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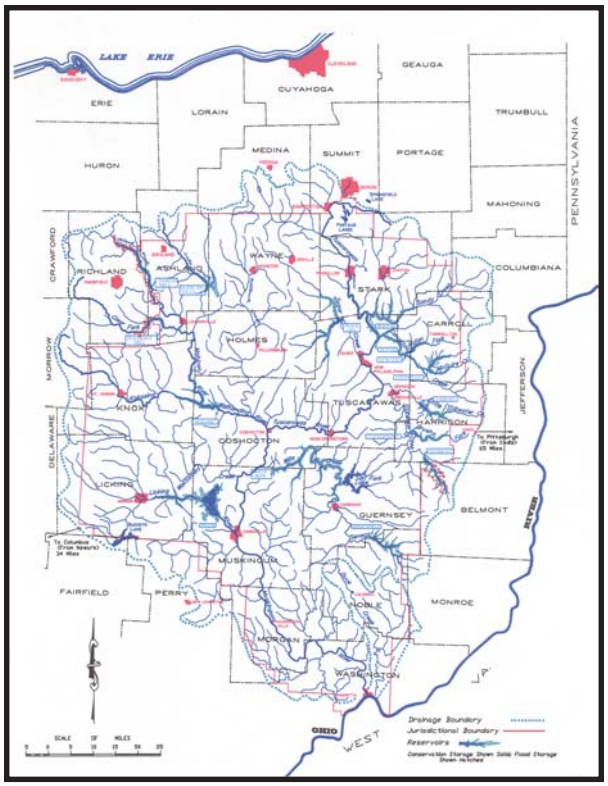
Amendment to the Official Plan

Introduction

The Muskingum Watershed Conservancy District (MWCD) was created on June 3, 1933, in accordance with Ohio law to carry out a comprehensive flood control and water conservation project in the Muskingum River Watershed and to secure the necessary financial cooperation between and among individual property owners and the local, state and federal government.

As a result of a contract between the United States of America and the MWCD signed March 29, 1934, the federal government allocated to the U.S. Army Corps of Engineers (USACE) the sum of $22,090,000.00 to accomplish this project. Included in the scope of work of the project was the preparation of the first Official Plan of the MWCD. That plan was approved by the MWCD Conservancy Court on November 19, 1934. The MWCD Official Plan has been the subject of revision only twice, on April 15, 1935, and again on June 5, 1935.



The Muskingum River Watershed Basin.
(for a full view of this map, see Exhibit 1)

The Official Plan for the MWCD called for the construction of 14 dams and reservoirs which comprise the principal part of a coordinated and comprehensive system designed to provide an equitable distribution of flood control and water conservation features throughout the basin (*See Exhibit 1*).

These dams and reservoirs would be located in the watersheds of three main tributaries of the Muskingum River: the Walhonding River, the Tuscarawas River and the Wills Creek.

- In the Walhonding Basin, dams were constructed creating the Mohawk Reservoir on the Walhonding River, Pleasant Hill Reservoir on the Clear Fork, Charles Mill Reservoir on the Black Fork and Mohicanville Reservoir on the Lake Fork.

- In the Tuscarawas Basin, dams were constructed creating the Dover Reservoir on the Tuscarawas River, Atwood Reservoir on the Indian Fork, Leesville Reservoir on the McGuire Creek, Bolivar Reservoir on the Sandy Creek, Beach City Reservoir on the Sugar Creek, Tappan Reservoir on the Little Stillwater Creek, Clendening Reservoir on the Brushy Fork and Piedmont Reservoir on the Stillwater Creek.
- In the Wills Creek Basin, dams were constructed creating the Wills Creek Reservoir on the Wills Creek and Senecaville Reservoir on the Seneca Fork.

This system of dams and reservoirs was designed to be operated so that the reservoirs could be filled to the height of the spillways in the event of a storm with a total five-day rainfall 36 percent larger than the magnitude of the March 1913 storm, one of the worst floods of record and the catalyst for the creation of the MWCD. At maximum flood elevation, approximately 77,730 acres would be used to hold water and lower flood stages, thereby providing flood protection for communities and properties below the dams. Flood easements to hold water were obtained while protecting the due process rights of the landowners who were compensated fair market value by the federal government for the applicable rights.

Additional channel improvement and other protective measures were anticipated in order to provide further protection to local areas throughout the watershed.

While the primary purpose of the 14 reservoirs is flood control, 10 of the reservoirs also were designed to provide storage for water conservation and recreation. This conservation feature has enabled withdrawals of water during periods of low inflow to increase the flows of streams, be of considerable value for water supply, replenish groundwater storage, reduce pollution, promote fish and wildlife, enhance commercial and residential development and provide a wide variety of recreational uses.

With the passage of the Flood Control Act of 1939, the federal government confirmed its commitment to be primarily responsible for flood control operations in the MWCD. The Act specifically authorized the transfer of ownership of the 14 dams to the United States to be operated by the USACE. MWCD has remained responsible for the operation and maintenance of the reservoir areas under its ownership and control. The USACE, with the cooperation of the MWCD, has operated the dams in accordance with its Comprehensive Ohio River Flood Control Plan and its Water Control Manuals. This amendment to the Official Plan recognizes the USACE's Comprehensive Ohio River Flood Control Plan and Water Control Manuals and hereby incorporates them by reference.

Conservation and recreation activities within the reservoirs, including public safety and law enforcement, have been a strong focus of the operations of the MWCD over the past several decades. However, the MWCD will be responsible for numerous maintenance projects that must be completed within the watershed that will directly impact the ability of this system of dams and reservoirs to continue to provide flood reduction benefits and enhance water quality for millions of residents and users. Thus, the cooperative effort of MWCD and the USACE is confirmed and continues today as a strong partnership.

According to the U.S. Army Corps of Engineers, more than $6 billion in flood damage has been prevented and countless lives saved or enhanced by the presence of the dams and reservoirs in the MWCD system.

With each of the 14 MWCD dams and reservoirs now approaching nearly 70 years of continuous operation, the decades of benefits to those who live or work in the watershed have been proven many times over. According to the USACE, more than $6 billion in flood damage has been prevented over that period and countless lives have been saved or enhanced by the presence of the dams and reservoirs. It is the responsibility of the MWCD to operate and maintain the reservoirs and to supplement local protection work necessary to preserve and enhance the benefits of flood reduction, water quality and watershed management.

This amendment to the MWCD Official Plan identifies the maintenance needs at the reservoirs and throughout the watershed to be addressed by the MWCD to ensure the continued optimum performance of this system for the residents of the watershed. It is intended that this amendment to the Official Plan be in concert with the Muskingum River Basin Initiative, a multi-agency project led by the USACE and the MWCD to emphasize the importance of the Muskingum River Watershed and how changes and demands within the basin have generated the need for renewal. *A copy of "Troubled Waters – A National Call for Renewal," which is a report that describes the work of the Muskingum River Basin Initiative, is located in Exhibit 2 of this plan.* All work to be done will be in accordance with applicable federal, state and local laws and ordinances.

Based on preliminary estimates, it is expected that the amended Official Plan will result in a total yearly assessment cost of approximately $12 per parcel for residential and agricultural property located in the jurisdiction of the MWCD. Commercial, industrial and other non-residential parcels would be charged an assessment based on factors including the size of the parcel, its property use code and the estimated contribution to runoff to the watershed. The formula for non-residential property will be established by the Board of Appraisers during preparation of the Appraisal Record.

Purpose of the Amendment

The construction of the MWCD dams and reservoirs has provided the Muskingum River Watershed with the flood reduction and water conservation benefits that it was designed to accomplish, minimizing property damage and saving lives. However, the reservoirs were designed with a general expectancy to function for around 50 years, due to the natural effects of sedimentation, erosion and other factors. As of 2005, the reservoirs have reached nearly 70 years of service and are in need of general maintenance and improvements to continue the work of their design.

The USACE has identified nearly $500 million in required safety improvements at the dams, with the MWCD serving as the federally mandated sponsor of the projects, providing 3.45 percent of the total cost. Three of the MWCD dams are among the five most in need for major repairs and upgrades in all of the Midwest of the United States, according to the USACE.

Heavy rain and flooding that taxed the MWCD system during 2004 and early 2005 emphasized the critical need – especially in reservoir areas behind the dams – to upgrade key roads and bridges to reduce the frequency and duration of road closures, provide "escape routes" in the reservoir areas and improve access for property owners in flood-prone areas, to aid local governments with flood cleanup issues and to assist local governments with local flood protection projects and mitigation. In January 2005 seven reservoirs set new pools of record following heavy rainfall over a multi-day period, leading to the isolation of more than 6,000 residents in one reservoir area, closings of schools for many days or weeks and flooding of low-lying roads and bridges in many reservoirs. In addition, this rain event emphasized the need for more stream gauging stations to be installed in selected streams and tributaries for development of a reliable early flood warning system that currently is not available in the watershed.

These issues all were confirmed by residents throughout the watershed during public meetings held following the rain events of early 2005 and in meetings with area government agencies and other organizations.

The MWCD also is extremely concerned that the reservoirs have been slowly filling in with sediment, thereby reducing overall water conservation storage capacity, that the water quality of rivers and streams emptying into the reservoirs and throughout the Muskingum River Watershed is being degraded by erosion of streambanks, failing package wastewater treatment plants and septic systems, along with the need for improvements to agricultural practices and increased runoff from new development.

Projects planned include:

- **Dam upgrades**
- **Sediment removal**
- **Shoreline protection**
- **Water quality improvements**
- **Watershed management**
- **Reservoir maintenance**
- **Partnerships on the local, state and federal levels, and with individuals.**

The MWCD has operated the recreational programs within the reservoir system for the past 70 years on revenue derived from the recreational activities. Today, however, the MWCD no longer can defer maintenance of the dams, reservoirs and the watershed as a whole. It must levy a maintenance assessment as provided for in Ohio Revised Code Section 6101 to "de-age" the flood reduction system and address the water quality and watershed management needs of the Muskingum River Watershed.

The MWCD cannot ignore its responsibility to protect the residents of the watershed from flooding, maintain the flood reduction system and improve the quality of the streams, rivers and lakes in the watershed.

The role of MWCD with respect to water quality, conservation and flood reduction is as crucial as it is unique. Problems in these areas arise as part of a watershed system. Watershed boundaries do not match the lines drawn for the political jurisdiction of counties, townships, cities and villages. The Conservancy Act created an innovative approach to effectively deal with water issues on a system-wide basis.

The watershed approach is the most logical way to address the hydrological and engineering problems connected with flood reduction, conservation and improving water quality. If the maintenance assessment were to fail, the responsibility for the Conservancy District's mission would fall on the shoulders of local political subdivisions that have neither the funding mechanism nor the legal authority to provide a comprehensive and coordinated approach to the water-related problems of the watershed. Additionally, competing local demands and interests make it virtually impossible for separate multiple political subdivisions to coordinate in watershed management. It is critical that the maintenance assessment succeed.

Plan of Work

Since the construction of the MWCD dams and reservoirs, the operation of the system has remained the same as when it was designed and put into use. The primary goal of the system has been to reduce flooding and the potential property damage that can result from floodwaters in the Muskingum River Watershed.

However, the watershed has changed in many noticeable and important ways.

The population of the region has grown significantly. Industrial, commercial and residential development has been enabled in locations that are afforded protection from frequent flooding, thereby reducing the risk of loss. Abundant supplies of water have encouraged increased public use. The demand for high quality water is greater and the imminent threats to our water resources warrant action to be taken by MWCD and its partners.

The near 70 years of operation of the dams and reservoirs has produced a substantial list of deferred maintenance and improvements that must be completed in order to continue to offer an acceptable level of flood reduction and related benefits. These improvement and maintenance projects include the following:

- Upgrades to dams for safety and flood protection through the expertise and planning of USACE, upgrades to culverts and bridges, raising and relocating critical roads, and other infrastructure projects.
- Sediment removal through dredging operations.
- Shoreline protection to reduce erosion damage.
- Water quality improvements by monitoring water quality, reducing pollution, addressing acid mine drainage problems, providing environmental education and improving sewer systems.
- Watershed management through planning and assistance for local interest groups and private property owners with programs to reduce sediment and pollution.
- Reservoir maintenance and inspection on a regular schedule.
- Partnering with local, state and federal agencies and other individuals and organizations, thereby sharing the responsibility and costs of these projects.

In most cases, estimated costs are provided along with the description of the projects in the following narrative. The total estimated cost of this work is $269.2 million. *(A complete estimated budget is located in Table 1 in this amendment to the Official Plan).*

No work planned nor implemented in this amendment to the Official Plan shall be in conflict with the USACE's Ohio River Flood Control Plan and its Water Control Manuals.

Dam Safety/Flood Control

Upgrades and Repairs to Dams – Since their construction, safety standards regulating dams by agencies from the state and federal governments have been strengthened to offer increased levels of flood reduction. These projects have been identified as "dam safety assurance" programs by the federal government.

The USACE has embarked on a program to make improvements to its dams.

The USACE has embarked on a program to make improvements to its dams in the Muskingum River Watershed. The federal guidelines for funding the projects through Congress also require that the Corps identify a "local sponsor" to share a portion of the costs associated with the work. The MWCD as a local sponsor would pay a percentage of the total cost of nearly $500 million for the dam safety assurance work.

The MWCD has committed to USACE that it will be responsible for the local share of the dam safety assurance projects for the original 14 dams. This amounts to 3.45 percent of the total project cost.

One project, a dam safety assurance project at Beach City Reservoir, was completed in 2001 at a total cost of more than $3.6 million, with the MWCD providing around $150,000 as its participation as the local sponsor.

Several other projects are planned at Atwood, Clendening, Dover, Piedmont and Pleasant Hill reservoirs, according to a schedule developed by the USACE. The Corps has estimated that the total cost for the projects planned through 2013 is more than $155 million, with the MWCD's share estimated at nearly $5.5 million.

The repeated damage that can occur for owners of structures in flood-prone areas can be costly for the individual property owners and for the counties, municipalities and townships where they are located.

Stream Gauge Flood Warning Program – The USACE plans implementation of an early flood warning system for the Muskingum River Watershed. The system will provide residents, affected agencies and the media of the watershed with a recognized source for reliable and timely information during potential flooding events.

To promote efficiency and accuracy of the program, the MWCD proposes to install 10 additional stream gauges in locations throughout the watershed. The MWCD will partner with the United

States Geological Survey to identify locations for the gauges, as well as to install and operate the gauges.

The estimated cost to the MWCD of the initial installation work and continued operation over a 20-year time period is $3.6 million.

Upgrades to Key Culverts and Bridges – The MWCD recognizes the importance to residents and the economy of reliable infrastructure in the watershed, especially in areas in and around the reservoirs and/or where floodwaters may be stored during periods of heavy rainfall. Culverts and bridges need to be repaired and replaced in a timely manner to ensure a continued level of performance and provide critical emergency access.

The MWCD will assist counties, municipalities and townships in the watershed with the identification of culverts and bridges that need repairs or need to be replaced in areas in or around the reservoirs, or where flood reduction issues may be involved. The MWCD plans to complete or participate with other entities in two projects per year, with a 20-year cost of around $4.3 million.

Debris Removal in Stream Channels – Debris that collects in the many streams in the Muskingum River Watershed can produce consequences that reach far beyond their immediate areas. Flood reduction benefits can be minimized if debris is permitted to collect at large rates throughout the watershed. Log jams, particularly related to bridges and culverts can increase flooding to adjoining properties and wash out roads and bridges.

The MWCD will establish a program to assist the counties, municipalities and townships in the watershed with the identification of problem debris areas and removal options. The Conservancy District will develop a response plan and handle debris removal from identified streams. The costs would be absorbed by the MWCD and over a 20-year time period, it is estimated that $7.99 million worth of work will be completed.

Road Relocations and Elevation Upgrades – Since the construction of the dams and reservoirs, numerous changes have occurred in the topography and development of properties in the watershed. Areas near the reservoirs where floodwaters are stored that previously were barren have become the sites for businesses, housing developments and recreation.

At the time the MWCD system was constructed, the State of Ohio embarked on a program to identify and prioritize those roads that were clearly within the flood storage areas. Original plans in cooperation with the State of Ohio intended that these roads would be reconstructed or relocated to provide ingress and egress. However, the costs associated with addressing all roads in these areas were much greater than the benefits, and the areas of greatest benefit initially were addressed. Since then, recent flooding events in the early part of the 21st Century have

The MWCD will assist in projects that relocate or increase elevation for roads.

provided the Ohio Department of Transportation, the USACE and the MWCD with updated information about roads in the flood storage areas.

The MWCD will serve as a partner in projects that will identify and prioritize projects for the relocation and/or elevation increases for roads in the watershed. The MWCD will provide its planning knowledge where required and also provide a portion of the funding to develop the projects, if necessary.

Flood Mitigation – When the MWCD flood reduction system was created, structures were prohibited from being constructed on certain properties (and the owners were compensated by the federal government for this restriction). Nevertheless, development has occurred in areas where flooding is not only probable, but occurs routinely.

The repeated damage that can occur for owners of structures in these areas can be costly for the individual property owners and for the counties, municipalities and townships where they are located. Solutions to assist property owners and counties, municipalities and townships exist, and can range from raising properties to the purchase and demolition of repeatedly damaged properties.

The MWCD will assist in identification and prioritization of mitigation projects and will assist federal, state and local governments in these programs and the individual property owners with financial assistance that can reduce the burden of all parties. For example, in the case of complete purchases of properties located in sensitive areas in easement zones or in flood zones downstream, the MWCD could provide local matching funds to finalize a purchase, removing the burden from local governments.

Assist Local Flood Reduction Programs – The MWCD will support individual counties, municipalities and townships that develop local flood reduction programs. Many of these projects can provide immediate local benefits, as well as provide benefits upstream and downstream. In areas where these proposals are determined to be viable, the MWCD can provide financial assistance in the planning and/or construction phases.

Over a 20-year period, the MWCD plans to invest more than $15 million in these projects in the watershed.

Improvements along the Muskingum River – The lower section of the Muskingum River between the cities of Zanesville and Marietta is an important historic and natural resource. This section of the river has been designated a National Historic Landmark by the American Society of Civil Engineers. In addition, the Ohio Department of Natural Resources has designated this section of the river as a state park. The MWCD will cooperate with ODNR and other local government entities in maintaining and preserving this important resource.

Assist in Flood Cleanup – When counties, municipalities and townships endure the hardships of flooding, problems do not disappear when the water recedes. In many cases, the time-consuming and costly work of cleaning, repair and maintenance of infrastructure and property

The MWCD will assist communities following flooding.

can be overwhelming for local governments, especially those with limited financial resources and manpower.

Because of its experience in dealing with the aftermath of flooding, the MWCD believes it can be a strong asset to communities in the watershed that endure the ravages of floodwaters.

The MWCD will assist with cleanup services for affected communities. In addition, the MWCD would provide funds to local governments for cleanup operations. The cost – estimated at $3.2 million – could pay even larger dividends to individual communities in their times of need.

Property Boundary Survey – The MWCD manages more than 38,000 acres of property within the 18-county region it serves. Many changes in its landholdings occurred during the first 35 years of its existence, although the sale and purchase of property still occurs today.

In addition, the changes in topography and other characteristics of the lands in the watershed can have consequences on the spillway and flooding elevations in the reservoirs.

The MWCD, in order to provide more reliable and accurate data to its partner agencies and the residents of the watershed, will begin the process of surveying its outer boundaries and holdings. Among other tasks, the Conservancy District will be able to verify spillway and flood impact elevations, as well as to identify its outer boundary locations for all reservoirs.

Sediment Removal

Dredge Reservoirs – Because the MWCD reservoirs were designed with the knowledge that they eventually would be filled with sediment if left unchecked, the Conservancy District has been seeking remedies to prolong their lifespans.

In 1998, the MWCD obtained funding from the State of Ohio and was able to purchase and operate a dredge that initially was located at Charles Mill Reservoir. The work completed at the reservoir has provided maintenance of conservation storage capacity, enabled the re-establishment of navigational channels, allowed for the removal and/or relocation of material from the lake bottom and permitted the creation

The dredge "Sedimental Journey" during its work at Charles Mill Lake.

of wetlands where feasible.

All of the MWCD reservoirs will be in need of some degree of sediment removal over the next 20 years. While dredging can be costly – the MWCD will invest more than $27 million in dredging work over the next two decades – it pays dividends that will reduce the potential for far greater costs related to protection of flood reduction benefits and overall water storage capacity in the watershed. Beach City Reservoir has been affected by sedimentation that has dramatically reduced its ability to store water for a conservation pool.

The MWCD will utilize dredging primarily to prolong the useful lifespan of the reservoirs for the purposes for which they were designed and constructed.

The MWCD will dredge approximately 50,000 cubic yards of material annually from the reservoirs over the 20-year period at a cost of more than $27.6 million, thus extending the life of the reservoirs far beyond their original expectations. The result will be flood-reduction, conservation and recreation benefits that will not burden local communities if nothing was done and the reservoirs were left to fill in on a natural schedule.

Shoreline Protection

Reduce Shoreline Erosion – As they age, the permanent impoundments of water in the MWCD reservoir system and the streams in the entire watershed suffer from the effects of shoreline erosion. This constant battle to protect flood-reduction benefits and precious water quality is important to the overall health of the reservoir system, and can be costly.

The MWCD will stabilize sections of the shoreline each year.

Managing the erosion in the permanent impoundments of water can help maintain maximum flood storage capacity and protect the quality of the water in the reservoirs. In the crucial stream areas, erosion controls can help minimize and manage the sediment loads that travel into the permanent impoundments of water behind the dams.

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The MWCD will stabilize sections of shoreline each year, as well as establish a program to identify and prioritize the needs in the watershed. Bioengineering practices will be encouraged through the establishment of riparian buffer zones where practical.

The estimated cost is $350,000 annually, with more than $9 million to be spent on shoreline work over the next 20 years.

Water Quality Improvements

Assist U.S. Army Corps of Engineers with Hydrogen Sulfide Issues – The MWCD, the USACE and the general public all can recognize the problem from the existence of hydrogen sulfide gas produced in the reservoirs at several projects. The odor from the production of this gas – a "rotten egg" smell – has been noted at numerous locations and has been the subject of public discussion and debate.

The USACE has studied the issue at length and has identified solutions that should minimize and/or eliminate the problems. The MWCD has a responsibility to provide assistance for the improvements, and will provide local matching funds to ensure the projects proceed as scheduled.

The MWCD will commit more than $5.3 million over the next 20 years to pay for the costs associated with the improvements.

Reduce Pollution Load in Watershed by Improving Wastewater Treatment and Sewers – Inadequate sewage disposal systems are numerous and threaten the quality of water and health of residents in the watershed.

As counties, municipalities and townships deal with the mandated need to provide adequate treatment and disposal programs, many rural areas also are concerned about the future of septic and other disposal issues.

To safeguard the quality of the water in and around the reservoirs and to serve as a leader in development of solutions for communities in the watershed, the MWCD will serve as a resource for agencies and various levels of government in the watershed to contact for assistance. The MWCD will serve as a funding mechanism and catalyst for identification of improvement and maintenance projects related to proper sewage disposal.

It is not the intention of the MWCD to construct, operate and permanently maintain facilities. Rather, the Conservancy District would assist communities in identifying solutions and locating sources of funding to assist in addressing the issues, as well as providing some financial help in the form of local matching funds.

The MWCD will invest $20 million in the watershed for these improvements, with projects that could approach nearly $80 million in minimum needs over the next 20 years.

Water Quality Monitoring – The MWCD has worked with the USACE for more than 20 years to monitor the quality of the water in the reservoirs. However, that data is only a small amount of the information that needs to be gathered from all of the streams and tributaries in the watershed in order to provide an accurate and comprehensive picture of water quality.

The MWCD will gather water quality data in the watershed. The focus will be to conduct testing in the watershed to gauge the overall quality of the water in the region and develop potential improvement strategies where necessary.

The Conservancy District will assist state and federal regulatory agencies with their information needs and serve as a "clearinghouse" for water quality data in the watershed.

Acid Mine Drainage Issues – The results of mining in eastern Ohio, which was one of the region's top industries during the first half of the 20th Century, continue to hamper overall water quality today.

Acid mine drainage, pollutants that carry numerous harmful chemicals, threatens the streams, tributaries and rivers in the Muskingum River Watershed. Easily identified in some forms by its bright orange color, the effects of acid mine drainage can move downstream as rapidly as a river flows.

The USACE has identified more than 180 "problem sites" associated with acid mine drainage in the Muskingum River Watershed. The MWCD, in order to develop further safeguards for the public health and welfare and its reservoirs and permanent impoundments of water, would participate in programs that can provide solutions and eliminate the effects of the problem sites.

The MWCD will provide information and financial assistance for federal, state and local initiatives that address the damaging effects of acid mine drainage. The Conservancy District will serve as a partner with other agencies and communities to address the problems, as well as to provide local matching funds to ensure programs can move forward.

Water Supply – By law and through an operational policy of the MWCD, the reservoirs may be utilized as sources of water supply for communities. This strengthens the need to protect the quality of the water for present and future generations.

As of 2005, Atwood, Seneca and Tappan reservoirs are utilized in some capacity as sources of water supply.

Applications submitted to the MWCD for water supply will be reviewed pursuant to the existing water supply policy of the MWCD subject to the approval of the USACE.

Tappan Lake will serve as the source of water for residents in the Village of Cadiz.

Environmental Education – The origin of methods to improve flood-reduction benefits and improve and protect water quality in the watershed are located in small parcels of property owned by individuals and expand to large tracts of land managed by government and private interests.

With the continued evolution of best management practices and programs that offer educational and potential financial assistance, it is not practical for residential homeowners and other property managers and owners to be able to keep abreast of the developments.

The MWCD, as part of its mission, will provide outreach programs to landowners, agricultural managers and producers, business leaders and others, and partner with government and regulatory agencies to generate accurate and useful information.

The MWCD will employ an environmental education specialist to conduct an outreach program through use of the media, public speaking opportunities, development of materials, use of the Internet and other available methods. The environmental education specialist position would work closely with all other facets of the MWCD's programs to improve and maintain flood-reduction benefits and water quality to provide accurate and useful information to the general public and interest groups.

Watershed Management

Planning – A key element for the MWCD to properly identify, prioritize, plan, develop and manage improvement and maintenance projects in the watershed will be a planning component.

The MWCD will need to work with other agencies, counties, municipalities, townships, interest groups and private individuals to gather information, contact the proper authorities with jurisdiction over proposals, meet regulations and carry out proposals to completion.

A planning department will serve as the first point of contact for the MWCD to properly analyze and develop projects that benefit residents and the overall quality of life in the watershed.

The overall estimated cost of the planning work is established at nearly $3.8 million over the next 20 years.

Support for Farm Conservation and Forest Management Programs – Major outreach programs developed over the past several decades in the Muskingum River Watershed have focused on the agricultural and forestry industries.

Various land-use improvement strategies that protect soils and reduce pollution loads, thus protecting water quality, have a positive impact on the MWCD reservoirs and permanent impoundments of water.

Financial incentives have been structured into many of these federal and state land-use programs, which can result in reduced available croplands utilized in particular locations.

Because the MWCD reservoirs receive a benefit from these programs, the Conservancy District will assist those whose practices are protecting water quality. The MWCD will identify, prioritize and provide local matching funds where approved to assist with the introduction and management of land-use practices that benefit residents in the watershed.

Watershed Coordinators – Programs that enhance and/or maintain flood-reduction and water quality benefits in a watershed can and do cross the routine jurisdictions of counties, municipalities and townships. Watershed boundaries do not match those of the political jurisdictions in the State of Ohio.

Programs that enhance and/or maintain flood reduction and water quality benefits in a watershed can and do cross the routine jurisdictions of counties, municipalities and townships. Watershed boundaries do not match those of the political jurisdictions in the State of Ohio.

Because watershed improvement programs can produce benefits that reach across many jurisdictions, it is necessary to establish recognized resources for program identification, prioritization, administration and management.

The MWCD plans to establish watershed coordinators in five regions throughout the Muskingum River Watershed. The coordinators would serve as the initial point of contact for the development of watershed improvement programs, including efforts that involve partnering with several other involved local, state and federal agencies. The watershed coordinators also would promote best-management practices and identify and explain the benefits of the MWCD reservoirs to potential participants.

With financial incentives and funding programs available for participation by individual property owners in various projects, the watershed coordinators will assist in locating and obtaining funding to administer individual and group efforts.

Regulatory Compliance – As scientific and technological advancements are made, stronger regulations for operations related to flood reduction and water quality, among others, are developed by local, state and federal agencies and governments.

The MWCD recognizes its responsibility to comply with regulatory mandates that exist and may be updated in the future.

The MWCD will research and manage its compliance issues for its present operations and future projects.

Establish Basinwide Geographic Information System (GIS) – The technological advancements that have occurred with the development of the electronic map analysis program, known as the Geographic Information System, can provide a tremendous benefit to the MWCD and its residents.

A GIS system will permit the MWCD to develop accurate mapping of its watershed region, including the outer limits of both the political and watershed boundaries, and provide accurate and up-to-date information throughout the watershed. The system will enable the MWCD to assist other agencies and government subdivisions with information about the watershed, including floodplain management and mapping.

The MWCD plans to expend an estimated $7.8 million for implementation of a basinwide GIS system.

Assist Local Property Owners with Best Management Practices – While most major land-use outreach programs developed over the past several decades in the Muskingum River Watershed have focused on the agricultural industry, all properties can contribute to the overall health of the Muskingum River Watershed.

Various land-use improvement strategies that improve soils and reduce sediment loads, thus protecting water quality and providing enhanced flood-reduction benefits, have a positive impact on the MWCD reservoirs and permanent impoundments of water.

Because the MWCD reservoirs receive a benefit from these programs, the Conservancy District has a responsibility to assist individual property owners who can adopt practices that protect water quality. The MWCD will identify, prioritize and provide local matching funds where approved to assist with the introduction and management of land-use practices that benefit residents in the watershed.

The MWCD will plan, develop and implement Best Management Practices projects on private property annually. Over a 20-year period, it is anticipated that more than $4.3 million will be invested in the watershed through these projects.

Reservoir Operations

Reservoir Inspection – A key element for optimum reservoir performance in the Muskingum River Watershed is for routine and documented inspection of the reservoirs. The MWCD has a responsibility to conduct regular inspections of the reservoirs to ensure their overall health and effective performance in the flood-reduction system in the watershed.

The Conservancy District will invest $4.7 million over the next 20 years to conduct regular reservoir inspection tasks.

Reservoir Maintenance – Working in tandem with the reservoir inspection program, the MWCD will perform routine and special maintenance projects at the reservoirs.

Over the 20-year period, more

Reservoir inspection and maintenance will be performed as part of this plan.

than $10 million will be invested in maintenance projects that benefit the reservoirs, protecting flood reduction and improving the water quality of the watershed.

Location of the Property Benefited from the Amended Official Plan

The work to be performed as described in this amendment of the MWCD Official Plan may be located anywhere within the territorial boundaries of the watershed of the Muskingum River and its tributaries *(See Exhibit 1)*. However, the primary focus of the work will be within the jurisdictional boundaries of the MWCD *(See Exhibit 1*), with emphasis on projects that will have an impact on the operation and maintenance of the reservoirs behind each of the 14 original dams.

All properties located within the boundaries of the Muskingum River and its tributaries will benefit from the provisions contained in this Amended Official Plan. The benefits include flood damage reduction, water quality improvement, economic development and quality of life.

The Plan of Work developed in the amended Official Plan is segmented into six major categories:

- **Dam Safety/Flood Control**
- **Sediment Removal**
- **Shoreline Protection**
- **Water Quality Improvements**
- **Watershed Management**
- **Reservoir Maintenance**

It is not presently anticipated that any additional property will be taken or damaged as a result of the work to be performed as described in this plan, with the exception of work to be performed to relocated roads or as a part of a flood mitigation plan to relocate structures repeatedly damaged by floods. In the event it becomes necessary, any properties taken or damaged as a result of this plan will be handled in accordance with Ohio Revised Code Section 6101.28.

Estimate of Costs for the Amended Official Plan

The Plan of Work developed in the revised Official Plan of the MWCD is segmented into six major categories:

- Dam Safety/Flood Control
- Sediment Removal
- Shoreline Protection
- Water Quality Improvements
- Watershed Management
- Reservoir Maintenance

The costs associated with each of these categories in the amended Official Plan were computed based on a 20-year time period beginning in 2007, and factoring in a basic level of inflation.

The total cost of the amended Official Plan identifies slightly more than $269 million worth of work to be completed.

This plan of work is intended to be general in nature and allows flexibility for implementing specific projects within the watershed as identified and prioritized within the six major categories. This proposed Plan of Work is detailed in *Table 1*.

Proportion of the Costs to be Assessed Within the District

The cost of the work to be performed as described in this plan will be assessed to the benefited owners of real property located within the jurisdictional boundaries of the MWCD as determined by the Board of Appraisers in accordance with Ohio Revised Code Section 6101.28. Whenever feasible, the cost of the work to be performed as described in this plan will be shared with local, state or federal partners, or individuals, corporations or organizations willing to participate in such work. By leveraging the funds available from the MWCD together with as many other resources as possible, a greater amount of work, and therefore, benefit, will result.

Breakdown of Sources of Funds to be Used

The federal government, through the USACE, already has committed substantial amounts of dollars necessary to operate and maintain the dams and plans to continue this effort into the future. Other federal sources of funding may include the Natural Resources Conservation Service, U.S. Geological Survey, U.S. Forest Service, Appalachian Regional Commission, Resource Conservation and Development Councils, Environmental Protection Agency, U.S. Department of Agriculture, Economic Development Administration and Rural Development Authority.

The State of Ohio has had an ongoing relationship with the MWCD since the District was created. It is anticipated that state funds may be derived from the Ohio Department of Natural Resources, Ohio Environmental Protection Agency, Ohio Department of Transportation, Governor's Office of Appalachia and Ohio Department of Development.

The broad approach to watershed management set forth in this plan also will involve many local funding sources, including counties, townships, municipalities and other political subdivisions or special districts.

Finally, individuals, corporations and other organizations desirous of improving flood damage reduction and water quality within the watershed will be encouraged and invited to participate.

Conclusion

Widespread flooding was the primary reason for the creation of the Muskingum Watershed Conservancy District. Flood reduction has long been the goal of local communities throughout the watershed, yet the expense of adequate measures is beyond the financial ability of any single community. The combined, comprehensive approach to flood reduction in the MWCD requires a watershed based plan to maintain success.

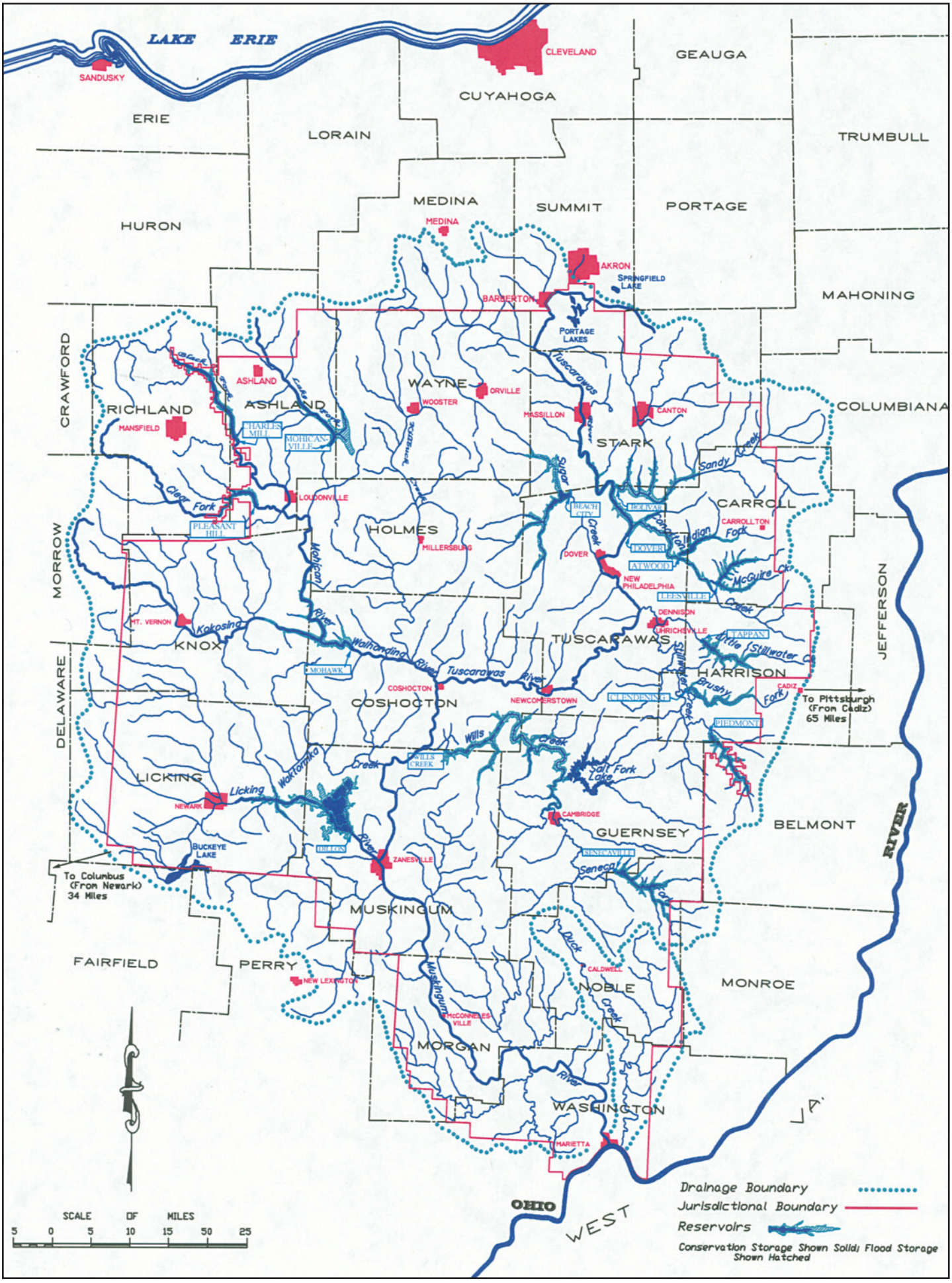
Water is our most valuable natural resource. It has been recognized that the ordinary unregulated natural supply of water may be inadequate to meet the growing demand. The importance of water conservation in MWCD reservoirs has proven to be an important factor in the quality of life in the watershed.

This amendment to the Official Plan identifies the maintenance needs in the watershed to be addressed over the 20-year period beginning in 2007. The system of dams and reservoirs comprise the essential and principal part of a coordinated and comprehensive plan of flood reduction and water conservation for the Muskingum River Basin. It is imperative that MWCD establish a plan to maintain the dams and reservoirs in the system and to implement initiatives throughout the watershed that will enhance water quality and reduce flooding.

Ohio law provides the funding mechanism to enable conservancy districts to maintain the properties and improvements under its jurisdiction. This amendment to the Official Plan will enable MWCD to meet the needs identified within the watershed and continue its tradition of strong partnerships with federal, state and local stakeholders. This amendment to the Official Plan presents a strategy for renewal of this watershed initiative.

TABLE I

Projected 20-Year Program Cost	Capital Cost	O & M	Replacement	20-Year Total (3% Inflation)
Dam Safety/Flood Control				
> Upgrades & Repair to Dams	$ 275,000			$ 7,390,000
> Stream Gage/Flood Warning Program	$ 310,000	$ 83,000	$ 40,000	$ 3,620,000
> Upgrade key culverts & bridges	$ 160,000			$ 4,300,000
> Debris Removal in stream channels	$ 150,000	$ 140,000	$ 200,000	$ 7,990,000
> Road Relocations/Elevation Upgrades	$ 300,000			$ 8,060,000
> Flood Mitigation (buy-outs, raise, etc.)	$ 132,000			$ 3,550,000
> Assist local flood reduction programs	$ 505,000	$ 177,000	$ 18,000	$ 18,340,000
> Improvements along the Muskingum River	$ 400,000			$ 10,748,000
> Assist in Flood Clean Up	$ 100,000	$ 19,000		$ 3,200,000
> Property Boundary Survey	$ 77,000			$ 2,070,000
Sediment Removal				
> Dredge Reservoirs	$ 1,000,000		$ 800,000	$ 27,670,000
Shoreline Protection				
> Reduce Shoreline Erosion	$ 350,000			$ 9,400,000
Water Quality Improvements				
> Assist C of E w/ H_2S problems	$ 200,000			$ 5,370,000
> Reduce pollution load in Watershed by improving WTP's & Sewers	$ 1,000,000			$ 20,000,000
> Water Quality Monitoring	$ 37,500	$ 14,000	$ 2,000	$ 1,450,000
> Acid Mine Drainage Issues	$ 200,000			$ 5,374,000
> Environmental Education		$ 30,720		$ 830,000
Watershed Management				
>Planning		$ 140,400		$ 3,770,000
>Support for Farm Conservation & Forest Management Programs	$ 300,000	$ 56,000		$ 9,570,000
> Watershed Coordinators	$ 36,000	$ 280,800	$ 72,000	$ 7,650,000
> Regulatory Compliance		$ 70,200		$ 1,890,000
> Establish Basinwide GIS	$ 201,000	$ 70,200	$ 20,000	$ 7,820,000
> Assist Local Property Owners with BMPs	$ 120,000	$ 41,000		$ 4,330,000
Reservoir Operations				
> Reservoir Inspection	$ 5,000	$ 170,100		$ 4,700,000
> Reservoir Maintenance		$ 404,000		$ 10,860,000
Annual Cost w/ Inflation @ 3% per year	$ 7,870,000	$ 2,280,000	$ 480,000	$ 189,950,000
Subtotal Annual Cost			$ 10,630,000	
Design (15% of Capital)			$ 1,181,000	
Construction Supervision (10%)			$ 787,000	
Administration (15% of Design, Super. & O&M)			$ 637,000	
Start Up Costs			$ 228,000	
Total Program Cost			$ 13,463,000	$ 269,200,000
Total Parcels in District				$ 701,200
Projected Residential Parcel Assessment				$ 12.00


LAKE ERIE
SANDUSKY
CLEVELAND
ERIE
CUYAHOGA
LORAIN
GEAUGA
TRUMBULL
HURON
MEDINA
SUMMIT
PORTAGE
MAHONING
CRAWFORD
RICHLAND
ASHLAND
WAYNE
STARK
COLUMBIANA
MORROW
HOLMES
CARROLL
JEFFERSON
KNOX
TUSCARAWAS
HARRISON
DELAWARE
COSHOCTON
LICKING
GUERNSEY
BELMONT
MUSKINGUM
FAIRFIELD
PERRY
NOBLE
MONROE
MORGAN
WASHINGTON
OHIO RIVER
WEST VA.
AKRON
SPRINGFIELD LAKE
BARBERTON
PORTAGE LAKES
MEDINA
ORVILLE
WOOSTER
MASSILLON
CANTON
ASHLAND
MANSFIELD
CHARLES MILL
MOHICAN VILLE
LOUDONVILLE
PLEASANT HILL
MILLERSBURG
BEACH CITY
BOLIVAR
DOVER
ATWOOD
NEW PHILADELPHIA
CARROLLTON
LEESVILLE
DENNISON
UHRICHSVILLE
LAPPANT
CADIZ
MT. VERNON
MOHAWK
COSHOCTON
NEWCOMERSTOWN
CLENDENING
PIEDMONT
WILLS CREEK
NEWARK
BUCKEYE LAKE
DILLON
ZANESVILLE
CAMBRIDGE
SENECAVILLE
NEW LEXINGTON
McCONNELES VILLE
CALDWELL
MARIETTA
Sandy Creek
Clear Fork
Mohican River
Kokosing River
Walhonding River
Tuscarawas River
Sugar Creek
Indian Fork
McGuire Creek
Little Stillwater Creek
Stillwater Creek
Brushy Fork
Wills Creek
Salt Fork Lake
Licking River
Muskingum River
Seneca Fork
Duck Creek
To Columbus (From Newark) 34 Miles
To Pittsburgh (From Cadiz) 65 Miles
SCALE OF MILES
5 0 5 10 15 50 25
Drainage Boundary
Jurisdictional Boundary
Reservoirs
Conservation Storage Shown Solid; Flood Storage Shown Hatched