropower is precluded. In addition, before hydropower can be included in a multiple purpose project, the project must be economically justified based on other outputs (flood damage reduction or navigation). If includable, however, hydropower scale is not limited by policy.

4-22. Conditions of Non-Federal Payment or Repayment.

a. The cost of Federal hydropower development is a non-Federal responsibility. The Corps of Engineers determines the development costs, including cost allocations, if any. The Separable Cost-Remaining Benefit method (SCRB) is the preferred cost allocation procedure (Corps, Interior, FERC interagency agreement).

b. Payment via reimbursement is permissible in law, but Corps policy is to seek payment concurrent with construction. Under non-Federal sponsor financing, all or some of the vendible power outputs may be ceded to the sponsor, or, the law permitting, the sponsor may receive revenue from the Federal power marketing agency selling the power. Traditional reimbursement by Federal power marketing agencies is unlikely because of budget restraints.

c. Although the Corps constructs and operates power facilities, the power itself is either sold by a Federal power marketing agency or conveyed to a sponsor. Thus, plan formulation, financing and other implementation requirements should be coordinated with the power marketing agency or sponsor, if any.

4-23. Special Considerations.

a. Studies. New studies may be conducted in cases where non-Federal development is impractical. Impracticality should be substantiated in the budgetary process. No single purpose hydropower studies may be initiated for new sites unless specifically directed and funded by the Congress. Non-Federal sponsors must agree to share the costs of the feasibility study with the explicit understanding that any resultant Federal project will be financed by non-Federal funds.

b. Report Recommendations. Federal development is appropriate only if non-Federal development is impractical. An Issue Resolution Conference is the appropriate avenue to ensure complete agreement on the practicality of non-Federal development.

c. Technical Services.

(1) Upon request, districts may provide reimbursable technical services to states or state subdivisions on hydropower development at sites where hydropower is not an authorized purpose (Intergovernmental Cooperation Act of 1968; 42 USC 4201, et seq; see ER 1140-2-303). Assistance is limited to technical services; separate authority to construct or operate and maintain hydropower facilities is required.

(2) The Corps Center of Expertise for hydropower projects is located in Northwestern Division (NWD).

d. Minimum Facilities for Future Power Installations. To support future hydropower development, penstocks and some other features ("minimum facilities") may be included in initial project construction, while installation of full facilities is postponed. This authority applies even to projects where hydropower is not an authorized purpose (1938 Flood Control Act and subsequent authorizing acts). It requires approval by the Secretary of the Army, on recommendation of the Chief of Engineers and the Federal Energy Regulatory Commission (FERC). Recommendations for minimum facilities should be based on estimates of future economic and financial viability of power, and the expected willingness of non-Federal interests to finance the facilities (or repay). The authority's rationale is the greater dam modification costs, and the potentially foregone project outputs while modification takes place, compared to the cost of initial provision of minimum facilities. Procedures for report processing and approval are contained in ER 1110-2-1.

e. Transmission Facilities. Transmission lines and substations must be considered with other project effects. Transmission investment plus operation and maintenance costs may be included as project costs, or accounted for in benefit estimates (i.e., through the effect of differences in transmission requirements between hydropower and other (typically thermal) alternatives).

f. Pumped Storage Developments. Pumped storage may be investigated where non-Federal development would be impractical. Pumped storage facilities are either integral or adjoining. Integral facilities frequently consist of a conventional powerhouse with reversible units (the same turbines alternately generate power and pump water). Adjoining facilities usually consist of an upper or lower reservoir and powerhouse and intake separate from the multipurpose project dam (and conventional powerhouse, if any). Adjoining facilities may be the only practical way to add pumped storage to an existing project.

g. Hydroelectric Development at Non-Corps Sites. The Corps of Engineers has no general authority to participate in hydroelectric development at non-Corps sites.

h. Coordination Initiatives.

(1) FERC Coordination-Costs of Alternatives. Ordinarily the Corps collaborates with FERC in estimating costs of alternatives to Corps hydropower projects, and frequently has adopted FERC values as benefits. The Corps is under no requirement to use FERC values however; if a district can perform superior analysis, it should do so (see Chapter 6 - Section V of this regulation for systems analysis procedures).

(2) Marketing Agencies. The Corps does not market the power it produces; marketing is done by the Federal power marketing agencies (Southeastern Power Administration, Southwestern Power Administration, Western Area Power Administration, Bonneville Power Administration, Alaska Power Administration) through the Secretary of Energy. The rates are set by the marketing agency to: (a) recover costs (producing and transmitting) over a reasonable period of years (50 years usually); and (b) encourage widespread use at the lowest possible rates to consumers, consistent with sound business principles. The law requires that preference for sale be given to public bodies and cooperatives. Rates are determined by the marketing agency and approved by FERC (Section 5 Flood Control Act 1944, Public Law 78-534; see ER 1130-2-324). In compliance with Section 103(c)(1) of the Water Resources Development Act of 1986 (Public Law 99-662), any proposal to Congress for hydroelectric power authorization must contain statements of the appropriate power marketing agency regarding its marketing of the power to recover all costs allocated to power and any other costs assigned for power cost recovery pursuant to law.

SECTION VI - RECREATION

4-24. Federal Interest. The legislative basis for Federal participation in recreation development is found in the Flood Control Act of 1944, as amended, the Federal Water Project Recreation Act of 1965 (Public Law 89-72), and the Water Resources Development Act of 1986 (Public Law 99-662). These give broad authority to include recreation as a project purpose. Policy limits exercise of these authorities however. Recreation is a low priority output and thus the Corps will not plan for (formulate for) recreation unless a sponsor is willing to pay one hundred percent of the associated implementation costs. (The statutory cost sharing requirement is just fifty percent.) The Corps will plan for and implement projects serving other purposes (hurricane and storm damage reduction for example) and these may have incidental recreation benefits. There may be limits on the magnitude of these recreation benefits however (see other project purposes).

4-25. Types of Improvements.

a. Vendible Outputs and Services and Non-Federal Facilities. Improvements providing outputs or services generally considered vendible are non-Federal responsibilities. Marina facilities and telephone services are examples. Any improvement or service not closely and directly related to enjoyment of the natural resource itself (or created resource itself) is a non-Federal responsibility, even if it is not generally considered vendible. Examples are tennis courts and accommodations for viewing sporting or cultural events taking place on or near a lake.

b. Federal Participation, Joint Facilities and Cost Sharing. If there is no non-Federal recreation sponsor, facilities or project modifications may not be recommended unless justified by other project purposes, in which case recreation benefits are considered incidental. Minimum facilities needed to maintain public health or safety, are permissible. These are limited to road end turnarounds, guardrails, barricades, warning signs, public safety fencing and vault toilets (unless upgrades are required by Federal or state regulations). Boat ramps and trailer parking justified by project operations requirements may be provided. Costs are joint costs and allocated to project purposes.

c. Facilities Justification and Cost Sharing. When there is a recreation sponsor economically justified facilities are cost shared 50/50.

d. Check List of Facilities. Appendix J contains a list of recreational facilities which may be provided in recreation developments at Corps water resources projects with requirements for funding each as either: (1) joint facilities cost-shared jointly with other project features; (2) separable recreation features dependent upon the water resource project that may be cost-shared

at 50/50 with the recreation sponsor; and/or, (3) separable recreation facilities for which there will be no Federal cost-sharing and which must be provided at 100% local cost.

4-26. Specific Policies.

a. Lakes (man-made).

(1) Lakes, or reservoirs, are impoundments created behind dams, or behind navigation locks and dams if lands not subject to navigation servitude are needed for water storage. Recreation policies applicable to lakes are not applicable to dry dams, that is those dams not providing permanently impounded water. The Federal government may participate in basic recreation facilities on project lands or separable recreation lands if a non-Federal sponsor will participate and cost share as outlined in paragraph 4-26. The same conditions apply to separable lands acquired for future recreation development.

(2) Recreation costs may not exceed one-half of total costs.

(3) If recreation is a project purpose several scales of development must be formulated and evaluated.

(4) Reallocation of Storage. Storage reallocations for recreation which significantly affect other authorized purposes, or involve major structural or operational changes, require Congressional approval. Costs reallocated to recreation and subject to cost sharing will be set to the highest of: benefits foregone; revenues foregone; replacement costs; updated cost of storage. Cost sharing of facilities is 50/50.

b. Other Types of Projects. General policies are discussed in paragraphs (1) through (5). Specific policies and exceptions follow.

(1) Non- lake Projects.

(a) At non lake projects basic recreation facilities exploiting project created opportunities may be provided, but only on lands acquired for non recreation purposes.

(b) The Federal government will not participate in acquiring lands for recreation purposes. A special case may exist when the real estate interest required for other project purposes is insufficient for recreation development. The sponsor may obtain real estate interest sufficient for recreation and receive a credit for the incremental cost. For example, if an easement is adequate for other project purposes, but fee acquisition is necessary for recreation development, the

sponsor may receive credit for the incremental cost of fee acquisition. This real estate upgrade policy does not apply to temporary construction easements, nor to disposal or borrow areas.

(c) If there is to be recreation development, then beyond real estate interest upgrades the only other Federal participation in land acquisition is for providing access to project lands, parking, potable water, sanitation and related developments for public control and for health and safety.

(d) Unlike lake projects, at non lake projects there is no routine Federal interest in provision of minimum facilities for public health and safety. In other words, if there no non-Federally sponsored recreation development, there is no Federal participation in minimum facilities.

(e) The Federal cost of a project including recreation may not exceed the Federal cost of the project excluding recreation by more than ten percent without prior approval by the Secretary of the Army.

(2) Shore Protection Project. Except for Federal shores the Corps will not participate in the cost of beach use recreation developments. Local cooperation requirements shall include the provision and maintenance of roads, parking, sanitary facilities and any other on-shore recreation development necessary to accommodate anticipated beach users needed to realize recreational benefits claimed. Also, Army policy precludes the addition of sand to a beach solely to increase its potential for recreation.

(3) Nonstructural Flood Damage Reduction Projects. The formulation of nonstructural flood damage reduction projects is not constrained by the limitation of increased Federal cost for recreation development described above.This is because such projects are justified mainly by creating new uses for floodplains, and the most important new use is frequently recreation.

(4) Continuing Authorities. Flood control, navigation and shore protection continuing authorities are subject to the same recreation policies and conditions of participation as specifically authorized projects. Additionally, all costs in excess of the statutory limitation of Federal expenditures for these projects are entirely a local responsibility.

c. Limitation on Corps of Engineers Participation. See paragraph 4-3d.

4-27. Federal and Non-Federal Participation. Costs allocated to recreation shall be apportioned to Federal and non-Federal interests as below:

a. Recreational Developments at Lakes.

(1) Federal. The Federal Government will assume not more than one-half of the separable first costs of construction of initial and future recreation facilities, including one-half of the cost of lands acquired specifically for recreation and access. All joint construction costs allocated to recreation shall be assumed by the Federal government.

(2) Non-Federal. The non-Federal entity must assume at least one-half of the separable first costs of construction of recreation facilities, including project lands acquired specifically for recreation and access, and all cost and full responsibility for the operation, maintenance, replacement, and management of recreation lands, areas, and facilities. Costs of revenue-producing facilities to be provided by private enterprise under Federal or third party agreements are not eligible for cost sharing.

b. Recreational Developments at Other Types of Projects. Agreements to participate with a non-Federal entity in the development of basic recreational facilities will require the non-Federal entity to:

(1) Acquire in its name in fee title, and dedicate to public outdoor recreation use, lands on which cost shared recreation facilities and improvements for access, parking, potable water, sanitary facilities and related developments for health and safety are provided, with credit as specified below.

(2) Make an additional contribution sufficient to raise the non-Federal share to at least 50 percent of the total first cost of adding recreation to the project if the appraised value of the creditable lands amount to less than that percentage.

(3) Operate, maintain and replace without cost to the Federal Government, for the economic life of the project, the recreation areas and all facilities installed pursuant to the agreement.

SECTION VII - WATER SUPPLY

4-28. Federal Interest. National policy has been developed over a number of years. This policy was most recently articulated by Congress in Section 932 of Water Resources Development Act of 1986. This section further amends the 1958 Water Supply Act (Title III of Public Law 85-500) to reduce the Federal interest (in Corps of Engineers projects) in the long range management of supplies, and assigns more of the financial responsibilities to users.

4-29. Types of Improvement. Primary responsibility for water supply rests with states and local interests. However, the Federal government may participate and cooperate in developing water supplies in connection with construction, operation, maintenance, and modification of Federal navigation, flood control, or multipurpose projects. Certain conditions of non-Federal participation are required.

a. Multipurpose Project. Limits are placed on the percent of municipal and industrial (M&I) water includable in a multipurpose project. To be considered multipurpose a project must fall in one of the following categories:

(1) The project has justified, separable storage for flood control or navigation or agricultural water supply. In this case the sum of benefits for these purposes must be at least ten percent of total NED benefits. If M&I water supply exceeds 90% of total benefits the project is considered single purpose water supply and thus not elegible for Federal participation.

(2) The project has no separable storage for flood control or navigation or agricultural water supply. In this case the sum of benefits for these purposes must be at least twenty percent of total NED benefits. If M&I water supply exceeds 80% of total benefits the project is considered single purpose water supply and thus not elegible for Federal participation.

b. Single-Purpose Project. Single purpose M&I water supply projects are defined in paragraph 4-29a above. The Corps will not conduct single purpose water supply studies, except for analysis of existing data under Section 22 of the Water Resources Development Act of 1974. This constraint does not apply to single purpose water supply modifications to previously constructed projects having flood damage reduction or navigation purposes. Also, the Corps may conduct reimburseable single purpose water supply studies for non-Federal interests under provisions of the Intergovernment Cooperation Act of 1968 (Public Law 90-577).

4-30. Specific Policies.

a. Municipal and Industrial Water Supply. Section 301 (a) of the Water Supply Act of 1958, as amended (43 U.S.C 390b), established a policy of cooperation in development of water supplies for domestic, municipal, industrial, and other purposes. Section 301(b) is the authority

for the Corps to include municipal and industrial water storage in reservoir projects. The terms "municipal and industrial," while not defined in the legislative history of the Water Supply Act, have been defined by the Corps to mean supply for uses customarily found in the operation of municipal water systems, and for uses in industrial processes. Irrigation is not ordinarily found among customers of a municipal system and, therefore, is not eligible to be included in a project under the M&I authority unless so specifically authorized by Congress. Other policies applicable to this category of water supply are as follows:

(1) Storage. Corps provided water supply service normally means reservoir space for storing water, and where necessary, facilities in the project structure for releasing or withdrawing the stored water for water supply purposes. The non-Federal sponsor must repay all costs allocated to water supply storage space.

(2) Water Conduits. Conduits for release or withdrawal of stored water may be designed as an integral part of the dam structure. Costs are identified as specific water supply costs with 100 percent payment of investment and annual costs by users. A sponsor must contract for the costs if the features are to be included in construction. For existing projects with conduits, any remaining unpaid conduit cost shall be prorated just as storage costs are prorated unless one or more entities agree to repay the entire cost.

(3) Seasonal Operations for Water Supply. Congress has not provided general authority for including storage space in Corps projects for seasonal M&I use, either as withdrawals or to improve groundwater supplies. Project specific authorizations are not precluded however. In addition, project operations may be modified to enhance ground water replenishment, to increase downstream flows, or to otherwise enhance usage of projects for M&I purposes. Modifications must be consistent with authorized project purposes and law however. Pricing policy for M&I water supply driven changes in project operations require the non-Federal sponsor be responsible for:

(a) 100 percent of new construction costs and new operations costs;

(b) A share of joint use operation maintenance and replacement cost based on use-of-facilities cost allocation;

(c) Benefits foregone;

(d) Compensation to others for losses in their operations (may be same as (c) above); and,

(e) Payment of an amount equal to one-half the savings to non-Federal interests (least cost alternative minus the specific cost of the modifications). In any case, the cost to the non-

Federal sponsor should not exceed the costs derived in paragraph 4-32d(2) for permanent reallocation of storage.

(4) Limits on Future Use Storage. The Water Supply Act of 1958, as amended, says not more than 30 percent of total construction costs can be allotted to water supply for future use. In addition, Corp policy is to obtain full payment of allocated capital costs from water supply sponsors prior to or during construction, or failing this to negotiate a repayment agreement, payments to begin immediately after construction completion. Thus, formulation of water supply storage without a current sponsor willing to participate is an exception requiring prior approval. Forward requests for exception to HQUSACE CECW-P.

(5) Water Rights. Potential encroachment on the water rights of lawful downstream water users by the operation of water supply storage must be carefully considered, and coordinated with responsible state and local interests. Water rights necessary for use of stored water will not be acquired by the Corps. This is a responsibility of the water users. Nor should the Corps become involved in resolving conflicts among water users concerning rights to use stored water, but will look to responsible state agencies to resolve such conflicts. Where there is more than one water user it is desirable to arrange for payment for the entire water supply storage from a single agency, if this is practical.

(6) Permanent Rights to Storage. Under the authority of Public Law 88-140, the non-Federal sponsor acquires a permanent right to the use of storage as long as the space is physically available. The sponsor must have completed or be making payments pursuant to its agreement with the government. It must also agree to continue to pay its share of annual allocated operation and maintenance costs, together with its share of costs allocated to necessary reconstruction, rehabilitation, or replacement of project features. Equitable reallocations of storage space may be necessitated by sedimentation.

(7) Water Quality. The Federal Government makes no representation and assumes no responsibility with respect to the quality or the treatment of the water.

b. Irrigation (Agricultural Water Supply). Water storage for agricultural irrigation, to meet entire needs or as a supplement to natural supplies, may be considered in plan formulation.

(1) Western States. Section 8 of the Flood Control Act of 1944 provides that Corps lakes may include irrigation as a project purpose upon recommendation of the Secretary of the Interior. Section 8 also says Interior may provide the irrigation works needed to make use of the

irrigation storage. It is Interior's responsibility to construct, operate and maintain the additional irrigation works, as well as to contract for the storage space. If allocated irrigation costs exceed the amount that can be repaid by water users, then in accordance with reclamation law the excess amount will be stated, and it will also be pointed out that special Congressional authorization is required for projects where irrigation costs exceed water users' repayment ability. Section 8 applies only to the 17 Western States users' repayment ability.

(2) Areas Outside the Western States. The Corps may include irrigation storage in reservoirs in areas outside the 17 Western States provided the non-Federal sponsor assumes thirty five (35) percent of the costs of the reservoir allocated to irrigation.

4-31. Federal and Non-Federal Participation.

a. Impacts of Section 932 of the Water Resources Development Act of 1986. This law further amends the Water Supply Act of 1958 (Public Law 85-500) as follows: Eliminates the 10-year interest free period for future water supply; modifies the interest rate formula; limits repayments to 30 years; and requires operation, maintenance, and replacement costs to be reimbursed on an annual basis. The amendments are applicable only to Corps projects.

b. Repayment Rate. The repayment rate used to calculate annual payment for storage in new projects, reallocated storage, and surplus water will be the yield rate defined in Section 932 of the Water Resources Development Act of 1986.

c. Repayment Period. The maximum repayment period for existing M&I storage, reallocated storage, and surplus water agreements will be 30 years from the date in which storage is available. For existing storage, this date will be the plant-in-service date or the date the first storage agreement is signed, whichever is later. For reallocated storage, the date will generally be the date the agreement is signed by the Assistant Secretary of the Army (Civil Works).

d. Water Withdrawal Agreements. The Corps of Engineers is not to use Section 501 of the Independent Offices Appropriations Act of 1952 (31 U.S.C 9701) to obtain reimbursement for water supply withdrawals. Existing contracts or agreements should be allowed to expire and not be extended.

e. Annual Operation and Maintenance Expense. The non-Federal sponsor is responsible for all water supply costs allocated to operation and maintenance. These costs must be paid yearly in advance, based on estimated expenditure. Appropriate adjustment will be made at the end of each year.

f. Repayment Period for Major Replacement and Major Rehabilitation Costs. Major replacement and major rehabilitation costs are to be paid either during construction or in lump sum upon completion of construction. The non-Federal sponsor should be encouraged to establish a sinking fund to cover these costs when they occur.

g. New Construction Starts. Cost sharing and financing will be based on construction new start guidance provided in the most current new construction start Engineer Circular. This applies to water supply included in projects considered for new start, projects funded for construction but which are unstarted, resumptions and separable elements of ongoing projects. Authorized but not constructed single purpose M&I projects will not be proposed for construction.

4-32. Special Considerations.

a. Interim Use of Water Supply for Irrigation. Section 931 of WRDA '86 provides that at Corps lakes the Secretary of the Army may allocate to irrigation purposes, on an interim basis, water which is allocated to M&I purposes but is not under conract. In accordance with Section 103(c)(3) of WRDA 86, the non-Federal sponsor cost share is 35 percent of the original project investment cost allocated to M&I water supply. The time period for computing annualized payments is 30 years. The non-Federal sponsor is responsible for 100 percent of the operation and maintenance expense, major replacement cost, and major rehabilitation cost allocated to the storage space contracted for.

(1) Investment Cost Computation. The investment cost for this interim use irrigation storage/water is calculated by multiplying 0.35 (35 percent) by the percentage of the interim use storage to the total M&I water supply storage (as determined by the use of Facilities cost allocation method). This factor is then multiplied by the original M&I water supply investment cost which would include accrued interest after a 10-year interest free period from the plant-in-service date. The project water supply interest rate in effect when the project went under construction is to be used for all interest computations including the repayment amortization schedule for the interim use storage agreement. In the case of projects that went under construction after 17 November 1986, the rate will be as established in Section 932, WRDA '86 and will be adjusted at 5-year intervals. The term of the agreement for this interim use shall not exceed five years. An option for incremental five year extensions is allowed with the basic agreement only if recalculations for annual O&M, major replacements and major rehabilitation costs are performed at the end of each five year increment.

(2) Annual Cost Computation. The annual O&M cost for the required interim use storage/water may be estimated if the expected annual O&M cost is relatively low and would not justify annual billing procedures. Otherwise, reimbursement of applicable actual project O&M

expenses would be required. An estimated annual major replacement and major rehabilitation cost is to be determined and included as a part of the annual repayment costs.

(3) Credit. Future sponsors for municipal and industrial use of the storage space shall not receive any credit from the interim use payments toward repayment of investment cost when such interim use is for agricultural water supply.

(4) Agreements. Agreements for such interim use of the water supply storage for irrigation shall follow the same reporting requirements as those for water supply storage agreements (see paragraph 4-33 of this section). A report shall accompany the draft agreement. The report shall document the exact use of the water to assure that it will not be used for municipal and industrial purposes, explain the manner in which the annual costs in the agreement were developed, show the impacts of the interim use of the water supply for irrigation on the currently existing uses of such storage, and include an appropriate analysis describing and assessing any adverse and/or beneficial environmental impacts that are expected to result from the interim use of storage for irrigation purposes, that were not discussed in the FEIS for the project.

b. Surplus Water.

(1) Authority. Under Section 6 of the 1944 Flood Control Act (Public Law 78-534), the Secretary of the Army is authorized to make agreements for surplus water with states, municipalities, private concerns, or individuals at such prices and on such terms as he may deem reasonable. These agreements may be for domestic, municipal, and industrial uses, but not for crop irrigation, from surplus water that may be available at any reservoir under the control of the Department of the Army.

(2) Classification.

(a) Surplus water will be classified as either:

(i) water stored in a Department of the Army reservoir that is not required because the authorized use for the water never developed or the need was reduced by changes that occurred since authorization or construction; or

(ii) water that would be more beneficially used as municipal and industrial water than for the authorized purpose and which, when withdrawn, would not significantly affect authorized purposes over some specified time period.

(b) An Army General Counsel opinion of March 13, 1986, states that Section 6 of the 1944 Flood Control Act empowers the Secretary of the Army to make reasonable reallocations between different project purposes. Thus, water stored for purposes no longer necessary can be

considered surplus. In addition, the Secretary may use his broad discretionary authority to reduce project outputs, envisioned at the time of authorization and construction, if it is believed that the municipal and industrial use of the water is a higher and more beneficial use. However, surplus water declarations citing use for higher beneficial purposes should be made with caution and only on a fixed period agreement for temporary use. When long term use is desired by the user, a permanent storage reallocation should be performed under the authority of the 1958 Water Supply Act, as amended.

(3) Requirements and Restrictions.

(a) Surplus water declarations will only be made when related withdrawals will not significantly affect authorized purposes.

(b) Surplus water agreements shall be accompanied by a brief letter report similar to reallocation reports (reference paragraph 4-32 d.(1)) and shall include how and why the storage is determined to be surplus.

(c) Surplus water agreements will normally be for small amounts of water and/or for temorary use as opposed to storage reallocations and permanent right to that storage. Normally, surplus water agreements will be limited to 5 year periods.

(d) Use of the Section 6 authority should be encouraged only where non-Federal interests do not want to buy storage because the need of the water is short term or the use is temporary pending the development of the authorized use.

(e) The views of the affedted state(s) will be obtained, as appropriate, prior to entering into any agreement under Section 6.

(f) The annual price deemed reasonable for this use of surplus water is to be determined by the same procedure used to determine the annual payment for an equivalent amount of reallocated storage plus an estimated annual cost for operation and maintenance, repair, replacement, and rehabilitation. The total annual price is to be limited to the annual costs of the least cost alternative, but never less than the benefits foregone (in the case of hydropower, revenues forgone).

(g) Declaration of surplus irrigation water in the 17 Western states will require appropriate coordination/consultation with the Department of the Interior (Bureau of Reclamation).

c. Drought Contingency Water Supply. Drought and other emergencies affecting municipal and industrial water supplies will likely generate requests for water stored in Corps reservoirs. When these situations occur, requests may require immediate action. Section 6 of the Flood Control Act of 1944 provides an opportunity to be responsive with surplus water. The preferred approach is for a state or subdivision to enter into a agreement with the Secretary of the Army and to agree to act as wholesaler for all of the water requirements of individual users. This places the local governments in a position to help their citizens and minimizes the potential for problems that could arise if the Secretary were to determine who is entitled to shares of surplus water. District commanders should take the initiative to make Section 6 assessments of the availability of storage for limited withdrawals (up to 99 acre-feet of storage may be reallocated by the district commander). This assessment can be made prior to any specific request in order to be ready to respond to urgent requests in a timely manner. The assessment should also summarize the impacts of such withdrawals and should be kept on file. Preferably, one agreement for each reservoir with the state or political subdivision can be used to distribute the water to small users. If this is not possible, individual agreements may be executed. Project managers are authorized to sign these agreements. However, if the user will be installing water lines or other facilities or equipment, an appropriate real estate instrument must be issued under ER 405-1-12. Drought contingency agreements for greater than 50 acre-feet should follow the cost and contracting format for surplus water agreements.

d. Reallocation of Storage.

(1) Approval Authority. Reallocation or addition of storage that would have a severe effect on other authorized purposes or that would involve major structural or operational changes requires Congressional approval. Providing the above criteria are not violated, 15 percent of total storage capacity allocated to all authorized project purposes or 50,000 acre feet, whichever is less, may be allocated from storage authorized for other purposes or may be added to the project to serve as storage for municipal and industrial water supply at the discretion of the Commander, USACE. For reallocations up to 499 acre-feet the Commander, USACE has delegated approval authority to the division commander. Reallocations which exceed the Commander's authority may be approved at the discretion of the Secretary of the Army if such reallocations do not require Congressional approval as described above. All reallocations or additions of storage should be to serve immediate needs. All reallocations or additions of storage must be accompanied by a report that includes:

(2) Reallocation report contents.

(a) Purpose of the report and Background, including map

(b) Pertinent project data table

(c) Water supply needs analysis

(d) Test of financial feasibility

(e) Cost of storage analysis

(f) Analysis of alternatives considered to address the water supply needs

(g) Appropriate NEPA documentation of environmental impacts

(h) Pertinent letters from affected Federal, state and local interests

(i) Documentation of public review and comment. Opportunites for public review and comment must be provided.

(j) Commander s recommendation

(2) Cost of Storage. The cost allocated to the non-Federal sponsor (i.e., the price to be charged for the capital investment for the reallocated storage) will normally be established as the highest of the benefits or revenues foregone, the replacement cost, or the updated cost of storage in the Federal project.

(a) Benefits Foregone. Benefits foregone are generally estimated using standard Corps NED economic evaluation criteria in compliance with the P&G. For small reallocations from hydropower, i.e., within the Chief of Engineers discretionary authority, benefits may be based on current estimates of long term power rates. These may be obtained from in house power value estimating procedures or otherwise in accordance with the P&G. For large reallocations, estimates should be calculated in accordance with P&G procedures for evaluation of hydropower benefits.

(b) Revenues Foregone. Revenues foregone to hydropower are the reduction in revenues accruing to the Treasury as a result of the reduction in hydropower outputs based on the existing rates charged by the power marketing agency. Revenues foregone from other project purposes are the reduction in revenues accruing to the Treasury based on any existing repayment contracts.

(c) Replacement Costs.

(1) If the reallocation is from flood control it is appropriate to utilize the replacement cost of equivalent protection. This would not be appropriate for reallocations within the Corps discretionary authority which by definition do not have severe impacts.

(2) For reallocation from hydropower the replacement cost of power should normally be considered equal to the benefits foregone and calculated in accordance with P&G procedures for evaluating hydropower benefits. In cases where the power marketing agency has existing customer contracts, the replacement cost of power may be estimated as the agency s cost of obtaining power from the lowest cost alternative source for the duration of the contracts. Once the contracts expire and for the remaider of the period of analysis the replacement cost of power should be equal to the benefits foregone. Documentation of the contracts and estimates of replacement costs of power to fulfill them should be included in the reallocation report.

(d) Updated Cost of Storage. The costs to be reallocated to the water supply storage are determined by first computing the costs at the time of construction by using the "Use of Facilities" cost allocation procedure as follows:

(Total construction cost - Specific costs) x Storage reallocated (ac-ft)

÷ Total usable storage space (ac-ft)

In this computation, usable storage does not include space set aside for sediment distribution or for hydropower head. The cost allocated to the storage on this basis is then escalated to present day price levels by use of the Corps of Engineers Civil Works Construction Cost Index System (CWCCIS). This index is maintained in EM 1110-2-1304. Because the CWCCIS does not cover all items, however, the Engineering News Record (ENR) Construction Index will be used for indexing three cost categories: relocations; buildings, grounds, and utilities; and permanent operating equipment. Land values will be updated on a case-by-case basis by a qualified Corps of Engineers real estate appraiser. The value of the land is not to include enhancement due to the presence of the existing project. Since the CWCCIS dates back only to 1967, the ENR Construction Index will be used to update the cost of older projects to the 1967 time frame. Costs are to be indexed from the midpoint of the physical construction period to the beginning of the fiscal year in which the agreement for the reallocated storage is approved. In this manner, interest during construction is not used in this updating procedure.

(3) Cost Accounts. All income and expenses (investment, operation, maintenance, and replacement) associated with the water supply function shall be separately identified in the official cost account record. When there is a loss of revenue of existing purposes, or additional operation and/or maintenance expense to existing purposes are incurred because of the new water supply addition, such charges shall be shown as a direct charge against the water supply function. This

will affect the appropriate cost reductions in the existing project purposes and all revenues from the new addition will be credited to the new purpose. If hydropower revenues are being reduced as a result of the reallocation, the power marketing agency will be credited for the amount of revenues to the Treasury foregone as a result of the reallocation (as determined in (2)(b) above) assuming uniform annual repayment. In instances where existing contracts between the power marketing agency and its customer would result in a cost to the Federal Government to acquire replacement power to fulfill the obligations of contracts, an additional credit to the power marketing agency can be made for such costs incurred during the remaining period of the contracts. Such credits should not actually be made for replacement costs until the costs are incurred and documented by the power marketing agency.

(4) Annual Costs. The non-Federal sponsor shall also be responsible for an appropriate share of the specific and joint-use operation, maintenance, replacement and major rehabilitation (OMR&R) costs. In those cases where the cost of water supply is based on hydropower replacement costs, the OMR&R increment of such cost is to be deleted from the total charge and then billed separately based on a pro rata share of the actual experienced project costs.

(5) Financial Feasibility. As a test of financial feasibility, the governing annual cost of storage derived as determined above should be compared to the annual cost of the most likely, least costly alternative that would provide an equivalent quality and quantity of water which the non-Federal interest would undertake in the absence of utilizing the Federal project. This analysis is to be included in M&I storage reallocation reports.

(6) Funding for Reallocation Studies. Feasibility studies of storage reallocation should be conducted using the framework of the Principles and Guidelines. The study will have two phases, reconnaissance and feasibility. The reconnaissance phase should be sufficiently detailed to determine if a feasibility study is warranted and if Congressional authorization is required for reallocation or addition of M&I storage. The reconnaissance phase is normally done using Operation and Maintenance, General funds. Use of Section 216 authority and regular survey authority are also options however. If O&M funds are utilized and Congressional authorization is required, cost sharing of the additional studies with the non-Federal sponsor is required in accordance with WRDA 86. The Federal share of the additional studies or the feasibility phase cost in the case of a Section 216 or regular survey authority comes from the General Investigations appropriation. If at the start of the study it appears likely the proposed reallocation will require Congressional authorization, contact HQUSACE (CECW-P) for additional guidance on requesting funds for the feasibility phase. If the reallocation is determined to be warranted, but

does not require additional studies or Congressional authorization, then Operation and Maintenance, General funds may be used to complete the reallocation at Federal expense.

e. Addition of Storage. When water supply storage is added to an existing project and storage is not reallocated, a willingness to pay concept is used to assign costs to the new water supply purpose. Under this concept the non-Federal sponsor is responsible for 100 percent of the new construction costs allocated to water supply. This is to be paid during the construction period. In addition, payments equal to 50 percent of the sponsor's savings are required. The sponsor’s savings are construed as the cost of the most likely alternative which would be constructed by the non-Federal sponsor in lieu of the proposed modification, less the sponsor s share of the cost of the modification to the Corps project. This cost is to be repaid at the water supply rate current at the start of project modification. It is to be adjusted at 5-year intervals within the remaining physical life of the project, but not to exceed 25 years from completion of project modification; or if water supply is already a project purpose, within 30 years from the time the project was first used for water supply. Total local capital contributions (original project plus modification) should not exceed the sum of the local share of the new construction costs, plus the Federal construction costs of the original project.The non-Federal sponsor shall also be responsible for an appropriate share of the specific and joint use operation, maintenance, replacement and major rehabilitation costs.

4-33. Water Supply Agreements. All revenues received from agreements with non-Federal sponsors shall be deposited into the Treasury of the United States as miscellaneous receipts.

a. Agreement Formats.

(1) Water Storage. Appendix K, PART 1 is to be used in entering into agreements under the authority of the Water Supply Act of 1958, as amended (43 U.S.C. 390b-f). Bracketed language may be changed as appropriate and material particular to either present or future use storage may be deleted if such storage is not included in the agreement. Non-Federal parties to water storage agreements must meet the requirements of Section 221 of the Flood Control Act of 1970 (42 U.S.C. 1962d-5b), as amended.

(2) Surplus and Agricultural Water Supply. The sample format set forth in Appendix K, PART 2 is to be used for agreements under the authority of Section 6 of the Flood Control Act of 1944 (33 U.S.C. 708) and Section 931, WRDA '86. A agreement for either can also be tailored to the format of Appendix K, PART 1. The primary factor in deciding which format to use is whether the non-Federal sponsor wants storage space or water. Costs are determined in the same way for both alternatives (see paragraph 4-32). Agreement terms are normally for 5 years with an

option for a 5 year extension, until the space is needed for the authorized purpose, or until the authorized purpose is deauthorized.

(3) Drought Contingency. Agreements for small amounts of water (withdrawals from 50 acre-feet of storage or less) may be accomplished via the form provided as Appendix K, PART 3. Larger amounts and long term arrangements should be the subject of a Section 6 agreement in accordance with this regulation, unless written approval by HQUSACE (CECW-P) is obtained.

(4) Disclosure of Lobbying Activities. Water supply agreements will be accompanied by a signed Certificate Regarding Lobbying and, if applicable, a completed Disclosure of Lobbying Activities (see Appendix Q). These forms must be thoroughly discussed with the sponsor prior to signature by the Contracting Officer. Completed forms will be attached to the agreement prior to its signature by the Contracting Officer, and kept on file by the district for later submittal to HQUSACE, if requested.

b. Submittal and Review.

(1) Water Storage.

(a) During initial negotiations leading to a draft agreement, significant departures from policy or complex interpretations of policy or legislation are to be submitted to HQUSACE (CECW-P) before spending time and resources negotiating a draft agreement.

(b) The first storage agreement on any project will be approved by the Assistant Secretary of the Army (CW) as will all agreements which deviate from the approved model (other than editorial changes.) Approval authority for subsequent agreements and reallocation reports which do not require Congressional approval has been delegated to the Commander, USACE, and to division and district commanders in accordance with Table 4-5. Under these delegations, two copies of all agreements, draft and final, along with appropriate reallocation reports must be submitted to HQUSACE (CECW-AR). One will be retained in HQUSACE files and the other will be provided to ASA(CW). Draft agreements and reallocation reports which require ASA(CW) review (or approval), and final agreements requiring HQUSACE or ASA(CW) approval must be accompanied by four copies.

(c) The cutoff point for incorporation of policy changes into water supply agreements will be the date of draft agreement approval by the ASA(CW). An approved agreement will be exempt from application of policy changes provided a final agreement is signed by the local sponsor within six months of the date of draft agreement approval. An exception may be granted

to the six-month limitation; however, a request for a longer time period should accompany the draft agreement and must contain a complete justification.

(2) Surplus and Agricultural Water Supply. Procedures similar to those described above for water storage shall be applied to both agricultural and surplus water agreements. District commanders have the authority, however, to approve and sign surplus water agreements for storage (or equivalent water) of less than 100 acre-feet. Agreements submitted to HQUSACE shall be accompanied by a brief letter report explaining the method used in determining the dollar values in the agreement, together with the recommendation of the division commander. Two copies of all agreements, draft and final, approved under delegated authority must be submitted to HQUSACE (CECW-AR).

(3) Drought Contingency. See paragraph 4-33a(3) above for procedures.

SECTION VIII - ECOSYSTEM RESTORATION

4-34. Purpose. This section provides guidance for ecosystem restoration activities in the Civil Works Program. It incorporates policy from the Office of the Assistant Secretary of the Army (Civil Works) and policy guidance from Headquarters, U.S. Army Corps of Engineers (HQUSACE). Adherence to this section should ensure that investments in ecosystem restoration will have the intended beneficial effects, are consistent with Administration policy, and will be conducted in the most cost effective manner.

4-35. Definitions.

a. Ecosystem. An ecosystem is the dynamic and interrelating complex of plant and animal communities and their associated nonliving environment. Ecosystems occur at spatial scales that range from local through regional to global.

b. Watershed. The geographically defined drainage basin that contributes water to an ecosystem or habitat. The hydrologic unit encompassed in the study area because the events and activities therein influence the ecological success of the restoration project. The watershed will be defined by the scope of the study and study objectives.

c. Habitat. Habitat refers to the place occupied by an organism, population or community. It is the physical part of the ecosystem structure in which an organism finds its home, and includes the sum total of all the environmental conditions present in the specific place occupied by an organism. Often a habitat is defined to include a whole community of organisms.

d. Biological Diversity. This refers to the variety and abundance of species, their genetic composition and genetic differences, and the communities, ecosystems, and landscapes in which they occur. It also refers to ecological structures, functions, and processes at all of these levels. Biological diversity occurs at spatial scales that range from local through regional to global.

e. Ecosystem Restoration. This includes measures undertaken to return a degraded ecosystem's functions and values, including its hydrology, plant and animal communities, and/or portions thereof, to a less degraded ecological condition. The goal of ecosystem restoration is to return the environmental study area to as near a natural condition as is justified and technically feasible.

f. Ecosystem Approach. This refers to the current emphasis by the Corps and other federal agencies on restoration of ecosystems as opposed to earlier approaches of resource agencies in protecting the environment of fish and wildlife focussing on single species, particularly game species of fish and wildlife. In the Fish and Wildlife Coordination Act of 1958, as amended, Congress declared that it was national policy to give full consideration to fish and wildlife conservation and improvement when investing in, or planning, any Federal navigation, flood control, or multipurpose water resource project. The Endangered Species Act, and other acts, continued this focus on species and requirements that Federal agencies avoid harming threatened or endangered species and that they use their existing authorities in furtherance of these species. More recently the USFWS, along with most other Federal agencies, including the Corps, have shifted emphasis from individual species to looking at ecosystems. Water Resource Development Acts (WRDA), particularly those of 1986, 1990, 1992 and 1996 have greatly broadened Corps authority and requirements for ecosystem restoration and protection.

g. Environmental Restoration. Care should be taken in the use of this term, which is often used interchangably with “ecosystem restoration”. However, in the context of Corps of Engineers programs and missions, “environmental restoration” is more commonly associated with “cleanup” measures undertaken to achieve compliance with state and/or Federal laws or regulations to clean up hazardous, toxic and radioactive wastes. Environmental restoration generally refers to actions such as Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) remedial actions, Resource Conservation and Recovery Act (RCRA) corrective actions, and cleanups related to underground storage tanks.

h. Mitigation. Mitigation consists of those measures taken to avoid, minimize or compensate for adverse environmental impacts. Mitigation measures are authorized by Congress or approved by HQUSACE or MSCs to compensate for ecological resources unavoidably affected by a Corps project or activity. Chapter 7, Section III defines fish and wildlife mitigation in more detail and the consultation and coordination requirements associated with it.

i. Enhancement. While the concept of enhancement is similar to ecosystem restoration, the two terms are not synonymous. The latter is based on the assumption that some previously degraded ecosystem function or structure can be restored to its historic condition. Enhancement, on the other hand, is simply the net improvement an alternative plan, or project, makes to fish and wildlife resources (singularly or collectively) compared with the "without" plan or project condition. Ecosystem restoration always involves enhancement of some environmental resource or value, but enhancement does not always involve ecosystem restoration. For the purposes of this ER, “fish and wildlife enhancement” benefits are nearly synonymous with “ecosystem restoration” benefits. Planning for fish and wildlife habitat enhancement follows the same principles and procedures undertaken for ecosystem restoration.

j. Protection. Protection consists of measures undertaken to protect and preserve elements of an ecosystem's structure and functions against future degradation. In some instances it is appropriate to include protection measures as part of Corps ecosystem restoration initiatives. Such measures are most appropriate if they require Corps engineering expertise in accomplishing the protection measure. Protection measures can also be undertaken as part of natural resources management and environmental dredging studies.

k. Environmental Outputs. Environmental outputs are the desired or anticipated measurable products or results of restoration measures and plans.

l. Restoration Measure. A restoration measure consists of one or more features or activities, at a geographic site, that is intended to cause a desirable change in an ecological resource and results in a positive environmental output. Many restoration measures are combinations of several features and activities.

m. Cost Effective. As used in this guidance, a plan is considered cost effective if it provides a given, desireable level of output at the least financial and NED cost. Cost effectiveness analysis is performed to ensure that the least cost solution is identified for each level of environmental output.

n. Incremental Cost Analysis. Incremental cost analysis compares the additional costs to the additional outputs of an alternative. It is a tool that can assist in the plan formulation and evaluation process, rather than a dictum that drives the process. Incremental analysis helps to identify and display variations in costs among different increments of restoration measures and alternative plans. Incremental cost analysis specifically is performed to identify changes in costs for increasing levels of environmental output.

4-36. Budgetary Priority. The Corps Civil Works budget guidance (EC 11-2-___) identifies the restoration of ecosystems or parts thereof, and their associated ecological resources as a priority project purpose. Priority will be given to restoration where a Corps project contributed to the degradation of the ecosystem and to modifications of existing Corps projects when such modifications are the most cost effective means of restoring ecological resources.

4-37. Applicability. This applies to the restoration of ecosystems and their ecological resources, but does not apply to cultural and historic resources, aesthetic resources, water-oriented recreation, the Regulatory Program or the clean up of hazardous and toxic wastes.

a. This applies specifically to the following Civil Works activities:

(1) Ecosystem restoration pursued under General Investigations (i.e., new start reconnaissance and feasibility studies for single-purpose ecosystem restoration, or in conjunction with navigation or flood control investigations).

(2) Ecosystem restoration in conjunction with General Reevaluation Reports.

(3) Reformulation opportunities in conjunction with General Design Memoranda or Significant Post-Authorization Change Reports.

b. This applies to ecosystem restoration activities which extend beyond fish and wildlife mitigation being investigated as part of a feasibility study or as part of an operations and maintenance (O&M) activity. Mitigation activities address unavoidable adverse effects of new project construction and operation, and are generally planned for and undertaken concurrently with new project development. Primary guidance on mitigation of fish and wildlife damages is found in Chapter 7. However, ecosystem and biodiversity implications of fish and wildlife impacts should be considered when developing fish and wildlife mitigation alternatives.

c. The general guidance in the Economic and Environmental Principles and Guidelines for Water and Related Land Resource Implementation Studies (P&G), Environmental Quality Procedures, applies to ecosystem restoration activities.

d. Projects formulated under Section 1135, Water Resources Development Act of 1986, as amended (WRDA 1986); or Section 204, Water Resources Development Act of 1992 (WRDA 1992) have specific guidance and are addressed separately in Sections 4 and 5 of Chapter 3, respectively. However the ecosystem approach described in this section will be used when formulating plans under those authorities.

4-38 Ecosystem Restoration Program Philosophy and Policy. Within the Civil Works program, priority will be given to projects for restoration of degraded ecosystem functions and values, including its hydrology, plant and animal communities, and/or portions thereof, to a less degraded ecological condition (EC 11-2-163). Budgetary priority will be given to cases where Corps projects contributed to the degradation of the ecosystem or where modification of existing Corps projects is the most cost-effective means of restoring the resources. An exception to this is where dredged material is used to enhance the ecosystem rather than to restore it, such as building reefs or wetlands where none had existed before. To receive budgetary priority for these beneficial use of dredged material efforts, it must be demonstrated that the ecosystem benefits outweigh the incremental costs.

a. Ecosystem restoration activities examine the condition of existing ecosystems, or portions thereof, and determine the feasibility of restoring degraded ecosystem structure, function,

and dynamic processes to a less degraded, natural condition. Ecosystem restoration provides a more comprehensive approach for addressing the problems associated with disturbed and degraded ecological resources than does focusing only on fish and wildlife habitat.

b. Corps activities in ecosystem restoration will concentrate on engineering solutions to water and related land resources problems. The principal focus in ecosystem restoration will be on ecological resources and processes directly associated with or directly dependent upon the hydrologic regime of the ecosystem and watershed(s). Not all ecosystem restoration opportunities are appropriate for Corps involvement. There will be instances where components of ecosystem restoration problems or opportunities are better addressed by other agencies through their missions and programs. Restoration opportunities that involve modification of hydrology or substrate are likely to be most appropriate for Corps initiatives. Such activities are most likely to address ecosystems associated with wetlands, riparian and aquatic systems. Budget limitations require the Corps to focus restoration efforts on initiatives most closely tied to Corps missions and expertise. Generally, it will not be appropriate for the Corps to conduct ecosystem restoration activities on upland, terrestrial sites that are not closely linked to water and related land resources, as defined in the P&G.

c. Water quality is recognized as an important component of ecosystem structure. This is one area, however, where distinctions can be made between the role of the Corps versus that of other agencies in ecosystem restoration. The Corps role in rehabilitating water quality as a structural component of ecosystems will be more one of hydrologic manipulation to control various water quality parameters, than pollution abatement, which is under the purview of other agencies. Corps restoration initiatives may involve changes in flows to improve aeration, temperature and turbidity and other parameters. If the ecosystem restoration opportunity includes other aspects of water quality that come under the missions of other agencies (e.g. pollutant regulation or removal) it is appropriate to pursue an interagency ecosystem management approach with these relevant agencies to provide them an opportunity to use their respective authorities to implement a more complete and sustainable approach to the restoration. The Corps will not propose, for Corps implementation, any ecosystem restoration activities that would principally result in treating or otherwise abating pollution problems caused by others where there is, or is likely to be, a legal responsibility for remediation by those parties.

d. Human influence has had, and will continue to have, varying degrees of impact on virtually all ecosystems. This must be recognized when developing ecosystem restoration goals and objectives. Ecosystem restoration goals must also recognize the dynamic nature of ecosystems, which includes such processes as community succession. To achieve ecosystem restoration goals, consideration must be given to the full complement of physical, chemical and

biological aspects of the structural and functional characteristics of both the site and its broader landscape or watershed setting, which includes estuarine and marine habitats.

e. In identifying ecosystem restoration opportunities, Corps field offices shall seek the advice and cooperation of Federal and State resource agencies. Input from interested non-governmental environmental organizations and the public shall also be sought. The assistance of these agencies and other interests should be used in identifying the "boundaries" and parameters of the ecosystem, or portions thereof; prioritizing ecosystem restoration needs on a national and regional basis; identifying the existing condition of selected ecosystem(s), or parts thereof; and in defining the restoration goals and objectives desired. The U.S. Fish and Wildlife Service has developed a paper titled An Ecosystem Approach to Fish and Wildlife Conservation (March 1994) which provides useful information. Where environmental restoration opportunities involve Corps project lands, input from the project's natural resources management staff and other operations personnel shall be sought.

f. Corps planning activities to meet natural resource restoration objectives will be conducted using an ecosystem approach, while maintaining the traditional Corps watershed focus on water and related land resources. Consideration of ecosystems within (or encompassing) a watershed provides a useful organizing tool to approach ecosystem-based restoration planning.

(1) The ecosystem approach consists of protecting or restoring the structure and function of an ecosystem, or parts thereof, recognizing that all components are interrelated. It recognizes and seeks to address the problems of habitat fragmentation and the piecemeal restoration and mitigation efforts that have been previously applied in dealing with the Nation's natural resources. All projects, not just those that focus on ecosystem restoration, should be conceived in a more comprehensive, holistic context, considering aquatic (including marine and estuarine), wetland and terrestrial complexes, as appropriate, to provide the potential for long-term survival as functioning systems.

(2) Rather than maximizing habitat benefits for a single species or a resource commodity, such as game fish or birds, ecosystem restoration planning will consider the roles of plant and animal species populations and their habitats in the larger context of community and ecosystem frameworks. Until ecosystem models become more available, however it will probably be necessary, or in some cases more appropriate, to continue to use a single species or a set of species (guilds) to represent the restoration objectives and to help characterize the outputs of the project.

(3) A list of some of the structural and functional characteristics of ecosystems is provided in Appendix R, Exhibit A. These characteristics illustrate the range of considerations

that may be necessary to effectively identify ecosystem problems, develop restoration objectives and formulate applicable restoration measures.

(4) The use of watersheds as an organizing tool while addressing ecosystem restoration opportunities complements the Corps traditional mandate for water and related land resources activities. Water (fresh, estuarine, and marine) is a key element in shaping the structure and function of ecosystems. The impact of Corps activities on water in a given watershed and the related consequences on ecological resources will be examined. Conversely, the impact of a watershed's existing water quantity and quality on ecological resources and proposed restoration features within that watershed will need to be identified. With the exception of atmospheric influences, those human activities and natural processes that impact upon water quality and quantity generally take place within a watershed's boundary. Given the Corps presence in most major watersheds of the Nation, the Civil Works ecosystem restoration program has the potential to significantly contribute to the comprehensive watershed management objectives of the States and other Federal agencies. Appendix R, Exhibit B describes a number of Federal Programs that illustrate the watershed context and associated partenership efforts.

(5) By focusing on watersheds, the Corps interdisciplinary planning team can identify parameters that are altering water quantity or quality and adversely impacting the ecosystem(s), or parts thereof, within that watershed. Because of this, consideration must be given during plan formulation to activities and conditions in the watershed(s) that may influence the success, persistence and resilience of the restoration proposal, even though they may exist outside of the study area.

4-39. Federal Involvement and Authorities. The Federal involvement in environmental quality, which would include ecosystem restoration, is supported in law, Executive Order, and treaty. A number of these general statements (Fish and Wildlife Coordination Act of 1958; Federal Water Project Recreation Act of 1965; the National Environmental Policy Act of 1969 (NEPA); WRDA 1986; WRDA 1990; WRDA 1992; and WRDA 1996) declare it national policy that full consideration be given to the opportunities which projects afford to ecological resources. In addition, authorities for new individual studies and projects to restore ecological resources (e.g., Kissimmee River, Florida; Yolo Basin Wetlands, California), as well as regional restoration program (e.g., Upper Mississippi River System Environmental Management Program) have been provided in legislation.

a. For the Corps Civil Works Program, the Federal involvement in the quality of environmental resources is broadly supported by the appropriate legislation listed in Table 2-4.

b. Section 906 of WRDA 1986 authorizes the Corps to mitigate for significant adverse impacts on all projects whether constructed or being proposed for construction. Section 306, WRDA 1990 authorizes the Secretary of the Army to include environmental protection as one of the primary missions of the Corps. In some instances, it is appropriate to include protection measures as part of Corps ecosystem restoration initiatives. Such measures are most appropriate if they require Corps engineering expertise in accomplishing the protection measure. Protection measures can also be undertaken as part of natural resource management and environmental dredging studies. Section 307(a), WRDA 1990 establishes "no net loss of wetlands" and an "increase in the quality and quantity of the Nation's wetlands" as goal of the water resources development program. Sections 306 and 307, WRDA 1990 support the Corps pursuit of opportunities to protect and restore existing ecological resources and their values in conjunction with planning for new projects and in the operation of existing projects.

c. Planning studies (reconnaissance and feasibility studies) for ecosystem restoration will be authorized in the same manner that flood damage reduction and navigation projects are authorized, i.e., by individual study authorities, by Congressional resolutions, or by favorable reconnaissance studies initiated under Section 216, River and Harbor and Flood Control Act of 1970. Ecosystem-based restoration can also be pursued under the Continuing Authorities Program the Section 1135, WRDA 1986 Program, and the authority of Section 204, WRDA 1992 for beneficial use of dredged material. Details for implementing Sections 1135 and 204 are presented in Sections 4 and 5 respectively of Chapter 3 of this ER. A more recent authority for ecosystem restoration is in Section 206 of WRDA 1996 (Aquatic Ecosystem Restoration). This will be administered as a Continuing Authority Program and guidance on how it is to be implemented is being developed.

4-40. Cooperation with other Agencies. The cooperative efforts of multiple Federal agencies as well as non-Federal interests will generally be necessary to achieve ecosystem restoration goals. Successful restoration at the landscape level will depend on the program coordination among those agencies responsible for management decisions on the separate ecosystem components. Corps ecosystem restoration efforts should complement and be complemented by the various authorities of other Federal and State agencies, Native American tribes and private groups, such that common management and restoration objectives are identified early in the study process. The Corps will, in some instances, lead in the development of alternative restoration plans, and in other instances play only a supporting role. The Corps can provide assistance in planning, study management, engineering, construction, environmental science and analysis, and in economic analysis of plans generated by others.

a. The growing financial pressures on Federal programs have increased the importance of the role of partnerships and cooperative efforts. Cooperative partnerships provide a means to more efficiently utilize limited dollars and resources among the participants. Major Subordinate

Commands (MSC) should encourage and develop partnerships with Federal and State agencies and tribal and non-government organizations in the accomplishment of restoration studies and financing. Cooperative efforts could include, for example, information and data base sharing, cooperative planning efforts, as well as collaborative and shared construction, operation and maintenance, and monitoring activities.

b. Cooperative efforts which effectively combine Federal investments can achieve greater ecosystem restoration benefits than individual agencies could achieve alone. The Coastal America Program, the Louisiana Coastal Wetlands Conservation and Restoration Task Force, and the Upper Mississippi River System Environmental Management Program are among the examples that illustrate these approaches.

4-41. Relative Value of Ecosystem Restoration Outputs. Priority will be given to those projects which produce the most significant environmental outputs when compared to the relative cost of the project. The assistance of the Federal and State resource agencies must be sought in helping to identify and adequately present the relative value of potential restoration outputs.

a. The anticipated value of the outputs of an ecosystem restoration alternative is the principal measure of the proposal's worthiness. Value is determined by the significance of the resource to be restored as well as the quantity and quality of units that would be produced. An ecosystem restoration proposal must demonstrate that the ecological integrity of a degraded ecosystem, or parts thereof, will be restored. It must also explain what the significance of this is relative to the cost. That is, it must answer the question: Why is this effort worth the cost. The willingness of a non-Federal sponsor to share study and project costs and the general concurrence of the State and Federal resource agencies and environmental community are strong indicators of the reasonableness and worthiness of the recommended action. The Corps will, however, retain full and final responsibility for determining whether or not a recommended action is justified and how it will be implemented.

b. Significance Criteria. The WRC Economic and Environmental Principles for Water and Related Land Resources define significance as "likely to have material bearing on the decisionmaking process." The significance of environmental resources based on their non-monetary values may be used as one of the criteria for planning, managing or allocating funds for ecosystem restoration efforts. Projects that relate to resources considered significant from a national or regional perspective generally will have a higher budgetary priority. In terms of environmental plan formulation and evaluation, the significance of environmental resources based on their non-monetary values may be established by institutional, public, or technical recognition of the importance of the environmental resources or attributes in the study area. Section 5-26h describes significance critieria in detail.

c. While restoration should result in benefits to ecosystem, or parts thereof, there may be instances where single-species restoration efforts are warranted based on significance. An example would be restoration of habitat for endangered or threatened specifies. In addition, bottomland hardwoods are recognized by law as being very important and must be replaced in-kind, to the extent justified (Section 906(d), WRDA 1986) as part of mitigation. Similarly, anadromous fishes and other species of plants and animals recognized by Federal law or treaty, or otherwise considered important by the U.S. Fish and Wildlife Service or National Marine Fisheries Service, are also to be considered important for purposes of ecosystem restoration.

4-42 Cost-sharing. The planning team should establish early dialogue with potential non-Federal partners to ascertain their willingness to cost share in the planning, implementation, and operations/maintenance of the restoration project. It is particularly important that potential cost-sharing partners understand the Corps ecosystem restoration program philosophy, policies and procedures. The Corps now focuses on ecosystems and plant and animal communities rather than on recreation-oriented (hunting and fishing) outputs.

a. General Investigations. Ecosystem restoration feasibility phase studies conducted under the G.I. program will be cost-shared at 50 percent Federal/50 percent non Federal cost. In accordance with Section 204 of WRDA 1996, implementation costs (including pre-construction engineering and design, preparation of plans and specifications, and construction) for ecosystem restoration projects authorized subsequent to the enactment of that legislation on 12 October 1996 are shared at a ratio of 65 percent Federal/ 35 percent non-Federal. Those projects authorized prior to its enactment are cost-shared at 75 percent Federal/25 percent non-Federal. OMRR&R costs are a 100 percent non-Federal responsibility.

b. Section 1135 of WRDA 1986. For small ecosystem restoration projects undertaken under this authority, the feasibility level study and Project Modification Report are initially prepared at Federal cost but will be included in total project costs shared during project implementation phase at 50 percent Federal and 50 percent non-Federal during construction. OMRR&R is 100 percent non-Federal unless these requirements are minor and can best be carried out as part of the overall Corps project. See Chapter 3, Section IV for a detailed description of requirements for ecosystem restoration projects undertaken under authority of Section 1135 Program.

c. Section 204 of WRDA 1992. The Initial Appraisal report, which is limited to $5,000, will be prepared by District at 100 percent Federal cost. Feasibility level studies are cost shared 50-50 between the Federal and non-Federal sponsor. Programmatic funds under this program are limited; thus they should not be used in support of large ecosystem restoration efforts or to support use of dredged material for beneficial purposes. See Chapter 3, Section V for details.

OMRR&R is 100 percent non-Federal unless it is demonstrated that these requirements are minor and can be best accomplished as part of the overall Corps project.

d. Section 906 of WRDA 1986. This section, in general, authorizes the Corps to mitigate for fish and wildlife impacts for completed projects as well as those that are being proposed for construction. Section 906 (b) specifies that the cost sharing for this mitigation shall be allocated to project purposes and cost share accordingly. Since Corps projects constructed prior to advent of cost sharing had project purposes that were 100 percent Federal cost, this authority could be used, in some cases, to restore project induced ecological damages at no cost to non-Federal interests. However, because this conflicts with established cost sharing procedures, this authority should not be used to circumvent non-Federal contributions to environmental restoration. This authority may be used to reduce or eliminate the non-Federal sponsors cash contribution to the restoration effort. Operation and maintenance of the environmental restoration project under this authority will be, at a minimum, 25 percent non-Federal.

4-43. Operational Effectiveness. While it is generally more desirable to pursue ecosystem restoration projects that have limited O&M requirements, there will be instances where considerable O&M measures may be essential to the functioning of the restoration project. Such projects may be pursued if they are justified based on the ecological value of the project outputs, and if the non-Federal sponsor who will be responsible for the O&M is willing to commit to these O&M requirements.

4-44 Forecasting. Forecasting future conditions in an ecosystem may be subjective and can be very difficult, but is essential in order to formulate restoration projects. it should be done in an iterative manner, seeking input from State and Federal resource agencies and the environmental community, in order to help build consensus about future without project conditions and what outputs the restoration project will produce. Forecasting may be especially critical to a case for protection where an argument must be made that there will be a decline or degradation of the resource unless protection is provided.

4-45. Monitoring and Post-Planning Considerations.

a. Adaptive Management. Because of the relative newness of restoration science and uncertainty in ecosystem restoration planning, theories, and tools, success can vary due to a variety of technical and site specific factors. Recognizing this uncertainty, it is prudent to allow for contingencies to address restoration problems during, or after, project construction. To accomplish this, a technique called “adaptive management” should be considered for inclusion in restoration projects recognized during planning to have the potential for uncertainty in achieving restoration objectives.

b. Monitoring. Monitoring programs should be designed to evaluate whether restoration measures are working as designed. Monitoring will be especially helpful when new, unproven restoration techniques are being applied, and when significant levels of uncertainty prevail at the time of implementation. The information obtained from monitoring can be used to ascertain whether: 1) projects have been designed and constructed in accordance with technical specifications; 2) the project is functioning as per its objectives; 3) adjustments for unforeseen circumstances are needed; and, 4) changes to structures or their operation, or management techniques are required.

c. Environmental Commitments. Restoration features approved during the feasibility effort that must be implemented during later stages in the life cycle of the project will be included in the Project Management Plan (PMP), the Environmental Plan, and a checklist entitled Environmental Restoration Commitments and Considerations for Engineering and Construction.

4-46. Selection of Ecosystem Restoration Plan for Funding. the following criteria will generally be used by decision makers to nominate a proposed project for funding:

a. Acceptability. An ecosystem restoration plan should be acceptable to State and Federal resource agencies, and local government. There should be evidence of broad based public consensus and support for the plan. A recommended plan must be acceptable to the non-Federal cost-sharing partner.

b. Completeness. A plan must provide and account for all necessary investments or other actions needed to ensure the realization of the planned restoration outputs. This may require relating the plan to other types of public or private plans if these plans are crucial to the outcome of the restoration objective. Real estate, O&M, monitoring, and sponsorship factors must be considered. Where there is uncertainty concerning the functioning of certain restoration features, an adaptive management plan should be proposed and accounted for in the plan.

c. Efficiency. An ecosystem restoration plan must represent a cost effective means of addressing the restoration problem or opportunity. It must be determined that the plan's restoration outputs cannot be produced more cost effectively by another agency or institution.

d. Effectiveness. An ecosystem restoration plan must make a significant contribution to addressing the specified restoration problems or opportunities (i.e., restore important ecosystem structure or function to some meaningful degree).

e. Partnership Context. Restoration projects that were planned in cooperation with other Federal resource agencies, and where those agencies also have a significant role in implementing the project, using their authorities and funding, should receive higher priority than those that do

not, assuming they also satisfy the other criteria. Similarly, restoration projects that make a significant contribution to regional or national interagency programs (e.g., North American Waterfowl Management Plan, Coastal America, Marine Fish Habitat Creation and Restoration Program, Chesapeake Bay Program, etc.) should also receive priority.

f. Reasonableness of Costs. All costs associated with a plan should be considered. Even after tests of cost effectiveness and incremental cost analysis have been satisfied, the decision-maker must ascertain that the benefits to be realized are really worth the costs. This will almost always be a subjective decision and ultimately must rely on experience, reasonableness and common sense.