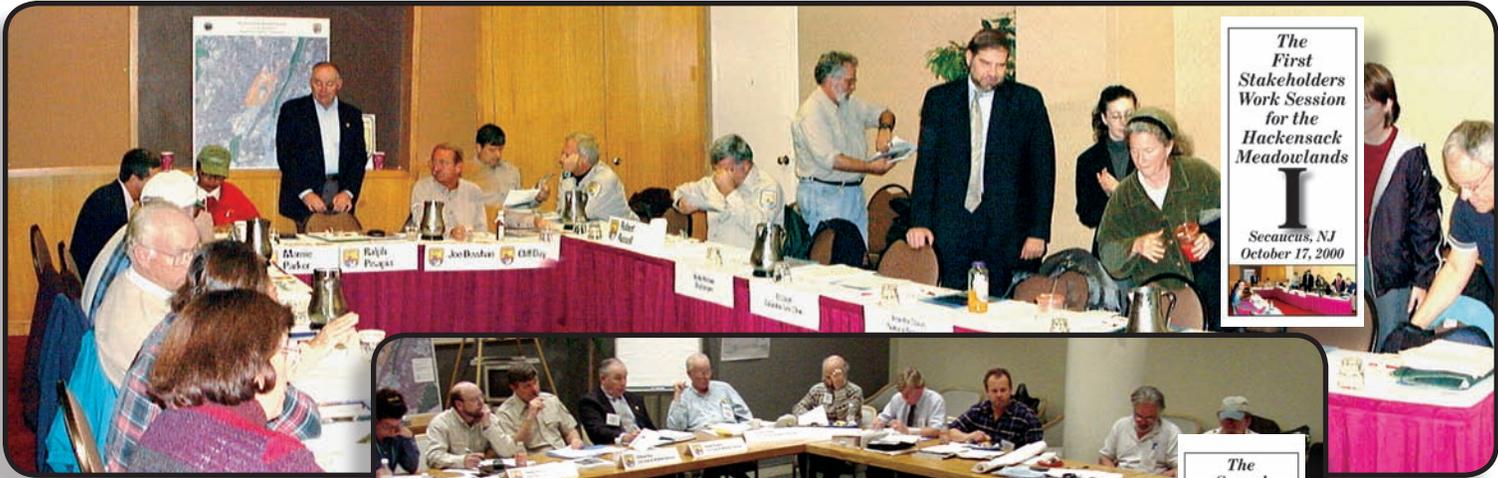


X. Restoration Planning and Coordination



Collaborating on the Meadowlands.



*The
First
Stakeholders
Work Session
for the
Hackensack
Meadowlands*

I
Secaucus, NJ
October 17, 2000



*The
Second
Stakeholders
Work Session
for the
Hackensack
Meadowlands*

II
Elizabeth, NJ
May 21, 2001



*The
Third
Stakeholders
Work Session
for the
Hackensack
Meadowlands*

III
Morristown, NJ
October 31, 2001



*The
Fourth
Stakeholders
Work Session
for the
Hackensack
Meadowlands*

IV
Lyndhurst, NJ
June 13, 2005



X. Restoration Planning and Coordination

Numerous remediation, enhancement, and restoration projects are now underway or in various planning stages for specific wetland sites in the Meadowlands and adjoining waters. These projects, such as the Hackensack Meadowlands Environmental Restoration and the Lower Passaic River Restoration, are being undertaken pursuant to specific legal authorities (*e.g.*, WRDA, Superfund) for various purposes (*e.g.*, water resource improvement, contaminant remediation) by different agencies (*e.g.*, Corps, NJMC, and EPA) on independent schedules.

Preliminary results of ongoing restoration projects are encouraging; however, these projects are not necessarily coordinated or integrated with other regional planning for water supply, sewage treatment, flood control, and transportation. Also, the funding of some remediation and restoration projects is only sufficient for improvements to small sites. As a result, current efforts will result neither in a successful restoration of the Meadowlands ecosystem overall, nor in the long-term protection of its fish and wildlife.

Thus, stakeholders must continue to work to improve overall coordination, collaborate on the development of a shared vision, and initiate establishment of a unifying authority to restore the entire Meadowlands ecosystem. Additionally, federal and State agencies must establish a principals' group to ensure the broad, long-term commitments and coordination (*e.g.*, restoration, regulatory, and other planning) necessary for comprehensive restoration of the Meadowlands ecosystem.

State and federal wildlife officials tour the Meadowlands.



X. RESTORATION PLANNING AND COORDINATION

A. INTRODUCTION

B. AUTHORITIES AND PURPOSES

1. Clean Water Act
2. Water Resources Development Act
3. Comprehensive Environmental Response, Compensation, and Liability Act
4. Specifically Authorized Projects and Their Applications to the Meadowlands

C. PARTNERSHIPS AND OVERSIGHT

D. RESTORATION SCHEDULES

E. BASELINE REMEDIATION AND RESTORATION PLANS

1. Development of Baseline Remediation Plans
2. Current Restoration Planning
 - a. The Harbor Estuary Program's (1996) Comprehensive Conservation and Management Plan
 - b. The Corps' HRE Feasibility Study and Comprehensive Restoration Implementation Plan
 - c. The Corps' Meadowlands-Comprehensive Restoration Implementation Plan
 - d. The NJDEP Coastal Management Program's Coastal Zone Management Plan
 - e. The NJMC's 2004 Master Plan for the Hackensack Meadowlands District
 - f. The NJDFW's Meadowlands Wildlife Action Plan

F. RESTORATION FUNDING

G. INTERAGENCY AGREEMENTS AND OVERSIGHT COMMITTEES

H. SUMMARY



The New Jersey Meadowlands Commission facilities at DeKorte Park in Lyndhurst, New Jersey.

X. RESTORATION PLANNING AND COORDINATION

A. INTRODUCTION

The past 10 years have seen a remarkable renaissance of environmental activities in the Meadowlands. To some extent, this rebirth has been reflected in the actions of individual stakeholders and the improved relations and interactions among government agencies and NGOs. For example, federal and State agencies that previously held widely different views on land use in the Meadowlands now partner together in efforts to protect natural resources and restore the ecosystem. These agencies must continue to build this partnership and work together to address critical issues related to water quality, contaminants, cumulative land-use effects, and invasive species. Issues at stake present substantial, complex, and costly challenges. In addition to technical or financial obstacles, expanding and improving the collaboration among those agencies and other stakeholders is of equal importance to restoring the Meadowlands.

Ongoing and/or future remediation and restoration activities are being undertaken: (1) pursuant to different authorities, (2) for various purposes (*e.g.*, mitigation, contaminant remediation), and (3) under the direction of different agencies. These differences potentially affect the scheduling, coordination, and costs of restoration, especially at Superfund sites, thereby complicating the restoration of the entire ecosystem and potentially placing fish and wildlife populations at risk. These differences also contribute to inefficiencies in remediating and restoring the Meadowlands. Avoiding such complications and inefficiencies will require a collaborative process to ensure open dialogue of major issues and concerns, and agreed-upon timeframes among restoration partners. Because government agencies have different responsibilities and priorities, restoration of the Meadowlands ecosystem will be most successful if all stakeholders identify and communicate concerns during early planning stages and work cooperatively to resolve outstanding issues.

Establishment of a common vision has been identified by many experienced restoration practitioners as the foundation for all successful restoration programs and a missing ingredient of many unsuccessful restoration programs (National Research Council, 1999; Vigmostad *et al.*, 2005). Once a common vision is established as a guide, supporting goals, specific objectives, restoration alternatives, implementation, success criteria, and monitoring can be developed collaboratively by stakeholders (Diefendorfer *et al.*, 2003). Developing a shared vision for the Meadowlands has been a Service focus in recent years and is also desired by other Meadowlands stakeholders. Though developed for different purposes, the Wildlife Management Plan for the Hackensack Meadowlands (U.S. Fish and Wildlife Service *et al.*, 2000), the Vision Plan (New Jersey Division of Fish and Wildlife and the U.S. Fish and Wildlife Service, 2002), and the NY-NJ Harbor Estuary Ecological Vision Plan (U.S. Fish and Wildlife Service, 2003a) are consistent with this document and emphasize collaborative development of a common vision, goals, and tasks. The NJMC's 2004 Master Plan also outlines a vision for the future of the Meadowlands. The commitment of all Meadowlands stakeholders to a common vision to guide the restoration of the Meadowlands and long-term protection of its natural resources will promote a new image of this long-neglected urban and suburban environment.

B. AUTHORITIES AND PURPOSES

Restoration and other modifications of specific wetland and waterway sites in the Meadowlands have been or are being undertaken according to various federal (*e.g.*, WRDA, CWA) and State (*e.g.*, Freshwater Wetlands Protection Act, Flood Hazard Area Control Act) authorities, which were legislated to accomplish different purposes. To date, the majority of restoration in the Meadowlands has been undertaken as compensatory mitigation for activities in wetlands regulated under the CWA. Because several mitigation projects may have failed over time, these “restorations” may in fact be contributing to continuing net losses of wetland acreage and functions in the Meadowlands. Increasingly, sites in the Meadowlands are being restored pursuant to the WRDA. While some sections of WRDA (*e.g.*, Section 206 [Aquatic Ecosystem Restoration]) appear applicable to a number of sites throughout the Meadowlands, current funding levels for such projects will probably limit WRDA-authorized restorations of the Meadowlands. The present WRDA Section 206 funding limit (\$5 million) will likely affect consideration or feasibility of certain project alternatives (such as remediation or hazardous waste disposal), prevent restoration of large sites or several sites within a basin with potential for connectivity, and encourage restoration partners to eliminate certain costs, such as monitoring, that do not provide immediate on-site benefits to restoration. Restoration of certain heavily contaminated sites in the Meadowlands and adjoining water-bodies in accordance with CERCLA also presents special coordination and other challenges due to the spread and pervasiveness of contamination. Irrespective of whether site remediation is performed prior to or concurrent with restoration, contamination may also greatly increase the costs of restoration. Thus, stakeholders should explore development of a specific authority (similar to the Coastal Wetlands Planning, Protection, and Restoration Act for coastal Louisiana [16 U.S.C. 3951-3956] or the CALFED Bay-Delta Authorization Act of 2004 [P.L. 108-361] for the San Francisco Bay watershed) that will amalgamate and better integrate restoration and related efforts of different agencies by combining, parlaying, or directing individual funding sources. Working under such an umbrella authority could hasten and improve clean-up and restoration of the entire system, minimize adverse impacts on fish and wildlife resources, and maximize efficiency and long-term benefits.

1. Clean Water Act

Several sites within the Meadowlands have been restored as compensatory mitigation for off-site impacts to other wetland sites in the Meadowlands from projects authorized pursuant to the CWA; the Service is concerned that such mitigation may be contributing to continued loss of wetland acreage and functions in the Meadowlands, particularly if such projects are not successful in the long term. When restoration is required as compensatory mitigation, federal laws (*e.g.*, CWA), policies, guidelines (*e.g.*, the Service’s Mitigation Policy, Section 404[b][1] Guidelines), and other agreements (*e.g.*, the August 29, 1997 MIMAC agreement) are intended to guide the actions and recommendations of regulatory and resource agencies, respectively. The poor success and lack of long-term oversight of compensatory wetland mitigation projects under the Corps’ jurisdiction nationwide have received considerable criticism (*e.g.*, U.S. General Accounting Office, 2001; National Research Council, 2001) that has led to improvements such as the National Mitigation Action Plan. Nonetheless, long-term review and management of mitigation sites in the Meadowlands appear lacking. The success of wetland mitigation projects

in the Meadowlands has not been evaluated by the Corps' New York District as it has in other Districts (*e.g.*, New England; U.S. Army Corps of Engineers, 2003b). Strict adherence to the Section 404 permit processes, strong regulatory oversight by the Corps, EPA, and the NJDEP (2005b), rigorous enforcement of permit conditions, and integration of remediation and restoration efforts with regulatory decisions are essential for protecting the Meadowlands (U.S. Department of Interior, 1994). It is the Service's view that under the guidance of the principals' group, the Corps and other MIMAC members should conduct a comprehensive review and evaluation of all past mitigation projects in the Meadowlands, as has been done in other Corps' Districts (*e.g.*, the New England District; U.S. Army Corps of Engineers, 2003b). After the MIMAC's review and evaluation of mitigation projects are completed, the August 29, 1997 interagency agreement that established the MIMAC should be revisited and revised accordingly to promote better communication and incorporation of specific review criteria to ensure compliance with federal regulations and prevent continuing loss of wetland acreage and functions. This should include the development of performance measures to determine project success, using species, habitats, and ecosystem functions.

2. Water Resources Development Act

The Hackensack Meadowlands Ecosystem Restoration (HMER), is being funded and conducted under the Corps' General Investigations Program (*Federal Register*, Volume 69, No. 248, Tuesday, December 28, 2004) as a part of WRDA. The HMER was authorized by a resolution of the Committee on Transportation and Infrastructure of the U.S. House of Representatives, dated April 15, 1999, that amended the Water Resources Development Act of 1986 (16 U.S.C. 2201 *et seq.*), to determine the feasibility of environmental restoration and protection relating to water resources and sediment quality within the New York and New Jersey Port District, including but not limited to creation, enhancement, and restoration of aquatic, wetland, and adjacent upland habitats. Although intended to employ an ecosystem approach with a broad scope consistent with Corps planning guidance (*e.g.*, Planning Guidance Notebook; U.S. Army Corps of Engineers, 2000), authorizations for restoration pursuant to WRDA have not always possessed a clear vision, distinct goals, broad focus, oversight, and, most importantly, a long-term planning process that involves local stakeholders. As a result of current funding limitations, the HMER to date has focused primarily on the restoration of the Anderson Creek Marsh.

In addition to feasibility studies, Section 206 of the WRDA (Aquatic Ecosystem Restoration) also provides the Corps with authority to undertake restoration projects in certain types of aquatic ecosystems (*e.g.*, wetlands, rivers), and has been approved for use on at least one site in the Meadowlands (the 31-acre Lyndhurst Riverside Marsh; U.S. Army Corp of Engineers, 2005d). Under Section 206, each project must be complete within itself and not a part of a larger project. Costs are shared between the federal government (65 percent) and a non-federal sponsor (35 percent); the maximum federal expenditure per project, which includes both planning and construction costs, is only \$5 million, a relatively small amount, given the extremely high costs of such activities in the Meadowlands. As a result, Section 206 authority has been considered only for restoration of small sites in the Meadowlands (*e.g.*, the 31-acre Lyndhurst Riverside Marsh); however, restoration planning pursuant to this authority is currently suspended in the Meadowlands due to funding shortfalls (U.S. Army Corp of Engineers, 2005d). Restoration of certain sites in the Meadowlands may be undertaken pursuant to other sections of WRDA: (1)

Section 22, which provides up to \$500,000 for planning assistance for development, use, and conservation of water and related land resources; (2) Section 1135, which provides up to \$5 million for restoration and to improve the quality of sites that were degraded by previous Corps projects; and (3) Section 204, with an annual appropriations limit of \$15 million, for projects that will beneficially use dredged material (from federal navigation and other dredging projects) to protect, restore, and create aquatic and ecologically related habitats. All of these WRDA programs require cost-sharing with non-federal project sponsors. One potential limitation in the use of these authorities for restoring one or more sites in the Meadowlands is the lack of an “umbrella” program or principals’ group to ensure a consistent and broad focus over problems or issues (*e.g.*, poor water quality, access) affecting the entire ecosystem.

3. Comprehensive Environmental Response, Compensation, and Liability Act

Seven heavily contaminated sites in the HMD have been identified on the Superfund National Priorities List (NPL) pursuant to CERCLA; some of these sites were identified on the NPL in the early 1980s. These NPL sites (*e.g.*, Diamond Alkali, Ventron/Velsicol) present numerous technical, communication, and coordination challenges for restoration (*e.g.*, U.S. Fish and Wildlife Service, 2005c). For example, although contamination originating from those sites has spread throughout the Meadowlands ecosystem, efforts have been made at various times by responsible parties and government agencies to restrict the geographic extent of the Berry’s Creek Study Area (as defined for remediation) to the immediate source areas. Restricting the Berry’s Creek Study Area reduces the financial obligations of the responsible parties for remediation and restoration to much smaller sites. However, restricting a study area may perpetuate risks to, and adverse impacts on, fish and wildlife populations from contamination spread beyond a designated study area. Restricting the Berry’s Creek Study Area may also result in lost resource uses and the transfer of unrealized remediation and restoration costs to the public.

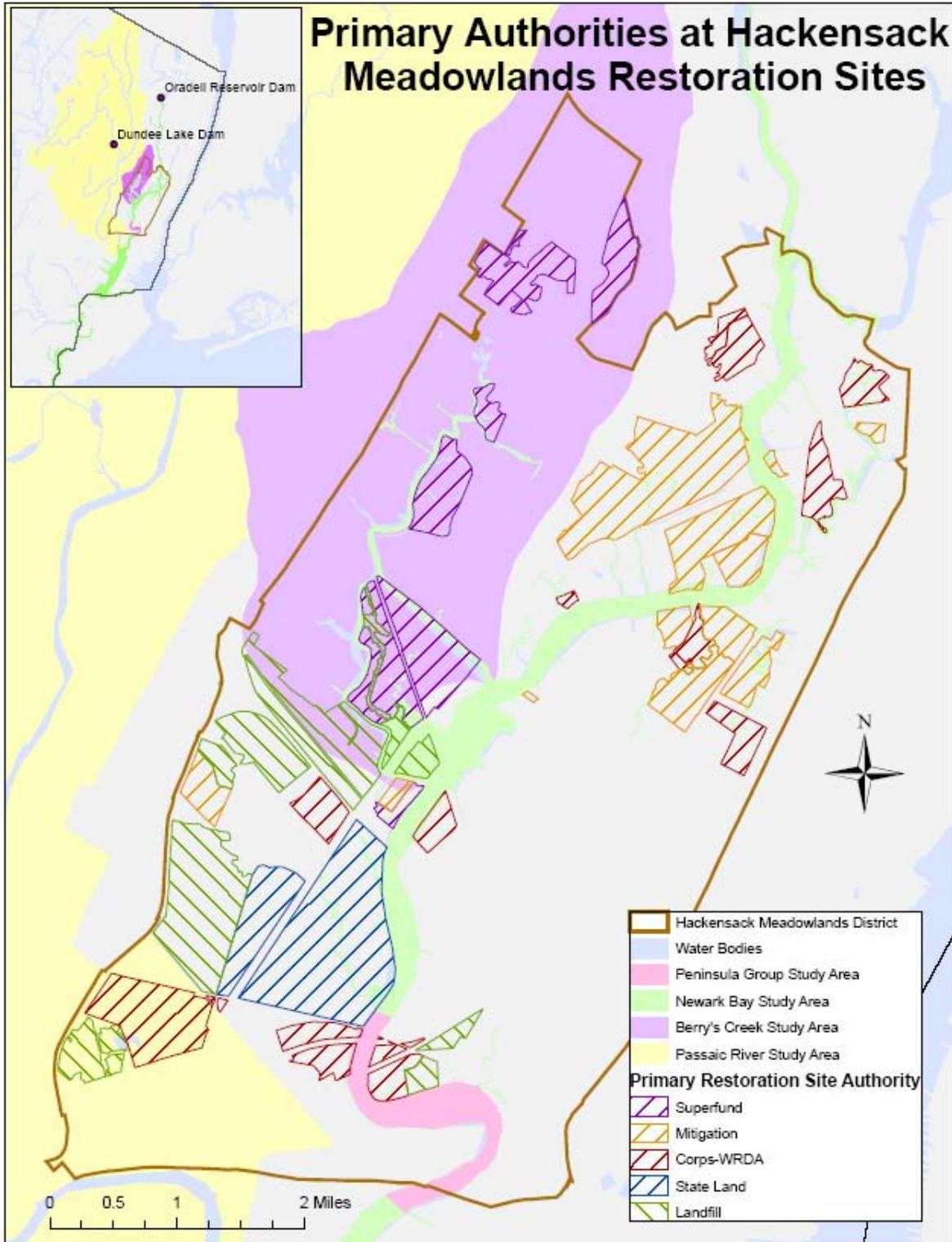
As an example, the designation of study areas in the Passaic River illustrates the potential complexity regarding assessment, remediation, and restoration of Superfund sites in the Meadowlands. The Diamond Alkali Superfund Site, initially designated in 1984, consisted of two upland parcels on Lister Avenue in Newark. However, the EPA defined a 6-mile stretch of the Lower Passaic River as the Passaic River Study Area in 1994. Information gathered within that area led the EPA to expand the Study Area to include the entire Passaic River below the Dundee Dam in 2004 and to include all contaminants and their sources associated with the degradation of the river. Additional studies led the EPA, through an Administrative Order of Consent, to expand the Study Area again to include Newark Bay and its tributaries, including portions of the Hackensack River, the Kill van Kull, and the Arthur Kill (U.S. Fish and Wildlife Service, 2005c). Additional legal challenges (*e.g.*, Natural Resources Defense Council *et al.* vs. U.S. Army Corps of Engineers and Colonel Richard Polo; U.S. Army Corps of Engineers, 2005e) may further delay remediation and restoration activities. Presently, there are four “operable units” of the Passaic River Study Area: (1) the Lister Avenue properties, (2) the 6-mile stretch of the Lower Passaic River, (3) the entire Passaic River below Dundee Dam, and (4) Newark Bay and portions of its tributaries (U.S. Fish and Wildlife Service, 2005c). Contamination originating from the sites undoubtedly extends far beyond the current designated Study Area (see Figure 61) due to tidal actions.

While considerable progress has been made in assessing and addressing contamination from some NPL sites affecting the Meadowlands (*e.g.*, Diamond Alkali, listed in 1984), minimal progress has been made with other sites in the Meadowlands (*e.g.*, Ventron/Velsicol, also listed in 1984) due to budget constraints and other work priorities of federal and State agencies. The importance of coordination issues surrounding NPL sites in the Meadowlands cannot be overemphasized. The Berry's Creek sub-basin includes some of the most heavily contaminated wetlands in North America. Furthermore, the Berry's Creek sub-basin is located between the two sub-basins with the greatest extent of wetlands in the HMD (see discussion in Section V above). The dispersal and availability of mercury originating from this site as a result of natural and restoration activities remains a considerable threat to all wetlands in the system, and has the potential to compromise the success of restoration of other sites throughout the Meadowlands. Thus, specific activities to remediate and restore the Berry's Creek sub-basin, and the sequence of those activities, have serious implications to restoring the entire system. *Timely communication and coordination among federal and State agencies and other stakeholders regarding the Berry's Creek, Diamond Alkali, and possibly other Superfund sites are essential for restoring the Meadowlands.* The EPA and BTAG coordinate individual site remediation; however, as noted above regarding implementation of WRDA projects, a specifically authorized oversight (principals') group is needed. Such a principals' group could work with BTAG to coordinate and implement restoration projects in Berry's Creek together with other remediation and restoration efforts (*e.g.*, MCRIP, Lower Passaic River) to help avoid or minimize adverse impacts and maximize benefits to fish and wildlife populations throughout the Meadowlands.

4. Specifically Authorized Projects and their Applications to the Meadowlands

Current State and federal funding is sufficient for planning the restoration of approximately one relatively small site in the Meadowlands per year. In other parts of the United States where federal actions have been recognized as having contributed to adverse impacts to fish, wildlife, and their habitats (as they have been in the Meadowlands; *e.g.*, U.S. Department of the Interior, 1994), federal laws have been enacted to establish comprehensive restoration projects in those specific areas. For example, the Missouri River Protection and Improvement Act of 2000 and the Missouri River Restoration Act of 2000 (Title VII and IX, respectively, P.L. 106-541) were enacted to improve conservation and water quality and protect recreational, cultural, and other resources in the Missouri River watershed in North and South Dakota, respectively. The Coastal Wetlands Planning, Protection and Restoration Act [16 U.S.C. 3951-3956] established a federal task force to achieve "no net loss" of wetlands through regulatory and other measures (*i.e.*, restoration and other long-term actions) in Louisiana. This task force, composed of regional directors (or their designees) from five federal agencies and the State Governor, provides oversight of a \$50 million annual appropriation for restoration projects that is based on a fixed percentage of excise taxes deposited into the Federal Sportfish Restoration Account. In one of the larger restoration projects undertaken by the federal government, the Comprehensive

Figure 61. Mapped areas of primary federal and State regulatory authorities for potential restoration sites and adjoining waterways in the Hackensack Meadowlands District.



Everglades Restoration Act of 2000 (Title VI, P.L. 106-541) was established to restore, preserve, and protect the South Florida ecosystem, including the Everglades, nearby national parks and NWRs, other conservation areas, wetlands, and submerged lands. This Act authorized four “pilot projects,” totaling \$69 million, to improve water quality (*e.g.*, restore riverine flows through oxbow lakes, control water flow and seepage among in-ground reservoirs, reuse wastewater) and ten “initial restoration projects” totaling \$1.1 billion to begin restoring the Everglades ecosystem and the Florida Bay estuary (*e.g.*, several large water-storage reservoirs, stormwater treatment systems, re-establishing hydrologic connections), including \$100 million to the Service for monitoring and assessment. These are just a few examples of the level of funding commitment necessary to effect restoration on an ecosystem scale, similar to what is required for the Meadowlands.

In addition to providing a sufficient funding base, authorization of a comprehensive restoration project at the federal level, specific to the Meadowlands, would offer many advantages to the restoration of this heavily contaminated ecosystem. Such an authorization is not meant to compete or be at cross-purposes with other restoration projects in the Meadowlands (*e.g.*, the Corps and NJMC-funded HMER [in which the Service is also a partner]), but to amalgamate and integrate those efforts and provide a broader authority and more stable funding base for additional comprehensive activities (*e.g.*, improving water quality) critical to achieving successful restoration. In addition, this funding would ensure that appropriate resources are available to each agency involved in the restoration effort. Other benefits would include: (1) improved interagency coordination; (2) broad planning scope; (3) thorough analyses; (4) consistent project oversight, including application of contaminant criteria; (5) public outreach and education; (6) long-term monitoring and management; and (7) potential for cost-sharing. Monitoring and other costs (*e.g.*, analyses) potentially slow down restoration of different sites, since they are costly and sometimes perceived as having little or no (immediate) benefit. Also, federal and State agencies have other considerable responsibilities and priorities that do not allow them to focus on any one project unless specific, dedicated resources are made available for that purpose. With a specific authorization, all agencies can actively pursue restoration and related activities (*e.g.*, remediation, assessment, planning) on all potential restoration sites in the most desired sequence (see Section D below).

C. PARTNERSHIPS AND OVERSIGHT

To date, restoration of various sites in the Meadowlands often has been undertaken separately by a number of individual government agencies, NGOs, and businesses. The NJMC has acquired or is undertaking restoration on most of those sites; one notable exception is the MRI Marsh Mitigation Bank site, owned by a publicly traded corporation, in Carlstadt. Several NGOs (*e.g.*, the Hackensack Riverkeeper’s Cole’s Brook Project in Hackensack, the Teaneck Creek Conservancy Site in Teaneck) are also restoring wetland sites with State or federal funding (*e.g.*, U.S. Environmental Protection Agency, 2005c). Other government agencies potentially have varied responsibilities in restoration projects in the Meadowlands. For example, the Corps and the NJDEP have regulatory oversight for all the above sites (*i.e.*, the NJMC and MRI Marsh Mitigation Bank site), which were restored as compensatory mitigation for activities in wetlands requiring federal and State permits (Figure 61). The EPA has regulatory oversight for the

assessment and remediation of designated Superfund areas pursuant to CERCLA; in some cases, remediation of a site may be necessary prior to any restoration of the site. The Service, NMFS, and the State have primary oversight for restoration of those Superfund (and possibly additional) sites pursuant to NRDAR. The Service's (2004f; 2005d) *Partners for Fish and Wildlife* and *Coastal* programs and NOAA's (2005c) *Community-based Restoration* Program works with certain partners (*e.g.*, private or State-owned lands) for restoration of specific wetland or upland sites and would be available to undertake such projects in the HMD. Similarly, the Service's and NFWF's *Bring Back the Natives* program also offers partnership opportunities with landowners to restore aquatic resources in the Meadowlands.

Coordination of restoration activities may be complicated further by the involvement of different administrative units within an agency. Within the Corps, the Regulatory and Planning Branches may be involved in restoration of different sites within the Meadowlands. Within the EPA, the RCRA Branch, Office of Water, Environmental Review Section, and the interagency BTAG (chaired by the EPA) may be involved in remediation and restoration activities in the Meadowlands. Within the Service, the NJFO and the Southern New England-New York Bight Coastal Ecosystems Program Office have been involved in Meadowlands resource issues. The involvement of different agencies and administrative units within agencies emphasizes the need and importance of communication and coordination among all the restoration partners. Thus, the Service recommends establishment of a technical committee (under the guidance of, and reporting to, the principals' group) to develop and implement a collaborative process to track and coordinate all projects potentially affecting remediation and restoration in the Meadowlands. The principals' group and technical committee would be most effective if created through a specifically authorized project similar to the examples discussed above for the Missouri River, Louisiana Coast, and the Florida Everglades.

D. RESTORATION SCHEDULES

Financial, biological, engineering, administrative, and legal issues pursuant to different federal and State authorities can affect the restoration sequence, both seasonally and longer-term. Despite various factors potentially affecting the scheduling of restoration activities, restoration of all sites should be scheduled to minimize additional adverse impacts on fish and wildlife resources and thus maximize the long-term benefit (*i.e.*, produce a net gain) to these resources. The sequence in which sites are restored and the scheduling of activities on each site should not contribute to creating attractive nuisances that adversely impact fish and wildlife resources; thus, the Service has consistently recommended remediation of contaminated sites prior to restoration. To date, the Service is unaware of efforts by government agencies or other stakeholders to identify issues (*e.g.*, contamination, dredged-material availability) affecting the sequence of restoring certain sites; however, an administrative issue may already be affecting the planning for the first site (Anderson Creek Marsh) to be restored by the HMER. For example, wetland filling required to close, cap, and remediate a landfill (*e.g.*, Keegan Landfill) requires compensatory mitigation according to the CWA. At this writing, the NJMC may "withhold" a portion of the Anderson Creek Marsh from the HMER's restoration to provide suitable mitigation for the wetland impacts associated with the Keegan Landfill closure. If portions of the site are restored

under different authorities, the timing must be coordinated to avoid compromising the overall restoration of the Anderson Creek Marsh.

A principals' group should encourage all stakeholders in the restoration of any site, and especially those with operating authorities governing several sites or any large area within the HMD, to identify potential concerns and timetables pertaining to restoring each site, and to use that information and the characteristics of each site to develop a master timetable for restoring all sites within the HMD. This master timetable should identify all currently planned projects in the HMD, and their potential interactions and impacts to wetland sites and sub-basins. The timetable also should include contingencies and alternatives based upon the specific concerns of each site. Planning and coordination are especially critical for activities at heavily contaminated sites. Coordination at this level would obviously result in cost-sharing and in-kind services to promote specific efforts and outcomes at certain restoration sites.

E. BASELINE REMEDIATION AND RESTORATION PLANS

1. Development of Baseline Remediation Plans

The Service recommends development of a "baseline plan" for remediation of all sites for the entire HMD. This baseline plan would be generated by mapping the concentrations of each contaminant of potential concern for every wetland site and waterway in the Meadowlands. The maps would then be overlaid to generate a contaminant map for the entire HMD. Using currently available information on contaminant depth profiles, this map would be used to:

- (1) improve risk assessments and determine the feasibility of restoration;
- (2) develop preliminary estimates of the volume and cost of removing all contaminated sediments to specified criteria within different sub-basins;
- (3) develop alternative remediation plans based upon projected removal of lesser volumes of contaminated materials, using consistent or other, less stringent, criteria (consistent across sites restored pursuant to different authorities) and other steps to isolate remaining contaminants *in situ* within different sub-basins; and
- (4) identify (a) sub-basins where additional contaminant research and study information has the potential to yield the greatest risk and cost benefits, and (b) other remediation and/or contaminant concerns.

Development of this baseline remediation plan would provide the principals' group, other stakeholders, and the public with a better understanding of the magnitude of, and threats presented by, the contamination in the Meadowlands and the funding required for remediation, enhancement, and restoration. The plan would also provide a framework for evaluating alternatives for remediation and restoration to determine which would be the most efficient and cost-effective in the long-term.

2. Current Restoration Planning

The Service has long been committed to the protection of the Meadowlands ecosystem; thus, this planning effort has been built partially upon earlier Service efforts pertaining to the Meadowlands. In particular, this effort benefited from: (1) the Service's (1996a) *Significant Habitats and Habitat Complexes of the New York Bight Watershed*, (2) the *Wildlife Management Plan for the Hackensack Meadowlands* (U.S. Fish and Wildlife Service *et al.*, 2000), (3) the *Vision Plan* (New Jersey Division of Fish and Wildlife and the U.S. Fish and Wildlife Service, 2002), and (4) the Service's (2003a) *New York-New Jersey Harbor Estuary Ecological Vision Plan*. Though developed for different purposes and sometimes including input from other agencies, these documents emphasized goals of limiting further encroachment into (*i.e.*, filling of) the Meadowlands, remediating heavily contaminated wetland sites, improving water quality, restoring wetlands, and increasing public access.

Several planning efforts led by other government agencies that address the restoration of the Meadowlands or larger geographic areas that include the Meadowlands have been completed or are underway (Table 30). These planning efforts were initiated by federal or State agencies under different authorities and for different purposes; however, some of these planning efforts identify similar concerns or address the same issues and therefore would benefit greatly from increased communication, coordination, and cooperation among all parties. Planning efforts by other agencies that specifically affect the remediation and restoration of the Meadowlands ecosystem are summarized and presented below.

a. The Harbor Estuary Program's (1996) Comprehensive Conservation and Management Plan

Authorized in 1987 by Section 320 of the Clean Water Act, the HEP received support from federal and State agencies, NGOs, academic institutions, and others in formulating its vision: "to establish and maintain a healthy and productive New York Harbor/Bight ecosystem with full beneficial uses." The CCMP's goals are to: (1) restore and maintain an ecosystem which supports and sustains optimum biodiversity; (2) preserve and restore ecologically important habitat and open space; (3) attain water quality that fully supports bathing and other recreational uses of the estuary; (4) ensure that fish and shellfish in the Hudson Raritan Estuary are safe for unrestricted human consumption; (5) restore and enhance the aesthetic quality of the estuary; (6) actively address emerging issues that impact the estuary; (7) manage and balance the competing uses of the estuary to improve environmental quality; and (8) manage pollutants within the estuary to prevent use impairments outside the estuary. Through several working groups, the HEP is charged with addressing five categories of impairments (habitat loss/degradation, toxics, pathogens, floatables, and nutrients/organic enrichment).

Overall, the HEP and the CCMP have been among the most important groups and planning efforts, respectively, regarding the NY-NJ Harbor. However, exchange of information and technical expertise among the HEP, the Service, and the NJMC has been limited by agency resources and multiple priorities. Moreover, the Service and NJMC have had limited participation in implementing the CCMP in the Meadowlands for similar reasons.

Table 30. Overview of planning efforts by federal and State agencies that pertain to the Hackensack Meadowlands.

<u>Lead agency/ Document Title</u>	<u>Status/Date of issue</u>	<u>Geographic scope</u>	<u>USFWS assistance</u>	<u>Other partners</u>	<u>USFWS concerns</u>
<u>I. U.S. Army Corps of Engineers (Corps)</u>					
A. Hudson Raritan Estuary (HRE) <i>Feasibility Study and Comprehensive Restoration Implementation Plan (CRIP)</i>	Project Management Plan completed	HRE	None	Port Authority of NY-NJ	Planning priorities and sequence; vision?
B. Miscellaneous port planning <i>-Dredged Material Management Plan -Comprehensive Port Improvement Plan</i>	2003 In revision	NY-NJ Harbor	FWCA 2(b) report; other	Port Authority of NY-NJ and others	Adverse dredging and filling impacts (contaminants)
C. Hackensack Meadowlands Ecosystem Restoration <i>Feasibility Study</i> and CRIP	In progress	HMD	PARs, other	NJMC and USFWS	Contaminant effects on restoration; vision?
<u>II. U.S. Environmental Protection Agency (EPA)</u>					
A. Harbor Estuary Program's <i>Comprehensive Conservation and Management Plan</i>	1996	NY-NJ Harbor	Limited	USFWS; federal and state agencies; others	Limited integration of HMD information
B. <i>Lower Passaic River Remediation and Ecosystem Restoration Plan</i>	In progress	Area in HMD	PARs, other	USFWS; federal and state agencies	Contaminant effects on restoration
C. Framework Document, Berry's Creek (Superfund) Study Area	2005	Area in mid-HMD	Technical assistance	USFWS; federal and state agencies; others	Contaminant effects on restoration
<u>III. New Jersey Meadowlands Commission (NJMC)</u>					
A. <i>Master Plan</i> and Zoning Regulations	2004; in review	HMD	Technical assistance		Inconsistency with NJDEP regulations
<u>IV. New Jersey Department of Environmental Protection (NJDEP)</u>					
A. Coastal Management Program's <i>Coastal Zone Management Plan</i>	1978; in revision	New Jersey	None	NJMC	NJMC coordination; consistency in HMD
B. Derivation of NJ-Specific Wildlife Values as Surface Water Quality Criteria for PCBs, DDT, and Mercury.	Expired in 2003	New Jersey	Co-author	EPA; USFWS	USFWS (1996b, 1998) requires NJDEP/EPA to promulgate the criteria.
C. Division of Fish and Wildlife's <i>Meadowlands Wildlife Action Plan</i>	In progress	HMD	None	Ducks Unlimited, Inc. New Jersey Audubon	None known.
D. Hackensack River Study Area Known Contaminated Site Investigation	In progress	Area in lower HMD	Technical assistance		Contaminant effects on restoration

b. The Corps' HRE Feasibility Study and Comprehensive Restoration Implementation Plan

In 2001, the Corps completed a Project Management Plan and executed a Feasibility Cost-Sharing Agreement with the Port Authority of NY-NJ to restore numerous sites throughout the entire HRE. The HRE Feasibility Study and Comprehensive Restoration Implementation Plan were designed by the Corps and its local sponsor (the Port Authority of NY-NJ) as a master plan to guide the restoration of the entire HRE, in part by “spinning-off” local projects, including HRE-Gowanus (NY), HRE-Hackensack Meadowlands (NJ), HRE Lower Passaic (NJ) and HRE-Liberty State Park (NJ). These projects are to focus on: (1) removal of fill and *Phragmites*, (2) restoration of tidal flow to enhance fish and wildlife habitat value and water quality, (3) restoration of shellfish beds, (4) recontouring of bottom sediments in selected harbor areas to restore benthic habitat, (5) removal of impairments to fish migration on tributaries, (6) covering of contaminated sediment hot spots with clean sediments, and (7) identification and implementation of beneficial uses of dredged material for habitat enhancement (U.S. Army Corps of Engineers, 2005f).

The Service supports efforts to restore degraded environments throughout the HRE; however, neither the Service nor most other stakeholders and interested parties have had an opportunity to participate substantially in the development of or review HRE “umbrella guidance” to establish a vision, goals, or objectives for the restoration of the entire HRE. Service concerns are focused on contaminant characterization and risk assessment and the development of water quality and other criteria needed to protect fish and wildlife; other stakeholders have similar and additional interests and concerns beyond the HRE and CCMP.

c. The Corps' Meadowlands-Comprehensive Restoration Implementation Plan

The *Meadowlands Comprehensive Restoration Implementation Plan* (MCRIP), recently released as a draft document, is the most recent and detailed Corps (2005g) planning document regarding the restoration of numerous sites throughout the Hackensack Meadowlands. The MCRIP reportedly addresses two primary water-resource needs: (1) the need for a single Meadowlands-wide analysis of ecosystem restoration opportunities, and (2) the need for initial ecosystem restoration efforts at specific candidate restoration sites. These needs include plans for restoring salt-marsh and benthic habitats, and recommended solutions to: habitat fragmentation, infrastructure encroachments on tidal flow, water-management control structures, and adverse impacts of contaminated sediments, brownfields, and landfills on the Meadowlands ecosystem and its fish and wildlife resources. The overall goal of the Corps' (2005g) MCRIP is “to restore ecological function to the Meadowlands to the extent practicable within the context of the greater HRE.” Other Corps (2005g) goals are to: (1) identify historical ecological functions of the Meadowlands; (2) identify impairments to ecological functions of the Meadowlands; (3) identify physical impairments to the Meadowlands; (4) identify quantifiable restoration performance metrics; (5) identify conceptual restoration opportunities; (6) conduct site characterization and selection; (7) evaluate restoration alternatives and functions restored; (8) assess cost/benefit; (9) select restoration opportunities; and (10) monitor and measure performance.

The Service (2005b) supports the Corps' wetland restoration efforts throughout the HMD, and has provided planning aid regarding site evaluation to avoid increasing the bioavailability of

contaminants. Well-designed remedial components must be included in the restoration of contaminated sites. Therefore, the Service's (2005b) recommendations for the MCRIP are to focus on: (1) regional and local contaminant sources that might hinder restoration efforts; (2) water quality throughout the Meadowlands; (3) the use of existing restoration projects for studies and monitoring to develop an understanding of contaminants in the Meadowlands and their impact on restoration; and (4) pursuing restoration projects that will minimize further problems related to contaminants, their redistribution, and their exposure to fish and wildlife. The Service (2005b) also ranked candidate restoration sites in the HMD into three categories: minimal, moderate, and major contaminant concerns (see Section III.E).

d. The NJDEP Coastal Management Program's Coastal Zone Management Plan

As part of the revision of the State's 1978 *Coastal Zone Management Plan* (CZMP), the NJDEP's Coastal Management Program is undertaking a critical evaluation of the CZMP goals, policies, and implementation strategies prior to revising and submitting an updated plan to the NOAA for approval pursuant to the Coastal Zone Management Act of 1972. The State's CZMP is implemented by the NJDEP's Land Use Regulation Program except in the HMD, where the NJMC is the lead agency. The Service recommends that the roles of, and coordination between, the State agencies (*i.e.*, NJMC and NJDEP) be clearly identified in the revision of the CZMP. In addition, any apparent inconsistencies between the NJMC's 2004 *Master Plan* and zoning regulations and with State wetland laws should be clarified.

e. The NJMC's 2004 Master Plan for the Hackensack Meadowlands District

As the NJMC's primary planning document, the *Master Plan* provides a policy framework to promote the careful balancing of environmental and economic development needs in the HMD. The plan includes an overall vision of a "re-greened Meadowlands and a revitalized urban landscape," to be achieved through: (1) protection, preservation, and enhancement of wetlands culminating in the preservation of 8,400 acres; (2) the thoughtful balancing of planned redevelopment and new development on upland sites; (3) an integrated multi-modal transportation network; and (4) the retention and growth of commercial, industrial, and financial enterprises and jobs. The *Master Plan* is implemented through revised zoning regulations adopted by the NJMC in 2005. The *Master Plan* and the zoning regulations have not been formally submitted to NOAA for consistency determination (K. Herrington, pers. comm., 2005; K. Wall, pers. comm., 2007).

The policies and principles of the *Master Plan* are to be enacted through the NJMC's regulations, including zoning, that are codified at N.J.A.C. 19:3-1.1 *et seq.* The zoning regulations must be consistent with other State regulations to prevent future encroachment into wetlands in the HMD. The NJMC's (2004d) *Master Plan* and zoning regulations would allow marinas and communication towers (as "special use exceptions") in wetlands. The extent of protection provided by land-use designations, such as wetlands, preservation areas, landfill restoration areas, and scientific/research areas on the NJMC's "Green Map" for the HMD (Figure 62), will need clarification. Also, the projected or future use of open space currently represented by landfills on some maps will need to be more clearly defined. The Service is concerned about the potential adverse impacts of special exception uses (*e.g.*, communication towers, marinas)

proposed for the environmental conservation zone. The Service encourages the NJDEP and the NJMC to review and clarify procedures for interagency coordination to ensure consistency of State regulations with federal provisions of the Coastal Zone Management Act and to minimize the potential impacts of federally approved, licensed, permitted, or funded projects in the HMD on federal trust fish and wildlife resources.

f. The NJDFW's Meadowlands Wildlife Action Plan

At the request of, and through funding provided by, the NJMC, the NJDFW has agreed to develop a *Meadowlands Wildlife Action Plan*. This plan is separate from and unrelated to the interagency wildlife management plan that was developed during the SAMP (U.S. Fish and Wildlife Service *et al.*, 2000). The *Meadowlands Wildlife Action Plan* being developed by the NJDFW will form one component of the Statewide *Wildlife Action Plan*, which provides the blueprint for statewide protection of wildlife with special conservation needs. The *Wildlife Action Plan* provides planning tools in a geographic information system to assist landowners and others in protecting habitats for species of conservation need. The Wildlife Action Plan relies on a landscape approach, which includes mapping the occurrence of rare species and their habitats. Fish and wildlife species and habitats can then be monitored to assist in the decision-making for remediation and restoration activities. Specifically, the information will be used to guide planning and regulatory decisions, direct management of conservation areas, provide conservation tools to local stakeholders, and guide further open-space acquisitions. The Service supports the efforts of the NJDFW to develop the *Meadowlands Wildlife Action Plan*; moreover, the Service recommends that this effort be expanded to assess rare plant species and develop management plans (*e.g.*, invasive-species control), as needed.

F. RESTORATION FUNDING

To date, private funding has accounted for the sites restored to date within the Meadowlands as compensatory mitigation for authorized projects in wetlands. Presently, estimates of the cost of restoring an acre of wetland in the HMD range from \$100,000 to \$165,000 per acre (M. Renna, pers. comm., 2004; R. Feltes, pers. comm., 2005). This estimate does not include costs for disposing of any hazardous waste and includes only minimal monitoring and contaminants assessment. Not including acquisition, costs of past HEP (2002) restoration projects throughout the NY-NJ Harbor are estimated to be \$466,000 per acre. Costs for wetland restoration ranging from \$500,000 to \$1.5 million per acre have been reported in other urban areas (*e.g.*, Zentner *et al.*, 2003; U.S. Environmental Protection Agency, 2005d).

Using the above cost estimates based on restoration of previous sites in the Meadowlands, the restoration of all remaining wetland sites in the Meadowlands (other than previously restored sites and the Sawmill Creek Wildlife Management Area) is projected minimally to cost approximately \$405 to \$648 million (4,050 acres x \$100,000 and \$165,000 per acre, respectively). Using the HEP estimate, restoration of the Meadowlands increases to \$1.89 billion. (The Everglades Restoration Project, as an example, has been allocated at \$8 billion.) Other activities associated with restoration, such as site remediation and disposal of hazardous waste, may increase that total estimate substantially (U.S. Environmental Protection Agency,

2005d). This estimate also does not include monitoring, which is currently estimated at approximately 10 to 15 percent of the costs of restoring other sites (*e.g.*, Everglades; U.S. Army Corps of Engineers, 2005h).

Large wetland restoration projects are recognized to have lower costs per acre than small projects (*e.g.*, Imus, 2003); thus, the Service recommends including restoration of adjoining or nearby sites, especially those in the same hydrologic sub-basin (*e.g.*, sites along Berry's Creek), wherever feasible, to reduce the cost and the risk to fish and wildlife. On a per-acre basis, recent Service restoration programs (*e.g.*, *Coastal, Partners for Fish and Wildlife* programs) have been reported to be more cost-effective nationwide than those of most other federal agencies. Possible differences in wetlands quality or other factors known to affect the cost of projects need to be addressed (U.S. Office of Management and Budget, 2004). Expanding the role of the Service may provide an effective means of minimizing costs of restoring certain sites (*e.g.*, Teterboro Woods, Mehrhof Pond, Losen Slote Creek) in the Meadowlands.

G. INTERAGENCY AGREEMENTS AND OVERSIGHT COMMITTEES

The Service recommends that federal and State agencies partnered in remediation and restoration activities develop an interagency memorandum of agreement that establishes a principals' group and technical committee to ensure a collaborative process to coordinate and direct activities affecting the restoration of the Hackensack Meadowlands. As noted above, such oversight committees would be most effective if created and supported by an authorized Meadowlands project similar to restoration projects in Louisiana, the Everglades, and other areas. The principals' group for the Meadowlands would be supported by the (staff-level) technical committee. The principals' group would meet several times a year to coordinate on major policy, programmatic, budgetary scheduling, and other issues affecting the restoration of the Meadowlands. The technical committee would address restoration of specific sites and related technical issues, and its function would be similar to that of the MIMAC and other groups (*e.g.*, the HMER Project Delivery Team, which is comprised of the Corps, NJMC, Service, EPA, NMFS, and NJDEP) regarding restoration planning for specific sites. The Service encourages the principals' group to consider carefully the exact structure and expertise of the technical committee, as its purpose is to provide an effective mechanism for obtaining timely and relevant technical support from appropriate agency resources and disseminating critical information within each agency. In addition, the principals' group and technical committee would coordinate on issues that potentially affect the restoration of the entire HMD. For example, consensus water quality criteria protective of wildlife (*e.g.*, Buchanan *et al.*, 2001) were proposed several years ago but were never adopted and implemented by the State of New Jersey. Similarly, the EPA has not taken action to promulgate these criteria. These criteria are needed to strengthen overall Clean Water Act planning and implementation. In the future and for new parameters, a technical committee could derive new parameter criteria, whereas the principals' group would coordinate and promote the adoption and implementation of these criteria among their respective agencies. In addition, the stakeholders could develop goals for plant communities and consistent guidelines (*i.e.*, under what contaminant and physiographic scenarios) and procedures (*i.e.*, chemical or mechanical) for removal of common reed. Incorporating valuable technical expertise from individuals or work groups not currently involved in the MIMAC or the Meadowlands could

help address issues such as contaminant remediation, re-vegetation goals, and *Phragmites* control. Thus, the utility of the interagency memoranda of agreement and the establishment of a formal principals' group would be increased by including representatives with expertise from outside government, such as NGOs, businesses, or universities, into *pro hoc* working groups for addressing designated issues.

Successful restoration of the Meadowlands ecosystem will require a serious, long-term commitment by government agencies and other stakeholders to fund and carry out remediation, enhancement, restoration, and protection. Thus, the principals' group and technical committee must address major, long-term issues affecting the restoration of the Meadowlands ecosystem and long-term protection of its resources. The Service recommends that activities of both oversight groups include, but not be limited to, the development of: (1) a collaborative process to coordinate all restoration and related activities, (2) a collective vision, (3) development of contaminant criteria and comprehensive risk assessments, and (4) performance measures as prerequisites for restoration. In addition, development of a specially authorized Meadowlands project, similar to restoration projects noted in other parts of the country, would ensure a long-term funding plan, authority for federal involvement, interagency coordination, and a means to move the restoration forward. Subsequent tasks should include addressing: (1) water supply, flow, and quality, including improved sewage treatment, and stormwater and flood control, (2) cumulative land-use impacts, and (3) other invasive species. The Service also recommends that any interagency agreement(s) be reviewed and revised periodically, as necessary.

Currently, the MIMAC performs only part of the communication and coordination functions necessary for the protection and restoration of the Meadowlands. While the MIMAC provides regulatory oversight of sites restored as compensatory mitigation, improvements in the MIMAC's coordination and oversight of compensatory mitigation projects are clearly needed to help prevent future wetland losses. Such improvements should include increased attention to contaminant issues (*e.g.*, monitoring, assessment, impacts) that pertain to many wetland sites considered for restoration, especially those within a designated Study Area for any federal (*e.g.*, Superfund sites, pursuant to CERCLA) and possibly other State-managed contaminated sites (*e.g.*, Peninsula Group site, managed currently by NJDEP's Site Remediation Program). The EPA's Superfund Branch (and coordination with the BTAG) should be considered for regular participation in the MIMAC. Thus, the current Interagency Compensatory Wetland Mitigation Agreement for the Hackensack Meadowlands District (dated August 29, 1997) that established the MIMAC should be re-evaluated to ensure: (1) compliance of all remediation and restoration projects with federal and State regulatory requirements, (2) consistency in remediation, restoration, and other activities governed by different authorities, and (3) coordination of remediation and restoration projects with other activities involving restoration or land use in the Meadowlands. Such actions have contributed to improvements in mitigation in other states (*e.g.*, Florida; Florida Office of Program Policy Analysis and Government Accountability, 2000).

Finally, the principals' group and technical committee should meet annually with other stakeholders in a forum for information exchange (and other specific purposes), such as the Stakeholders' Work Sessions that have been hosted by the Service since October 2000. Additional meetings with smaller workgroups might be conducted to facilitate specific tasks. The commitment of restoration partners to an annual gathering would improve communication,

facilitate coordination on issues important to remediation and restoration (particularly restoration schedules), improve cooperation on projects, and enhance the visibility of efforts to restore the Meadowlands.

H. SUMMARY

Greater collaboration among federal and State agencies and NGOs is necessary to address the numerous and complex problems and issues regarding the restoration of the Meadowlands and the long-term protection of its fish and wildlife resources. Numerous agencies are involved in restoration of different sites in the Meadowlands; however, these restoration efforts are being undertaken by different agencies independently and pursuant to different authorities for different purposes on different schedules. To date, activities reflect the absence of a shared vision to guide actions by restoration partners, including regulatory and resource agencies. Several land-use planning efforts are underway for different purposes and have the potential to contribute to the restoration and protection of the Meadowlands; however, these efforts would also be improved by the commitment of all agencies to a shared vision and collaborative action. While current funding is sufficient to undertake restoration of small sites, it will not be adequate for comprehensive restoration of the Meadowlands ecosystem. Stakeholders need to explore the development of a specific funding authority for Meadowlands restoration similar to what has been established for other landscape-scale restoration projects in the Missouri River, Florida Everglades, and lower Colorado River. While development of such an authority may take time, all stakeholders, and especially federal and State agencies, could improve current restoration efforts in the Meadowlands by developing a memorandum of agreement that establishes a principals' group and a technical committee to develop a collaborative, consensus-driven process and ensure coordination on regulatory, remediation, and restoration issues. Recent efforts to restore the Meadowlands are encouraging; however, improved collaboration and long-term coordination will be necessary to address the complex problems affecting the Meadowlands ecosystem and its fish and wildlife resources.