

Executive Summary

Background

The Middle Mississippi River Regional Corridor (MMRRC) study was one of five federally funded watershed studies being conducted in response to the Fiscal Year 2006 Energy and Water Development Appropriations Act (PL 109-103). That legislation directed the Secretary to conduct, “at full federal expense, comprehensive analyses that examine multi-jurisdictional use and management of water resources on a watershed or regional scale.” As prerequisites, selected studies were to include collaboration among a broad range of stakeholders, apply systems-level approaches, cover a large geographic area, and strive to achieve multiple goals. The focus for the MMRRC study is on improving regional collaboration and providing the tools and products necessary for better interagency planning within the Middle Mississippi River (MMR). The framework for the MMRRC study focuses on ecosystem restoration, natural resources management, and the interaction between the natural resource community and other communities of practice which impact or are impacted by natural resource planning and decision-making.

A central part in this study was played by the Middle Mississippi River Partnership (MMRP); a group of twenty-one stakeholders in the region who come from federal agencies, state agencies, and non-governmental organizations (NGO). The vision statement of the MMRP is:

“To develop a network of diverse and sustainable natural resources on public and private lands in the Middle Mississippi River corridor that adequately supports fish and wildlife habitat and provides conservation benefits consistent with a variety of other uses.”

This document is part of a larger effort in the region driven by the MMRP and is complemented by two other documents produced for the region during this same time period. The first of the documents, the MMRP Regional Coordination Plan, strives to give the stakeholders goals, objectives, strategies/actions in order to achieve the aforementioned vision as well as the individual partners’ missions.

The second document that was produced was “An Evaluation of Ecosystem Restoration Options for the Middle Mississippi River Regional Corridor.” This document uses a hydrogeomorphic (HGM) approach to determine historic vegetation communities and allow the user to plan for restoring these communities to their historical locations. The HGM technique uses a variety of data such as geology, topography, and flood frequency as well as the use of historic documents to determine historic vegetation communities and their locations.

The Middle Mississippi River (MMR) Corridor Study

The MMR is an approximately 200 mile stretch of river that lies between the confluence with the Missouri River near St. Louis, Missouri and the confluence with the Ohio River at Cairo, Illinois. It is also the most northern section of the Mississippi River where water levels are not regulated by dams. The associated floodplain includes about 550,000 acres.

When the Middle Mississippi River is examined from an ecological perspective it can be divided into three regions (Heitmeyer, 2008). These regions, as described in Heitmeyer 2008, are referred to as the American Bottom region (historically dominated by prairie and some forest), Kaskaskia to Thebes region (a transitional area with historically more forest than prairie) and below Thebes region (dominated historically by bottomland hardwoods).

In an attempt to divide this reach into manageable units for the study, the river was further subdivided into 5, approximately 40 mile sections. The responsibilities for consolidating data and information for each reach were given to a different partnering agency that participated in this study. Each agency used this data to contribute to assessments of their forty mile stretch of river and its associated floodplain.

Each reach was then subdivided even further into sub-areas in order to help drive regional focus towards narrower bounds. This further subdivision allowed for greater accuracy in targeting opportunities, problems, needs, and abilities within the MMR. Sub-areas were grouped based on whether they were unprotected floodplain, floodplain protected by levees, or part of the main channel and its border. The sub-areas in each reach are discussed in detail in this report.

A large part of this study consisted of gathering existing information on the reaches. One of the most influential sources of data came from Geographic Information Systems (GIS) data from various sources. Two of the largest contributors were the U.S. Geological Survey's (USGS) Long Term Resource Monitoring Program (LTRMP) and the Middle Mississippi River Decision Support System (MMRDSS).

The collection of GIS data as well as a host of information on the MMR gathered from a variety of sources was presented at a series of meetings held for each of the five reaches. Present at these meetings were a variety of stakeholders which included federal agencies, state agencies, departments of transportations, planning agencies, NGOs, and private individuals (see participants list in Appendix B of each reach section). During these meetings the various stakeholders were asked to examine the gathered information and discuss its accuracy as well as add to it. Stakeholders were given the opportunity to voice their concerns, wants, and needs for the region and each of the sub-areas and to prioritize the sub-areas based on where they most wanted to direct their efforts. All this data is contained in this report.

Most stakeholders participating in the corridor study were also members of the Middle Mississippi River (MMR) partnership group. The MMRP had developed a living document known as the MMRP Coordination Plan that complements this MMR Corridor Study. The MMRP Coordination Plan outlines goals towards natural resource conservation consistent with economic sustainability in the MMR and the various strategies for obtaining these goals. The members of the MMRP area as follows:

Table ES-1: MMRP Member Groups

Federal Partners	State Partners	Additional Partners
Upper Mississippi & Great Lakes Region Joint Venture	Illinois Department of Natural Resources (IDNR)	American Land Conservancy
U.S. Army Corps of Engineers (USACE), St. Louis District	Illinois Forestry Development Council	The Conservation Fund
U.S. Environmental Protection Agency (EPA)	Illinois Society of American Foresters	Ducks Unlimited
U.S. Fish & Wildlife Service (USFWS)	Missouri Department of Conservation	The Nature Conservancy
U.S. Forest Service (USFS)	Missouri Department of Natural Resources (MDNR)	SIUC Cooperative Wildlife Research Lab
U.S. Geological Survey (USGS)		Southern Illinois Community Foundation
USDA Natural Resources Conservation Service (NRCS) (IL & MO)		Southwestern Illinois RC&D, Inc.
		Wildlife Forever
		National Wild Turkey Federation

Another large part of this effort was the commissioning of a hydrogeomorphic (HGM) study (Heitmeyer, 2008) for the region. This study incorporated knowledge of the topography, geology, soils, flooding frequency, and historical maps to determine what and where vegetational communities existed in the MMR before European settlement. It also allows us to determine where these communities can exist today and what it will take to restore them. The results were packaged into a separate report as well as into ArcGIS shape files that can be used by anyone to conduct their own analyses of the region.

The Middle Mississippi River – Historical Perspective

The first inhabitants of the Middle Mississippi Region probably arrived sometime around 9,000 B.C. At this time use of the river and its floodplain consisted entirely of subsistence. Eventually peoples settled into larger groups and the Cahokian culture developed in the northern area of the Middle Mississippi River near present day East St. Louis.

Changes to the landscapes in the corridor by humans began even before European settlement. Native Americans eventually converted small portions of the landscape to agriculture and also helped maintain the prairie through periodic fires set to maintain an open landscape conducive to hunting. With the arrival of European settlers, more land was cleared and drained for agricultural and development.

A HGM analysis (Heitmeyer, 2008) was used to more specifically and scientifically identify pre-European settlement vegetation types in the corridor. The following table lists the acreage and percentage of the presettlement vegetation present in the corridor:

Table ES-2: Presettlement Vegetation in the MMR Corridor

Presettlement Vegetation	Acres	Percent
Bottomland Hardwood	47,818.69	8.65%
Bottomland Hardwood Ridge	2,368.78	0.43%
Bottomland Lake	37,479.42	6.78%
Bottomland Prairie Ridge	8,713.42	1.58%
Bottomland Prairie Swale	34,956.11	6.32%
Bottomland Prairie Urban	16,071.10	2.91%
Floodplain Forest Ridge	39,945.30	7.22%
Floodplain Forest Swale	111,387.13	20.14%
Floodplain Forest Urban	7,286.03	1.32%
Other	51,809.43	9.37%
Riverfront Forest	108,023.12	19.54%
Slope Forest	21,291.94	3.85%
Slope Savanna	9,938.69	1.80%
Terrace Forest	0.00	0.00%
Terrace Prairie	18,314.68	3.31%
Water	37,561.47	6.79%
Total	552,965.32	100.00%

Forest vegetation dominated the original landscape with 338,122 acres or 65% of the corridor. Prairie vegetation covered 78,055 acres or 14% of the area. Water and lakes covered 75,040 acres or about 14% of the corridor.

Two major floods in the late 1800s greatly influenced the widening and reshaping of the MMR channel. Additionally, the MMR has seen dramatic ecological changes due to human influence over the last 200 years. These changes are numerous and products of several influences. An important milestone in the changing of the MMR landscape was marked by the arrival of the first steamboat into the Upper Mississippi in 1823. One of the results of the increased navigation by steamboats was an attempt to control the river itself.

The fertile lands of the floodplains were cleared and drained in order to be converted to agriculture. To prevent flooding, these lands were subsequently leveed. This prevented any lands that were still left in original habitat from receiving periodic flooding and drying that helped maintain the diversity of species.

The Middle Mississippi River – Current Conditions

Today the landscape of the MMR is dominated by agriculture throughout and by urban development in the upper portion of the American Bottom Ecoregion. What little natural habitat is left lies primarily between the levees and the river itself. A large portion of the floodplain in the MMR, 354,947 acres, is behind levees which block the ability of the river to spread across the flood plains in times of high water resulting in severe ecological consequences.

Table ES-3: Current Land Cover in the MMR from USGS LTRMP year 2000 data.

Class	Acres	Percent
Agriculture	293,100	53.14%
Developed	55,675	10.09%
Forest	88,975	16.13%
Grass/Forbs	16,684	3.02%
Sand/Mud	6,656	1.21%
Unknown	4,895	0.89%
Water	64,846	11.76%
Wetland	20,723	3.76%

Ecoregions and Reaches

Three ecoregions were established in the corridor based on ecological conditions. These were the American Bottom from RM 117 to RM 200, Kaskaskia to Thebes from RM 40 to 117, and Thebes from RM 0 to 40. Five reaches were also established for the corridor based on land use, river segments, and the opportunity to localize resource issues applicable to stakeholder interest. These included Reach 1 from RM 156 to 200 and Reach 2 from RM 117 to 156 (both included in the American Bottom ecoregion); Reach 3 from RM 80 to 117 and Reach 4 from RM 40 to 80 (both included in the Kaskaskia to Thebes ecoregion); and Reach 5 from RM 0 to 40 (the Thebes ecoregion).

Reach 1 (St. Louis Reach)

Reach 1 is located in the northern portion of the corridor from just south of the Jefferson Barracks Bridge to Lock and Dam 26 at Alton, IL (RM 156 to 200). This reach contains twenty-three different sub-areas that are described in detail in the report. The northern portion of the reach is dominated by urban land in the Metro-East area which includes commercial/industrial complexes along the river. The southern portion of the reach is dominated by agricultural land. This reach originally contained the largest acreage and percentage of prairie vegetation, most of which has been converted to other land uses. The area contains 21,099 acres of public lands, mostly owned by Illinois Department of Natural Resources, Missouri Department of Conservation, and the National Park Service.

The following table highlights the land use changes from the early 1800s to the present time.

Table ES-4: Land use change in Reach 1 - 1800s vs. 2000 & 1989 vs. 2000 *

Land Cover	Land Use Early 1800s (Acres) ¹	Land Cover 1989 (Acres)	Land Cover 2000 (Acres)	Net Land Cover Change (Acres)	
				1800 to 1989 (Acres) ¹	1989 to 2000 (Acres)
Agriculture	0	80,719	64,844	+80,719	-15,875
Grasses/Forbs	62,405	10,130	7,096	-52,275	-3,034
Forest	69,259	10,924	18,236	-58,335	+7,312
Wetlands/Marsh	-	567	6,078	-	+5,511

Table ES-4 (continued): Land use change in Reach 1 - 1800s vs. 2000 & 1989 vs. 2000 *

Land Cover	Land Use Early 1800s (Acres) ¹	Land Cover 1989 (Acres)	Land Cover 2000 (Acres)	Net Land Cover Change (Acres)	
				1800 to 1989 (Acres) ¹	1989 to 2000 (Acres)
Sand/Mud	0	736	1,294	+736	+558
Water	19,256	13,828	15,200	-5,428	+1,372
Developed	0	45,574	48,859	+45,574	+3,285
Unknown	13,043	1483	2,175	-	-
Total	163,964	163,784	163,784	-	-

¹ (The 1800s land use categories do not match the 1989 and 2000 land use categories exactly in their definitions. Some assumptions were made to place the HGM presettlement vegetation into the categories in the above table. Given those assumptions, the changes from 1800s to 1989 are not exact and are only approximate trends. The Savanna in the HGM table was included in Grasses/Forbs in the above table and the other category from the HGM model was placed in the unknown category in the above table. The changes in forest and prairie land use from the 1800s to 1989 are significant even if the exact acreages are not known.)

Reach 2 (Harlow Reach)

Reach 2 is located in the corridor from the mouth of the Kaskaskia River to just south of the Jefferson Barracks Bridge (RM 117 to 156). This reach contains twenty different sub-areas that are described in detail in the report. The reach is dominated by agricultural land with 65% of the area in that land use. Much of the original forest and prairie vegetation has been converted to other land uses, mainly agricultural use.

The following table highlights the land use changes from the early 1800s to the present time.

Table ES-5: Land use change in Reach 2 - 1800s vs. 2000 & 1989 vs. 2000

Land Cover	Land Use Early 1800s (Acres) ¹	Land Cover 1989 (Acres)	Land Cover 2000 (Acres)	Net Land Cover Change (Acres)	
				1800 to 1989 (Acres) ¹	1989 to 2000 (Acres)
Agriculture	0	67,180	60,878	+67,180	-6,302
Grasses/Forbs	21,137	2,426	2,333	-18,711	-93
Forest	47,344	9,932	12,646	-37,412	+2,714
Wetlands/Marsh	-	212	2,417	-	+2,205
Sand/Mud	-	1,025	1,422	+1,205	+397
Water	16,491	11,819	12,027	-5,428	+1,372
Developed	0	556	1,539	+556	+983
Unknown	9,023	845	483	-	-
Total	93,995	93,995	93,745	-	-

¹ (The 1800s land use categories do not match the 1989 and 2000 land use categories exactly in their definitions. Some assumptions were made to place the HGM presettlement vegetation into the categories in the above table. Given those assumptions, the changes from 1800s to 1989 are not exact and are only approximate trends. The Savanna in the HGM table was included in Grasses/Forbs in the above table and the other category from the HGM model was placed in the unknown category in the above table. The

changes in forest and prairie land use from the 1800s to 1989 are significant even if the exact acreages are not known.)

Reach 3 (Crain’s Reach)

Reach 3 is located in the corridor from Devil’s Tower to the mouth of the Kaskaskia River (RM 80 to 117). This reach contains fourteen different sub-areas that are described in detail in the report. The reach is dominated by agricultural land with 54% of the area in that land use. Much of the original forest and prairie vegetation has been converted to other land uses, mainly agricultural use. This reach contains 5,626 acres of public land much of which is owned by the US Fish and Wildlife Service as part of the Middle Mississippi River Wildlife Refuge.

The following table highlights the land use changes from the early 1800s to the present time.

Table ES-6: Land use change in Reach 3 - 1800s vs. 2000 & 1989 vs. 2000 *

Land Cover	Land Use Early 1800s (Acres) ¹	Land Cover 1989 (Acres)	Land Cover 2000 (Acres)	Net Land Cover Change (Acres)	
				1800 to 1989 (Acres) ¹	1989 to 2000 (Acres)
Agriculture	0	90,490	81,015	+90,490	-9,475
Grasses/Forbs	4,452	2,340	3,160	-2,112	+820
Forest	88,208	10,575	14,278	-77,633	+3,703
Wetlands/Marsh	-	20	1,921	-	+1,901
Sand/Mud	0	358	1,648	+358	+1,290
Water	16,274	11,177	10,480	-5,097	-697
Developed	0	515	1,845	+515	+1,330
Unknown	7,121	578	995	-	-
Total	116,054	116,055	115,342	-	-

¹ (The 1800s land use categories do not match the 1989 and 2000 land use categories exactly in their definitions. Some assumptions were made to place the HGM presettlement vegetation into the categories in the above table. Given those assumptions, the changes from 1800s to 1989 are not exact and are only approximate trends. The other category from the HGM model was placed in the unknown category in the above table. The change in forest land use from the 1800s to 1989 is significant even if the exact acreages are not known.)

Reach 4 (Hamburg Reach)

Reach 4 is located in the corridor from Thebes Gap to Devil’s Tower (RM 40 to 80). This reach contains seventeen different sub-areas that are described in detail in the report. The reach is mainly agricultural land with 46% of the area in that land use. Much of the original forest vegetation has been converted to other land uses, mainly agricultural use. This reach contains a large portion of forest land, 24% of the area, and has the largest acreage of public land (27,334 acres) of any other reach in the corridor. The Shawnee National Forest is located in this reach.

The following table highlights the land use changes from the early 1800s to the present time.

Table ES-7: Land Use Change in Reach 4 - 1800s vs. 2000 & 1989 vs. 2000 ¹

Land Cover	Land Use Early 1800s (Acres) ¹	Land Cover 1989 (Acres)	Land Cover 2000 (Acres)	Net Land Cover Change (Acres)	
				1800 to 1989 (Acres) ¹	1989 to 2000 (Acres)
Agriculture	0	60,132	48,479	+60,132	-11,653
Grasses/Forbs	0	2,898	2,860	+2,889	-38
Forest	85,030	25,422	27,540	-59,608	+2,118
Wetlands/Marsh	-	775	7,990	+775	+7,215
Sand/Mud	0	629	1,057	+629	+428
Water	8,248	12,440	13,351	-4,192	+911
Developed	0	802	11,864	+802	+1,062
Unknown	1,931	1,149	1,017	-782	-132
Total	104,246	104,246	104,159	-	-87

¹Data is taken from Reach 4 data tables, USACE for Hamburg Reach approximately (RM 40–80) 6/13/2008.

²Data is taken from MMR Partnership Coordination Plan (USNRCS, 2005)

Reach 5 (Dogtooth Reach)

Reach 5 is located in the corridor from the mouth of the Ohio River to Thebes Gap (RM 1 to 40). This reach contains twenty-one different sub-areas that are described in detail in the report. The reach is mainly agricultural land with 50% of the area in that land use. Much of the original forest vegetation has been converted to other land uses, mainly agricultural use. This reach contains a large portion of forest land, 22% of the area, and has 8,651 acres of public land.

The following table highlights the land use changes from the early 1800s to the present time:

Table ES-8: Land use change in (Reach 5) - 1800s vs. 2000 & 1989 vs. 2000 *

Land Cover	Land Use Early 1800s (Acres) ¹	Land Cover 1989 (Acres)	Land Cover 2000 (Acres)	Net Land Cover Change (Acres)	
				1800 to 1989 (Acres) ¹	1989 to 2000 (Acres)
Agriculture	-	43,109	37,884	+43,109	-5,225
Grasses/Forbs	-	971	1,235	+971	+264
Forest	48,278	13,328	16,275	-34,950	+2,947
Wetlands/Marsh	-	670	2,318	+670	+1,648
Sand/Mud	-	449	1,234	+449	+785
Water	14,772	13,177	13,789	-1,595	+612
Developed	-	1,065	1,567	+1,065	+502
Unknown	11,665	1,936	224	-9,729	-1,912
Total	74,705	74,705	74,526	-	-

¹ (The 1800s land use categories do not match the 1989 and 2000 land use categories exactly in their definitions. Some assumptions were made to place the HGM presettlement vegetation into the categories in the above table. Given those assumptions, the changes from 1800s to 1989 are not exact and are only approximate trends. The Savanna in the HGM table was included in Grasses/Forbs in the above table and

the other category from the HGM model was placed in the unknown category in the above table. The changes in forest and prairie land use from the 1800s to 1989 are significant even if the exact acreages are not known.)

Restoration and Planning Efforts

The members of the Middle Mississippi River Partnership have been cooperating on restoration efforts in the corridor for a number of years. A variety of projects have been planned and completed and many are still in progress in the region. These efforts have been successful in reversing the trends in forest and wetlands losses from the early 1800s to the year 1989. From 1989 to 2000 forest and wetland acres increased in the corridor by 18,792 acres and 18,479 acres respectively.

The following are some of the projects in the corridor that have been planned and/or implemented in the past several years.

Reach 1:

Chouteau Island Complex – The US Army Corps of Engineers, the Illinois Department of Natural Resources and the City of Madison own several thousand acres of land within this three-island complex.

East St. Louis & Vicinity Ecological Restoration and Flood Damage Reduction Project – The US Army Corps of Engineers has identified several historic stream corridors in the American Bottom in both Madison and St. Clair Counties where opportunity exist for ecological restoration.

Wetland Acquisitions in Madison County – Southwestern Illinois Resource Conservation & Development is in the process of acquiring 83 acres in Madison County which contain portions of Edelhardt Lake, a remnant meander of the Mississippi River. The site contains 63 acres of existing wetlands.

Horseshoe Lake State Park – Maintained by IDNR as a recreation and wildlife area in the American Bottom. The Park is an excellent place for bird watching. It has been said that virtually all species of birds that have been spotted in the state have been seen at one time or another at the Park.

Reach 2:

Kimmswick Stone Dikes - Was included in O&M stone dike alterations report.

Atwood Chute - Project concept includes dredging to improve connectivity to river, and potential management of island and side channel as part of a complex.

Herculaneum Stone Dikes - Was included in O&M stone dike alterations report.

Calico/Osborne Stone Dikes - Was included in O&M stone dike alterations report.

Calico Chute - Woody bundles placed at two sites (A&M funded).

Osborne Chute - Project concept includes: alternating hard points, selective dredging, disposal material placement to extend island downstream, and secondary channels enhancement.

MMRNWR - Harlow Island Division - USFWS purchased this 1,225-acre tract in 1996; now part of MMR National Wildlife Refuge.

Salt Lake Stone Dikes - Was included in O&M stone dike alterations report.

Fort Chartres Stone Dikes - Was included in O&M stone dike alterations report.

Fort Chartres Island & Chute - Project concept includes: dredging, and management of the location as a complex.

Wetland Reserve Program and Emergency Watershed Program – Easements for the restoration and protection of wetlands.

Reach 3:

Wilkinson Island -The majority of this island is currently owned by the USFWS and is part of the Middle Mississippi River Fish and Wildlife Refuge. Portions of the island are being restored in collaboration with USACE.

Rockwood Island - A large part of this island is currently owned by the USFWS and is part of the Middle Mississippi River Fish and Wildlife Refuge. Portions of the island were purchased by the American Land Conservancy and Ducks Unlimited and then transferred to the USFWS. Efforts are underway to restore wetlands on the floodplain portion of the complex.

Crains Island - A large part of this island is currently owned by the USFWS and is part of the Middle Mississippi River Fish and Wildlife Refuge. Efforts are underway to restore wetlands on the floodplain portion of the complex.

Kaskaskia Island - A large part of this island is currently owned by the USFWS and is part of the Middle Mississippi River Fish and Wildlife Refuge. Restoration of wetlands has occurred on 2,110 acres with opportunities for future restoration on additional acres as they become available.

Owl Creek - The USACE has initiated restoration efforts in the side channel of this complex in an effort to disconnect the island from the mainland for the benefit of nesting least terns.

Reach 4:

Shawnee National Forest Land and Resource Management Plan - This plan was completed in 2006 and is for management of National Forest land within the boundaries of the Forest and

Forest purchase units for the next 10-15 years. Included in that plan were four specific management area prescriptions for lands within the MMR partnership area.

Grand Tower L&DDs - USFS-Shawnee National Forest presence includes: operation and management of Oakwood Bottoms Greentree Reservoir; management of Big Muddy Wetlands area; management (wetlands) of the Big Muddy River Bottoms Habitat Improvement area; acquisition and management of EWRP lands and other lands within the Shawnee NF Middle Mississippi River Purchase Unit; and monitoring and management of Indiana bat maternity colony.

E. Cape Girardeau/N. Alexander L&DDs - Existing management includes restoration and management of wetlands, recreation (hunting and viewing), reforestation, USFWS administration of FSA easements, and various USEPA actions.

Other specific projects are included in the main body of this report.

Reach 5:

Horseshoe Lake – The acquisition of Horseshoe Lake Fish and Wildlife Area began in 1927. This area was purchased to provide wintering habitat for the Mississippi Valley population of Canada geese. Current management efforts are directed at providing more wetland habitat for ducks and endangered and threatened species.

Powers Island – This area was proposed for addition to the USFWS refuge system. There are only a few landowners and many are not interested in having agricultural land converted to other uses. This area is almost entirely in agricultural production and has abandoned side channels that could be reconnected.

Thompson Bend – This area is almost entirely in agriculture and has no levee for flood protection. The USACE has several reforestation easements with the goal of preventing scour damage as the river wants to form a cutoff and create an island out of Thompson Bend.

Cache River Joint Venture – Cypress Creek NWR has recently acquired a forested tract along the Mississippi River at the Mouth of the Cache River. This acquisition along with recent acquisitions of Horseshoe Lake create a connection where two partnerships can work together to improve habitat conditions and create viable wildlife corridors.

Dogtooth Bend Floodway Zone – The USACE has developed plans for evaluating the potential for creating a floodway across Dogtooth Bend. This proposal would use controlled overflow across the bend to reduce Mississippi River flooding.

Wetlands Reserve Program (WRP), Emergency Wetlands Reserve Program (EWRP), and Emergency Watershed Protection (EWP) Floodplain Easements – These programs were used mainly from 1994 to 1998 by the USDA Natural Resources Conservation Service to convert lands in the floodplain back to wetlands. Most of these areas were flooded in 1993. There are currently 1,595 acres in the reach covered by conservation easements under these programs.

Planning Efforts to Date

The responsibilities for consolidating data and information for each reach were given to a different partnering agency that has been participating in this study. Each agency used this data to contribute to assessments of their forty mile stretch of river and its associated floodplain. These participating agencies and their reach responsibilities can be seen in the following table:

Table ES-9: Reach Responsibilities by Agency

Reach	River Mile	Agency
1	156 - 200	Southwestern Illinois Resource Conservation & Development
2	117 - 156	U.S. Army Corp of Engineers
3	80-117	American Land Conservancy
4	40 - 80	U.S. Forest Service
5	0 - 40	Illinois Department of Natural Resources

Each reach was then subdivided even further into sub-areas in order to help drive regional focus towards narrower bounds. This further subdivision allowed for greater accuracy in targeting opportunities, problems, needs, and abilities within the MMR.

A large part of this study consisted of gathering existing information on the reaches. This effort looked to several different types of sources. One of the most influential sources of data came from GIS data. Two of the largest contributors were the U.S. Geological Survey's (USGS) Long Term Resource Monitoring Program (LTRMP) and the Middle Mississippi River Decision Support System (MMRDSS). In addition to GIS data all previous reports and studies involving the MMR that could be identified and located were gathered.

A series of stakeholder meetings were held in each reach to gather input relating to the resource needs, current and future restoration projects, high priority issues and geographic areas, and other information applicable to each reach and sub-area. Information on these meetings and the attendees is contained in Appendix B of each reach section. These sessions were very valuable in obtaining local input to the project and in expanding partnering efforts with potential new MMRP members and/or stakeholders.

All of this compiled data was put together into this report or into data forms. A data form (Appendix A of each Reach section) was constructed to help tabulate available data regarding each site location. These forms are also meant to help augment the ecosystem objectives refinement matrices included in the data forms.

Sub-Area Assessments

An assessment of each sub-area was completed using existing data and information, GIS maps, data forms, land use data, and feedback from the stakeholder meetings held in each reach. An individual assessment was completed on each of the ninety-five identified geographic areas in the corridor. The assessments included historical and current land uses and trends, identification of resource problems and opportunities, and listing of potential restoration or natural resource projects in each sub-area.

Maps are also included for each sub-area showing 2000 land cover, presettlement vegetation, farmland classification, and farmland and flooding frequency. The maps contain the acreages and percentages of land in each category.

Reach Assessment Summary

As the stakeholder groups met to provide input into the needs and projects for each sub-area they also established a priority for each area for current restoration efforts and activities utilizing the various partnership programs. A high, medium, or low priority was given to each sub-area as outlined in the body of this report. In addition, the applicable side-channel projects were also listed for each sub-area. These tables outline this information by sub-area and river mile.

The stakeholders in each reach also established high priority projects or geographic areas for that section of the corridor. These will serve to focus the efforts and programs of the partners for future restoration efforts or for activities needed to address identified resource concerns in that reach. These are the high priority opportunity areas or issues for each reach:

Reach 1:

- 1) Implementation of the East St. Louis & Vicinity, Illinois Ecosystem Restoration and Flood Damage Reduction Project. Several sites in the region.
- 2) Implementation of the Chouteau Island Master Plan.
- 3) Horseshoe Lake State Park and vicinity (Include area between IL 203, IL 111, and I55/70, and Collinsville Road).
- 4) MO/MS Confluence Area.
- 5) Aquatic Habitat restoration and conservation.
- 6) Smaller potential priority areas were identified including:
 - a) Areas in MO contained in the MDC Comprehensive Wildlife Strategy.
 - b) Eagle Park Marsh – T & E species habitat and marsh community
 - c) Cahokia Mounds and Vicinity
 - d) Sand Road Site in Madison County and Adjacent Chorus Frog habitat.
 - e) Poag Road RR prairie – mesic prairie community
 - f) Levee Lake Natural Area – wetland, forested wetland
 - g) Alorton Rookery Area – T&E species nesting habitat
 - h) Frank Holten State Park and Vicinity – wetland habitat
 - i) Borrow Pit (Rt 3 north of I-270) – wetlands
 - j) Berm Highway (Near Lock and Dam 26) – wetlands and forest

Reach 2:

- 7) Side channel restoration.
- 8) Island creation and new secondary channel creation.
- 9) Bottomland prairie restoration.
- 10) Riverfront forest corridor connectivity and diversity.

- 11) Moredock Lake complex
- 12) Kidd Lake Marsh complex
- 13) Harrisonville and Ivy No. 2 Levee District
- 14) Schmidt Island Complex
- 15) Harlow Island

Reach 3:

- 16) Wilkinson Island Jones Towhead – restoration of natural habitat.
- 17) Jones Towhead – restoration of natural habitat.
- 18) Rockwood Island – wetland restoration and tree planting.
- 19) Crains Island – wetland restoration and tree planting.
- 20) Kaskaskia Island – restoration of wetlands.
- 21) Owl Creek RM – side channel restoration.
- 22) Degonia & Fountain Bluff L&DD – restoration opportunities on floodplain.
- 23) Chester Bottomland – restoration opportunities on floodplain.
- 24) Bois Brule L&DD RM – restoration opportunities on floodplain.

Reach 4:

- 25) Backwater and oxbow lake restorations in all unprotected and protected sub-areas.
- 26) Reforestation of former agricultural land when acquired by fee title or easement in all or any unprotected and protected floodplain sub-areas where possible.
- 27) Island creation and new secondary channel creation.
- 28) Side Channel/Chute habitat improvements in all applicable sub-areas
- 29) Island restoration. Land acquisition and Island creation/restoration between USACE, USFWS, MDC, and/or IDNR on Marquette Island and Windy Bar.
- 30) Restoration Partnerships. Land acquisition and restoration.
- 31) Backwater restoration/connection and improved levee district drainage.
- 32) Water management partnerships.
- 33) Wetland restorations in former agricultural lands in protected and unprotected floodplains.
- 34) Improved Public Access. Boat ramp repairs and management.
- 35) Shallow water wetland construction/placement over sand boil areas inside and adjacent to the Mississippi River levees.
- 36) Seasonal wetland developments on agricultural lands to allow for flooding during dormant seasons.

Reach 5:

- 37) Horseshoe Lake FWA – Strong interest in wildlife in this area; enhances habitat restoration potential.
- 38) Powers Island – This area was once proposed for addition to the National Wildlife Refuge System.
- 39) Browns Bar – Reconnecting the side channel adjacent to this island.
- 40) Dogtooth Bend – This peninsula south of Horseshoe Lake is dominated by frequently flooded farmland with limited rural housing.

- 41) Sisters Island/Thompson Bend – This area has no levees for flood protection and good potential for acquisition or easements.
- 42) Cache River Joint Venture – Working closely with this partnership will increase the benefits of efforts in the area where our partnerships meet or overlap.
- 43) Cairo Point Area – Efforts are underway to revitalize this city.
- 44) Bumgard Island/Price Towhead – This is a very important area for nesting least terns.
- 45) Angelo Chute – Improving the depth diversity and structure within this chute would enhance conditions for native fish.
- 46) Burnham Island – Habitat on this island could be improved with acquisitions or easements.

Data Forms (Appendix A of Each Reach Section)

A large part of this study consisted of gathering existing information on the reaches. This effort looked to several different types of sources. One of the most influential sources of data came from GIS data. GIS data was gathered from numerous sources; two of the largest contributors were the USGS Long Term Resource Monitoring Program (LTRMP) and the Middle Mississippi River Decision Support System (MMRDSS). In addition to GIS data, all previous reports and studies involving the MMR that could be identified and located were gathered.

All of this compiled data was put together into data forms. A data form (Appendix A of each Reach section) was constructed to help tabulate available data regarding each site location. The completion of this form is an interactive process with periodic improvements being made as team reviews and new information enters the picture.

The data forms contain the following information:

- General planning assumptions
- Sub-areas, associated side-channels, and priorities
- Science Panel objectives
- NESP Ecosystem objectives and goals
- Science Panel objectives applied to MMRP goals
- Landownerships (Public and Private)
- WRP Easements

The data forms in the report contain the following information for each sub-area:

- Problems
- Vision statement
- Ecosystem goals
- Ecosystem objectives
- Other goals
- Potential ER measures
- Potentially applicable programs
- Existing management activities

- Existing management plans
- Special status areas
- Federal T & E species
- State T & E species
- Available data sources
- Site Characteristics
- Data needs
- Modeling needs
- Monitoring needs
- Potential projects
- Potential partners
- Maps
- Other notes

Data Tables (Appendix to the overall report)

Data for the entire Middle Mississippi River corridor, the three ecoregions, the five reaches, the 97 sub-areas is included in the Appendix to the report. These tables include the following data:

- 2000 Land Cover – USGS Land Cover
- 1989 Land Cover – USGS Land Cover
- Farmland Type – USDA, NRCS Soil Survey Data
- Farmland Type and Flooding Frequency – USDA, NRCS Soil Survey Data
- Hydric Soils – USDA, NRCS Soil Survey Data
- Public Lands – USGS Decision Support System
- Wetland Reserve Program Acres – USDA, NRCS
- Presettlement Vegetation – Heitmeyer, 2008, HGM Report
- Remnant Vegetation – Heitmeyer, 2008, HGM Report
- Land Use and Flooding Frequency – USGS Land Cover and NRCS Soil Survey Data