

**PROGRESS SUMMARY  
OF THE MIAMI CONSERVANCY DISTRICT CASE STUDY**

February 28, 2005

**The Ohio Conservancy Act**

In the wake of Ohio's Great Flood of 1913, the State of Ohio passed Chapter 6101 of the Ohio Revised Code, known as the Conservancy Act. The primary function of Conservancy Districts is, therefore, flood prevention and control. A Conservancy District is a political subdivision of the State of Ohio.

Some key provisions of the Conservancy Act include:

§ 6101.04. Organization and purposes of conservancy districts.

*Any area or areas situated in one or more counties may be organized as a conservancy district in the manner and subject to the conditions provided by this chapter for any of the following purposes:*

- (A) Preventing floods;**
- (B) Regulating stream channels by changing, widening, and deepening the stream channels;**
- (C) Reclaiming or filling wet and overflowed lands;**
- (D) Providing for irrigation where it may be needed;**
- (E) Regulating the flow of streams and conserving their waters;**
- (F) Diverting or in whole or in part eliminating watercourses;**
- (G) Providing a water supply for domestic, industrial, and public use;**
- (H) Providing for the collection and disposal of sewage and other liquid wastes produced within the district;**
- (I) Arresting erosion along the Ohio shore line of Lake Erie.**

*This section does not terminate the existence of any district organized prior to July 19, 1937, entirely within a single county.*

*The purposes of a district may be altered by the same procedure as provided for the establishment of the district.*

§ 6101.17. Dominant right of eminent domain.

*The board of directors of a conservancy district, when it is necessary for the purposes of this chapter, shall have a dominant right of eminent domain over the right of eminent domain of railroad, telegraph, telephone, gas, water power, and other companies and corporations, and over townships, counties, and municipal corporations.*

*In the exercise of this right, due care shall be taken to do no unnecessary damage to other public utilities, and, in case of failure to agree upon the mode and terms of interference, not to interfere with their operation or usefulness beyond the actual necessities of the case, due regard being paid to the other public interests involved.*

It is clear from the two parts of the Act cited above that, the main purpose of a conservancy district is to prevent floods. As a result, its authority regarding land and stream modifications, and its dominant right of eminent domain, are all directed to empower the district to take necessary actions to prevent floods.

Because the necessity of approaching flood prevention from a geographic scale of watersheds/basins, Conservancy Districts naturally cover an area of multiple counties within a major river basin. However, it's unclear what authorities a district has over the land outside its main flood watershed but inside its constituency counties.

It seems that the dominant right of eminent domain was designed to facilitate the district in acquiring/using land and other private or public properties for the purpose of building flood prevention projects or any other related general activities.

The organization of a Conservancy District is shown in the following diagram using the Miami Conservancy District (MCD) as an example.

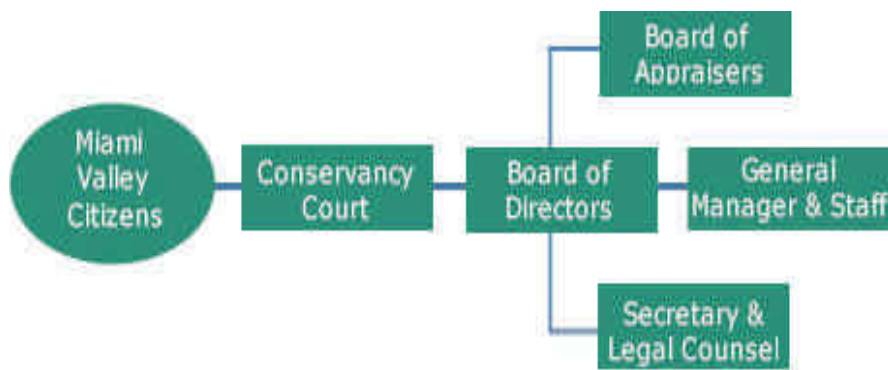


Figure 1. General Organization of a Conservancy District as illustrated by MCD (from [www.miamiconservancy.org](http://www.miamiconservancy.org))

The Conservancy Court is composed of one judge from the Common Pleas Court of each member county in the district. The Conservancy Court appoints the Board of Directors and the Board of Appraisers. The Board of Directors establishes district policy and provides oversight

and direction to the Board-appointed General Manager. The Board of Directors makes key decisions with the approval of the Conservancy Court. It is the General Manager's responsibility to implement Board policy and run the day-to-day operations of the district. The Board of Appraisers is responsible of appraising land necessary for work of the district. In MCD, the Board also determines benefits provided by the flood protection system, the groundwater program, and recreational amenities, and approves the methodology used to determine assessments.

### **Miami Conservancy District (MCD)**

The Miami Conservancy District (MCD), established on June 28, 1915, is the oldest among 23 active Districts in the state. The MCD serves 1.5 million people in the Great Miami River Watershed. The District covers 9 counties in the Watershed: Butler, Clark, Greene, Hamilton, Miami, Montgomery, Preble, Shelby, and Warren. However, three counties that have the majority of their jurisdiction located in the Watershed, Logan (upper Mad River and upper Great Miami River), Darke (supper Stillwater River), and Champaign (upper Mad River), are not represented in the District. The District employs 50 full-time, year-round staff and 20 seasonal and temporary staff.

Initial funding to build the flood protection services was entirely paid for by the people of the Miami Valley. No federal or state funds were used for the design or construction of the system (1918-1922). Construction debt was financed through bonds which were retired in 1949. At that time, assessments were reduced to a level required to provide for the ongoing maintenance of the flood protection system. The current system consists of 5 large scale flood control dry dams and levies on the rivers of major towns and cities.

The system of the dry dams (and flood retarding basins) was designed to take care of a flood 40% greater than that of 1913. It was built in an era of large dam constructions intended to “stimulate basinwide economic development by combining flood control, municipal water supply, irrigation, hydroelectric power generation, recreation and water quality improvement functions within single projects (Goldfarb, 1994)”. Therefore, it is interesting that the MCD flood control dams were designed only for flood relief. During dam design, the MCD found that “the use of the Miami Conservancy District dams for power development would not be advisable from a financial or practical standpoint (MCD, 1922)”, probably referring to the funding source (bond) and the geological conditions of the watershed (flat grades of the main streams in the watershed).

The bulk of all MCD historical and current operation is dedicated to its primary mission of flood protection ensured through maintenance of the 5 dams, their retarding basins, levees, walls, gates, pump stations and related appurtenances. Current activities included a heavy dose of safety upgrades such as installation of relief wells below dams. Roles are expanding as water related needs emerge including water quality monitoring and recreation trails.

MCD maintains real-time monitoring networks to continually update the operation of the flood control system. Updates are posted on the website in the form of press releases indicating status of the dams such as collecting floodwater, holding floodwater, releasing floodwater. It is

frequently noted in these releases how often the system has benefited those it was designed to protect (e.g., about 1500 times floodwater stored and released in a controlled rate in the District’s 90 years of existence). In addition, it brings this protection claim down the \$ level by reminding the public that this protection is achieved at a low cost compared to what would happen people instead relied on pricey insurance and flooding was allowed to occur.

Organization

In addition to the general conservancy district organization structure shown in Figure 1, the MCD has the following specific subdivisions:



Figure 2: Subdivisions and Functions of the Miami Conservancy District  
(from [www.miamiconservancy.org](http://www.miamiconservancy.org))

Staff members are housed in these subdivisions. There are also several subdistricts within the MCD. It is not clear at this moment how these subdistricts were established and how they were related to the main District in terms of administrative responsibilities and duties. It seems, from the names of and activities carried out by the subdistricts, subdistricts can be set up for a specific geographic area within the District (e.g., the Dicks Creek—Little Muddy Creek Subdistrict and

the Miami County Subdistrict) or a specific function of the District (e.g., the Water Conservation Subdistrict and the Aquifer Preservation Subdistrict). It appears that these subdistricts do not have a physical presence, i.e., a subdistrict office or department in the District's main office building in Dayton. Rather, they are a function concept established to accomplish the District's missions in a geographic or task area. The financial statements in the District's 2003 annual report do not illustrate the accounting records of individual subdistricts or subdivisions.

### Funding

General funding of the District comes from assessments paid by property owners who receive benefits from services provided by Miami Conservancy District in the following three areas:

- ?? Flood Protection
- ?? Groundwater Preservation Program
- ?? Recreational Amenities

The fee schedule for maintaining the District's flood protection system comes from two sources, unit and individual assessments. Unit assessments are charged to both cities and counties which have property and infrastructure protected by the District's flood protection system. Infrastructure includes public water and sewer systems, roadways and bridges.

Individual assessments are charged against parcels that flooded in the 1913 flood and receive protection from the District's flood protection system. A parcel's assessment is based on two factors including 1913 flood depth and current taxable value. The assessment is computed as a percent of the individual benefits within city or county boundaries. Individual benefits are in turn calculated as a percent of the tax value of a particular property. The percentage ranges from 3% to 30% depending on the depth the 1913 flood reached at the property. Cities pay 40% of the individual assessments within their boundaries. Counties pay a combination of 40% of the individual benefits within the townships, plus 15% of all benefits in the county.

For example: \$60,000 home is valued for tax purposes at 35%, or \$21,000. If exposed to 3 feet of the 1913 floodwater, benefit received is 15% of \$21,000 or \$3,150. The assessment rate is currently 1.65% of the benefit or \$51.98/year.

The Ohio Conservancy Act enables a Conservancy District to levy assessments against property receiving the benefit of groundwater preservation. A unit assessment, levied against each of the nine counties within the program boundaries, funds the District's activities. Each county has the option to pay the assessment out of its general fund or to spread the assessment over all properties within the program area.

Levies were also assessed against property receiving the benefit provided by recreational amenities. The political entities where these amenities are located pay an annual assessment to the District to provide maintenance for bikeways, low head dams and recreational trail bridges in Montgomery and Butler counties. The River Corridor Improvement Subdistrict's Board of Appraisers set benefits for each type of structure based on its replacement value. An assessment rate is established by the Subdistrict's Board, which is applied to these benefits to establish the

annual assessment. The concept is similar to how assessments are established for street lights or curb and sidewalk improvements found on a common property tax bill.

In addition to assessments, the District also pursues outside funds from various funding sources. For example, in 2003, a \$700,000 grant was received through EPA’s Watershed Initiative (or Targeted Watersheds) Grant Program to implement a suite of watershed improvement projects with local partners throughout the Great Miami River Watershed.

In its 2003 Annual Report, MCD listed five fund categories of its accounting records. Table 1 shows total cash receipts and disbursements for each of the 5 fund categories are as follows:

**A. General Fund**

Limited to operation, maintenance, and other current expenses of the District.

**B. Special Revenue Funds**

To account for the proceeds of specific revenue sources that are legally restricted to disbursements for specified purposes.

1. The Aquifer Preservation Subdistrict (APS)
2. The River Corridor Improvement Subdistrict
3. Miscellaneous
  - o Watershed Initiatives
  - o RiverSmart

**C. Debt Service Funds**

To account for the accumulation of resources for and the payment of debt principal, interest, and related costs: Dam Safety and Rehabilitation Debt Service

**D. Capital Project Funds**

To account for financial resources to be used for the acquisition or construction of major capital facilities: Dam Safety and Rehabilitation

**E. Internal Service Funds**

To account for the financing of goods or services provided by one department or agency to other departments or agencies of MCD.

1. Internal Service Support
2. Internal Service Operations

Table 1. Abbreviated MCD 2003 Financial Statements.

Fund Categories	General	Special Revenue	Debt Service	Capital Projects	Total
Receipts	\$ 4,338,252	\$ 1,361,881	\$ 1,183,936	\$ 110,136	\$ 6,994,205
Disbursements	4,386,463	1,461,300	1,026,128	6,161,765	13,035,656
Other Receipts/(Disbursements)	(358,165)	(469,000)	0	4,000,000	4,110,835
Balance*	8,236,706	5,875,520	507,232	5,841,087	20,460,545

\*Including carry-on’s from 2002.

It is clear that the majority (62%) of the case receipts was from the general fund which presumably came from flood protection assessments on private and public properties.

### **The MCD Water Quality Trading Program**

The Water Conservation Subdistrict is currently spearheading a water quality trading program. Great efforts have been made to obtain support from state and federal regulatory agencies and local public and private organizations. During 2003, numerous meetings and discussions were held with various potential partners including staff of various public and private wastewater dischargers, county Soil and Water Conservation Districts, the Ohio Farm Bureau Federation, Ohio EPA, Ohio DNR, and the U.S. EPA. Cooperation and regulatory flexibility offered by Ohio EPA and U.S. EPA leadership staff, throughout the discussions, bodes well for the potential to implement an innovative and cost-effective program. For example, Ohio EPA has agreed to coordinate data collection with MCD, to participate in efforts to strengthen community-based watershed groups, and to cooperatively pursue a water-quality trading effort in the Great Miami River Watershed. Ohio DNR also has agreed to provide technical support and oversight for the trading program.

Staff prepared a draft amendment to the Official Plan of The Water Conservation Subdistrict of MCD, which would reactivate the dormant Subdistrict to carry out the proposed program. In June 2004, the Board of Directors approved the final Official Plan amendment. By the end of 2004, a draft Operations Manual had been completed for the program. Currently, additional funding for initiating and partially implementing the program is being pursued.

#### Water Quality Trading Program

The following two documents provide detailed description of the trading program:

*Great Miami River Watershed Water Quality Credit Trading Program Operations Manual* (by the Water Conservation Subdistrict of the MCD)

*Preliminary Economic Analysis of Water Quality Trading Opportunities in the Great Miami River Watershed, Ohio* (by Kieser & Associates).

### **MCD in comparison with ESD**

Ecosystem services districts (ESDs) are conceptual government authorities dedicated to management of ecosystem services. The Growing Water RFP defines ESD as “a specialized government entity to direct public investment into activities that enhance those ecological services that improve the condition of the district’s water and water dependent natural resources.” By taking the value of ecosystem services into account in making economic and social decisions, ESDs have the potential to promote sustainable development and fundamentally change the way our economic activities interact with the ecosystem.

The paper pioneering the ESD concept (Heal et al., 1997) considered the powers an ESD should have to manage ecosystem services, which include, from least to most controversial,

- ?? coordination across existing different service districts (Coordination)
- ?? generation of information on ecosystem services (Information Generation)
- ?? zoning authority or other land use powers (Land Use), and
- ?? taxation authority (Taxation).

Compared to these four functions:

### Coordination

MCD work regularly with local organizations such as SWCD to obtain external funds and work together on watershed improvement projects. However, it seems that MCD does not have a defined role of coordinating officially established service districts. On the other hand, interestingly, some of MCD's subdistricts clearly have different service focuses than the main district's flood protection (e.g., the Water Conservation Subdistrict and the Aquifer Preservation Subdistrict).

In addition, the recently re-activated Water Conservation Subdistrict covers a broad range of watershed activities, including assisting community-based watershed organizations, Phase II Stormwater permitting assistance, public education, and land conservation. The water quality trading program is also operated by this subdistrict. Other envisioned activities by the Subdistrict include expanded water quality monitoring, restoration of natural floodplains and wetlands, streamside recreational development, and public education.

### Information Generation:

MCD maintains an extensive and continually expanding monitoring network throughout the Great Miami River watershed. These stations monitor groundwater levels, groundwater quality and surface water quality at wells and streams. Miami Conservancy District's monitoring network currently consists of 189 groundwater level wells, 77 water quality wells. In addition to data collection, MCD staff interprets and analyzes the data to provide important information to decision-makers to help guide their use of the region's water resources. These results are published in user-friendly, non-technical reports that are widely distributed to MCD's constituents. MCD maintains 37 rain gauge stations and a subsequent database of rain records. MCD maintains or partners with other interests in the operation and maintenance of several 45 stream gauges and 2 lake gauges mostly provided by USGS. USGS processes the data and makes it public.

Although these data collection activities have well equipped MCD to quantify water related ecosystem services, MCD has not taken conscious steps towards such quantification. Apparently, these data collection activities can be well justified with flood control/protection and groundwater quality protection. However, to take the MCD closer to an ESD, these data need to be analyzed in a way that goes beyond hydrology. Economic and social factors and goals will have to be considered.

Interestingly, MCD has actually started to move in this direction . Personal communications with MCD staff members indicated that MCD has initiated a study with the Ohio State University to

study the economic impacts of watershed improvement projects such as trails, buffer strips, and river access points.

### Land Use

It appears that outside of flood control and possibly groundwater protection, MCD has very limited land use power. Except the initial land and property acquisitions for the construction of the flood control dam system, we have not been able to find cases where MCD exercised its dominant right of eminent domain. Although this is far from what an ESD is envisioned to be able to do in terms of managing land use for optimum ecosystem services, flood control, being a key service provided by any ecosystem, is an excellent starting point for land use management by any service district aspiring to become an ESD.

The District also acquires land, apparently using its general fund and grant or other extra funding sources, for preventing development on the floodplain and other watershed improvement projects. In addition, it appears that the District tries to influence local authorities' zoning decisions with technical advice and education.

### Taxation

Similar to its land use power, taxation by MCD is also largely based on flood control and groundwater protection, two pillar functions of the District. Funding analysis (see Table 1) shows that basic taxation provides the majority of MCD's operation expenses, likely reaching beyond these two key functions.

### **MCD's 2003 Strategic Plan**

The forward thinking of the MCD's management and the Board of Directors, and the potential of MCD moving towards an ESD can best be illustrated by the District's 2003 Strategic Plan. The following is the Plan quoted in its entirety as it appeared in MCD's 2003 Annual Report.

\*\*\*\*\*

***Vision:*** Healthy watersheds, sustainable communities, and a higher quality of life for our generation and those to come.

***Mission:*** Protecting lives, property, and economic vitality by providing unfailing flood protection, preserving water resources, enhancing river corridors and conserving valuable land within the Great Miami River Watershed.

### ***Long-term Goals***

1. Mitigate flood damage to properties within the watershed by:
  - ?? Maintaining and improving the integrity of the existing flood protection system, including completion of the safety upgrades to all dams.
  - ?? Providing flood protection to communities using environmentally sensitive techniques.

- ?? Implementing maintenance practices that maximize natural stream processes and aquatic habitat within the channelized portions of the flood protection system.
  - ?? Assisting jurisdictions in the watershed to upgrade the Federal Emergency Management Agency (FEMA) floodplain maps.
  - ?? Conserving and restoring natural floodplains and wetlands.
  - ?? Acquiring additional land and conservation easements to prevent development on the floodplain and allow natural stream channel processes to occur.
2. Collect and analyze water-resource data that support sound management of the watershed by:
- ?? Monitoring the aquifer systems to gain a better understanding of long-term, seasonal, and event-driven changes in groundwater quantity.
  - ?? Assessing the ecologic health of groundwater resources through geochemical analysis, analysis of groundwater quality and data interpretation.
  - ?? Partnering with United States Geological Survey (USGS) on new water-quality investigations concerning the occurrence of arsenic and new emerging contaminants within the groundwater of the watershed.
  - ?? Improving regional stream, precipitation and flood forecasting information by upgrading the stream and precipitation gages to provide real-time data to Ohio Emergency Management Agency (OEMA), United States Geological Survey (USGS), and Miami Conservancy District flood forecasting systems.
  - ?? Partnering with United States Geological Survey (USGS) to develop a continuous surface water quality monitoring network in the watershed.
  - ?? Developing biological assessment capability for the watershed's streams.
  - ?? Monitoring the status of aquatic ecosystems and their responses to changes in land use.
  - ?? Producing periodic reports on the trends and conditions of water resources within the watershed.
3. Develop a system of greenways along the stream corridors that provides recreation, wildlife habitat, and water supply protection by:
- ?? Conserving and restoring natural floodplains and wetlands.
  - ?? Acquiring additional land and conservation easements that can provide opportunities for greenways, outdoor recreation, and wildlife habitat along the river corridors.
  - ?? Developing new—and promoting existing—recreation trails along stream corridors.
  - ?? Completing the planned bike trails in Butler, Miami, and Warren counties.
  - ?? Partnering with county park districts and other land conservation groups to expand natural preserves and recreational areas along the river corridors throughout the watershed.
4. Improve the quality of water resources in the Great Miami River Watershed by:
- ?? Conserving and restoring natural floodplains and wetlands.
  - ?? Acquiring additional land and conservation easements to restore or preserve healthy ecosystems along the river corridors.

- ?? Restoring streambanks to prevent erosion and sedimentation, and establishing wetlands to allow natural filtering and buffering processes to occur.
- ?? Developing a comprehensive public education and outreach program to support or enhance water-quality initiatives in the watershed.
- ?? Providing support to watershed groups in their efforts to improve water quality in the various subwatersheds.
- ?? Partnering with other agencies to mitigate nonpoint source pollution.
- ?? Partnering with local zoning officials, metropolitan planning organizations, and soil and water conservation districts to implement conservation-oriented storm water Best Management Practices (BMPs) on several new construction sites as part of a storm water management education campaign.

\*\*\*\*\*

### **Next Steps for this Case Study**

- ?? Interview MCD staff members for questions and more knowledge of the District
- ?? Send this summary to the project team, particularly Henry H. and Dennis K., for comments and suggestions
- ?? Study other watershed management authorities/organizations in the Great Lakes and the nation, e.g., (Florida, Nebraska, and Arizona).
- ?? Integrate trading, ESD, and MCD.