

Introduction

This Master Plan update includes updating the text of the Utilities Section of the current Master Plan and adding a report concerning telecommunications. Each element examines the existing utility infrastructure including a service area several miles beyond the present City boundaries.

We have made recommendations as to timing and sequence of utility extensions along with cost estimates for the proposed utility improvements. These recommendations are sensitive to the future as well as the present requirements of the City.

Purpose

The purpose of this study is to provide a guide for upgrading utility services for the City's planning area, for both the existing service area and the proposed service area. Communities change over time. Thus, information concerning them must continually be gathered and analyzed in light of the changing conditions. This update of the utility plan is to provide local decision-makers with long-range technical guidance needed to make future development decisions.

Summary

Water

The improvement recommendations are compatible with the expansion of the existing water treatment facility to 9 MGD and supported by the 36-inch transmission main along King Road and State Route 25. Enhancements to the system are based on the construction of the 24-inch water main from the new plant clearwell to the trunk mains.

Expansion of the distribution system is based on current and estimated population statistics along with the City's current Land Use Plan. In order to project future demands, a per-acre population was determined for each type of land use based on current future projections (FP). This calculation assumes 80 gallons per capita day. Waterline extensions, trunk mains, pump stations, water storage tanks and capacity, system pressures, and system capacity needs are recommended based on these projected demands along with known development areas.

Sewer

In order to plan the expansion of the sanitary sewer collection system, the planning area was divided into five districts based on previous report efforts. It was necessary to divide each of the five previously designated districts into smaller sub-districts in order to maintain design criteria requirements and provide sanitary sewers to the whole plan area. Each of the sub-districts is served by a pump station that pumps the flows it receives to one of the trunk sewers or to another sub-district. Design was based on estimated flows within each of the sub-districts. Flows were estimated based on population estimates and the Land Use Plan.

Combined Sewer

In order to evaluate the combined sewer system in the City, certain assumptions were made concerning the feasibility to separate flows. First, conflicts with existing sewers were not considered. Instead, it was assumed that sanitary sewers could be installed deeper than existing storm drainage facilities. In some cases, it may be preferable to install new storm sewers; converting existing combined sewers to sanitary only flows.

Water Treatment and Distribution Systems

Existing Water Facilities

The existing water treatment plant for the City of Bowling Green is located northeast of the intersection of King Road and State Route 65 in Middleton Township. The facility has been in operation since the early 1950's. The nominal treatment capacity of the facility as originally constructed was 3.0 MGD. Subsequently, improvements have increased the plant capacity to 6 MGD. The plant draws its raw water supply directly from the Maumee River via an 8.5 MGD raw water pumping station. The raw water pumping station feeds a 170 million gallon above ground reservoir. Raw water flows from the reservoir to the plant by gravity or by two (2) 6 MGD pumps. The City is investigating the option of a second raw water intake in the Maumee River and increasing the raw water pumping capacity. The station has a submerged channel inlet along the river's edge and has four low service pumps of the following capacities:

- 1 - 3 MGD (electric driven)
- 2 - 3 MGD (electric driven)
- 1 - 2 MGD (electric or natural gas driven unit)

The water treatment plant consists of a chain of treatment units used in purifying the raw water to a potable state. The unit processes applied are chemical coagulation and sedimentation, lime-soda softening, recarbonation, filtration, fluoridation, and chlorination (disinfection) and carbon filtration. The plant has a one million gallon treated water clearwell from which the high service pumps are capable of delivering a total nominal flow of 6 MGD to the distribution system. The pump capacities are the following:

- 1 - 2 MGD (electric driven)
- 2 - 1 MGD (electric driven)
- 1 - 2 MGD (electric or natural gas driven)

After treatment, the high service pumps deliver the finished water to the distribution system via a 20-inch transmission main. Along the transmission main route, there exists a booster pumping station with an elevated 1/2 million gallon water storage tank. The booster station houses two booster pumps, which can increase the pressure of the potable water as it is delivered to the City. The pumping capacity of the station is approximately 6.0 MGD and it has two 6.0 MGD pumps. The 1/2 million gallon water storage tank acts as a fluctuating water reservoir from which the booster pumps draw their supply. (This booster pump station is not currently in service. The need for it was reduced by the construction of the transmission main from the plant.) The transmission main also serves the Villages of Haskins and Tontogany, which are served upstream of the booster pump station location.

A second 36-inch transmission main was constructed in 1995. This transmission main connects to the 20-inch water main at the Village of Haskins, and runs east along King Road, then south along State Route 25 to the City, connecting to the existing distribution system south of Newton Road. This line is fed from the existing 20-inch line from the water treatment plant.

A second clearwell was constructed in 2003 at the water treatment plant. This second clearwell holds 1 million gallons of treated water. Three (3) vertical turbine pumps in the clearwell provide an additional 19 MGD capacity to serve the system. Water from the second clearwell discharges through a new 24-inch trunk main that connects to the existing 20-inch and 36-inch

trunk mains at the Village of Haskins. These flows will augment the capacity available to the City of Bowling Green both for inside sales and for contract sales to outside customers.

In regard to the distribution system, the City currently operates and maintains approximately 82 miles of waterlines locally -- ranging from 3-inch to 36-inch in diameter. The system includes a one-half million gallon elevated water storage water tank located near the intersection of Clough and Manville Streets, a 1.5 million gallon elevated water storage tank located in Carter Park, and a 1.5 million gallon elevated water storage tank located near the intersection of Mitchell and Sand Ridge Roads. In addition to the City's own distribution system, there are also approximately 17 miles of 8-inch through 16-inch diameter waterlines connected to the Bowling Green system that serve the Villages of Tontogany, Haskins, Weston, Portage, and Rudolph, as well as the Miltonville water service area, the Wood County Landfill and Euler Road service area, and the Arlington Woods service area. The City provides maintenance services to these non-City owned waterlines on a requested, case-by-case basis. There are three (3) elevated water tanks serving the communities of Portage, Grand Rapids, and Weston. A fourth tank will be constructed on State Route 25 to serve the Jerry City area.

In regard to system performance, the system has performed reasonably well over the years. Recent improvements to the plant and distribution system have alleviated many of the shortcomings noted in earlier reports and studies and today no major deficiencies in the system remain.

Past water demands placed on the Bowling Green system had historically gradually increased on an annual basis as cited in previous water studies. This generalization held true until 1975 when the system's average daily demand dropped significantly and remained lower through 1976. It is believed this decrease in water demand corresponded to the departure of the Heinz canning operations from the water system during 1975.

Recognizing the fact that the water system did not meet the standards recommended by both the Ohio EPA and the ISO of Ohio, the City commissioned studies in 1975 and 1983, to determine the most appropriate action for the City to take to improve the water system. It was hoped that these studies would provide a satisfactory solution to the City's water system deficiencies without requiring the construction of a new water transmission main. The studies met this problem by recommending upgrading and additions to the water distribution system and the addition of finished water storage facilities.

Subsequently, the City made extensive improvements to the water distribution system. The updated system now consists of a main water loop surrounding the City, which provides improved coverage for the entire City. The City also constructed two 1.5 million gallon capacity water towers. These towers, along with the previously existing storage facilities, provide an elevated storage capacity of 4 million gallons. This is slightly more than a one-day supply of finished water storage and meets the recommendation of the Ohio EPA.

Appendix A contains figures showing the location of the existing waterlines, the booster station, and the storage towers.

Since the 1983 Water Distribution System Master Plan was issued, the City has completed virtually all of the immediate improvements recommended in that report. Those improvements, as well as the proposed waterline improvements on Dunbridge Road, have and will greatly enhance the City's ability to distribute water throughout the system.

To ensure that the water distribution system is able to provide acceptable levels of service in the future, it is necessary to predict future water requirements. The following maximum day water demands have been projected for the Bowling Green Water System:

<u>Year</u>	<u>Maximum Day Demand (MGD)</u>
2010	6.46
2020	7.14
2035	8.17

At the time of the previous report, it was anticipated that between the year 2000 and 2010 the system's maximum day usage would exceed the present capacity of the Bowling Green Water Treatment Plant, as well as the reliability of the existing 20-inch transmission main to deliver treated water to the City. Therefore, the City upgraded the water treatment plant and constructed the additional transmission main.

The second transmission main is a 36-inch trunk main that extends from the Village of Haskins east along King Road and then south along State Route 25 connecting to the 20-inch main on North Main Street south of Newton Road. A 24-inch extension to the water treatment plant is being planned. This new 24-inch main will connect to the existing 20-inch and 36-inch mains at Haskins and will parallel the existing 20-inch main to the water treatment plant. Flow to the 24-inch will be provided by the high service pumps in the new clearwell. This new construction is planned for completion in 2004.

Proposed Water Distribution System Improvements

The planning area for the water distribution system is bounded on the north by Bishop Road and Newton Road, on the west by Mitchell Road, on the south by Kramer Road, and on the east by Huffman Road and Carter Road. Additional extensions to the north, east, and west are examined in relation to a recently completed Land Use Study.

The recommended size of future and proposed water main improvements are listed by quadrants (northwest, southwest, southeast, and northeast). As development occurs within the planning area, the distribution system should be expanded using the sizes shown. All areas that cannot be served by the future trunk mains outlined in this report will be served by 8-inch waterlines. The future and proposed distribution system improvements are compatible with the expansion of the existing water treatment facility to 9 MGD and supported by the recent construction of the 36-inch transmission main along King Road and State Route 25. It will be further enhanced by the construction of the 24-inch water main from the new plant clearwell to the trunk mains.

Northwest Quadrant

The proposed water main improvements for the Northwest Quadrant of the City are as follows:

- 1) A 20-inch trunk water main along Bishop Road between the existing 20-inch main at State Route 64 (Haskins Road) and the 36-inch main at U.S. Route 25 (North Main Street).
- 2) A 20-inch trunk water main along Bishop Road between the existing 20-inch main at State Route 64 (Haskins Road) and a future 12-inch main at Mitchell Road.
- 3) A 20-inch trunk water main along Brim Road between the proposed 20-inch main at Bishop Road and the existing 12-inch main at Newton Road.
- 4) A 12-inch trunk water main along Mitchell Road between the future 20-inch main at Bishop Road and the 12-inch County main at Bowling Green Road West.
- 5) A 12-inch trunk water main along West Poe Road between the 12-inch County water main at Liberty Hi Road and the existing 12-inch water main at the west corporation line on west Poe Road.
- 6) A 8 -inch water main along Gorrell Avenue between the proposed 12-inch water main along Mitchell Road to the existing water main on Gorrell Avenue. A portion of this extension was completed in 2003 to serve the Church of the Nazarene.
- 7) Additional 12-inch and 8-inch water main extensions west to Liberty High Road, North of Bishop Road, and west to Range Line Road are also indicated on the Distribution Map. Connections in the area of the County Landfill would be to existing County mains in the area of the landfill. The necessity of completing these extensions and connection to County lines will depend on future development in these areas.

Southwest Quadrant

The proposed water main improvements for the Southwest Quadrant of the City are as follows:

- 1) A 12-inch trunk water main along Mitchell Road between the existing 12-inch water main at Sand Ridge Road and the future 12-inch water main at Kramer Road.
- 2) A 12-inch trunk water main along Bowling Green Road West between the future 12-inch water main at Mitchell Road connecting to the County mains on West Bowling Green Road and South Mitchell Road, and the existing 12-inch water main at the intersection of Pearl Street and Muirfield Drive.
- 3) A 12-inch trunk water main along Kramer Road between the future 12-inch at Mitchell Road and the existing 16-inch at U.S. Route 25 (South Main Street).
- 4) Additional waterlines shown on the Distribution Map extending west to Range Line Road between Kramer Road and Bowling Green Road West would be added as requested to support future development. These waterlines would connect to existing County water mains at Sand Ridge Road, Euler Road, and Bowling Green Road West.

Southeast Quadrant

The proposed water main improvements for the Southeast Quadrant of the City are as follows:

- 1) A 12-inch trunk water main along Napoleon Road between the existing water main at Campbell Hill Road and the existing 16-inch water main at Dunbridge Road.
- 2) A 12-inch trunk water main along Napoleon Road between the existing 16-inch water main at Dunbridge Road and the future 12-inch water main at Huffman Road.
- 3) A 16-inch trunk water main along East Gypsy Lane Road between the existing 16-inch main at U.S. Route 25 (South Main Street) and the 12-inch main at Campbell Hill Road.
- 4) A 16-inch trunk water main along East Gypsy Lane Road between the 12-inch main at Campbell Hill Road and the existing 16-inch water main west of Dunbridge Road.
- 5) A 12-inch trunk water main along East Gypsy Lane Road between the existing 16-inch water main at Dunbridge Road and the future 12-inch water main at Huffman Road.
- 6) A 12-inch trunk water main along Kramer Road between the existing 16-inch water main at U.S. Route 25 (South Main Street) and the future 12-inch water main at County Home Road.
- 7) A 12-inch trunk water main along Kramer Road between the future 12-inch water main at County Home Road and the future 12-inch water main at Huffman Road.
- 8) A 12-inch trunk water main along County Home Road between the existing 16-inch water main at U.S. Route 6 and Dunbridge Road and the future 12-inch water main at Kramer Road.

- 9) A 12-inch trunk water main along Huffman Road between the future 12-inch water main at Napoleon Road and the future 12-inch water main at Kramer Road.
- 10) Additional waterline extensions north of Kramer Road, east of Silverwood Road, and south of State Route 105 are indicated on the Distribution Map. The necessity of these improvements will be determined by future development in the area.

Northeast Quadrant

The proposed water main improvements for the Northeast Quadrant of the City are as follows:

- 1) A 30-inch trunk water main along Newton Road between the existing 36-inch transmission main at U.S. Route 25 (North Main Street) and the future 24-inch water main at Dunbridge Road.
- 2) A 12-inch trunk water main along Newton Road between the future 24-inch water main at Dunbridge Road and the future 12-inch water main at Carter Road.
- 3) A 24-inch trunk water main along Dunbridge Road between the future 30-inch main at Newton Road and the existing 24-inch main south of East Poe Road.
- 4) A 12-inch trunk water main along Carter Road between the future 12-inch water main at Newton Road and the future 12-inch water main at State Route 105 (Bowling Green Road East).
- 5) A 12-inch trunk water main along State Route 105 (Bowling Green Road East) between the future 12-inch water main at Carter Road and the existing water main on State Route 105 (Bowling Green Road East).
- 6) In addition, the Distribution Map indicates the interconnection and extension of the above, north to Sugar Ridge Road and east to Anderson Road, in accordance with the land use plan (2001). The necessity of these additional extensions will be dependant on development that may occur in these areas.

Long Range Infrastructure Improvements

In addition to the long-range proposals called for above, the City is also pursuing a plan to update the existing waterlines. Currently, there are several miles of waterlines in service within the City that do not meet recommended standards for water distribution systems consisting of approximately ½ mile of 3-inch service line on South Main Street from Lehman Avenue to Napoleon Road, 2 miles of 4-inch diameter pipe, and 23 miles of 6-inch diameter pipe. At the present time, the City is developing a plan for the improvement of the distribution system to eliminate the substandard waterlines in a logical and prioritized method.

Estimated Costs of Construction

The estimated costs of the proposed water system improvements are based on current prices as of the 2001 construction season and include all fittings, valves, hydrants, etc. Where indicated, costs to bore and jack at highway and railroad crossings have been included. No costs have been included for pavement replacement or easement acquisition. Unit costs for construction used in calculating these totals are as follows:

8-inch waterline	\$50	/ft
12-inch waterline	\$65	/ft
16-inch waterline	\$85	/ft
20-inch/24-inch waterline	\$110	/ft
30-inch waterline	\$135	/ft
Bore & Jack	\$150	/ft

Northwest Quadrant

Bishop Road

1. 20-inch waterline Haskins Rd to Brim Rd	5320	lf	\$110	/ft	\$585,200
2. 20-inch waterline Brim Rd to N Main St	3780	lf	\$110	/ft	\$415,800
3. 20-inch waterline Mitchell Rd to Haskins Rd	1190	lf	\$110	/ft	<u>\$130,900</u>
Sub-Total					\$1,131,900

Brim Road

1. 20-inch waterline Newton Rd to Bishop Rd	2520	lf	\$110	/ft	<u>\$277,200</u>
Sub-Total					\$277,200

Mitchell Road

1. 12-inch waterline Bishop Rd to W Poe Rd	7840	lf	\$65	/ft	\$509,600
2. 12-inch waterline W Poe Rd & BG Rd W	5180	lf	\$65	/ft	<u>\$336,700</u>
Sub-Total					\$846,300

W Poe Road

1. 12-inch waterline Mitchell Rd to Corp limits	2590	lf	\$65	/ft	<u>\$168,350</u>
Sub-Total					\$168,350

Total Northwest Quadrant Costs **\$2,423,750**

Southwest Quadrant

Mitchell Road

1. 12-inch waterline Mitchell Rd to Haskins Rd	4620	lf	\$65 /ft	\$300,300
2. Bore & Jack U.S. Route 6	120	lf	\$150 /ft	<u>\$18,000</u>
Sub-Total				\$318,300

Bowling Green Road West

1. 12-inch waterline Mitchell Rd to Muirfield Dr	1540	lf	\$65 /ft	<u>\$100,100</u>
Sub-Total				\$100,100

Kramer Road

1. 12-inch waterline Mitchell Rd to S Main St	10500	lf	\$65 /ft	<u>\$682,500</u>
Sub-Total				\$682,500

Total Southwest Quadrant Costs **\$1,100,900**

Southeast Quadrant

Napoleon Road

1. 12-inch waterline Campbell Hill Rd to Dunbridge Rd	4032	lf	\$65 /ft	\$262,080
2. Bore & Jack Interstate 75	120	lf	\$150 /ft	\$18,000
3. 12-inch waterline Dunbridge Rd to Huffman Rd	5320	lf	\$65 /ft	<u>\$345,800</u>
Sub-Total				\$625,880

E Gypsy Lane Road

1. 16-inch waterline S Main to Campbell Hill Rd	5600	lf	\$85 /ft	\$476,000
2. Bore & Jack Railroad	80	lf	\$150 /ft	\$12,000
3. 16-inch waterline Campbell Hill Rd to Dunbridge Rd	3780	lf	\$85 /ft	\$321,300
4. Bore & Jack Interstate 75	120	lf	\$150 /ft	\$18,000
5. 12-inch waterline Dunbridge Rd to Huffman Rd	5320	lf	\$65 /ft	<u>\$345,800</u>
Sub-Total				\$1,173,100

Kramer Road

1. 12-inch waterline S Main St to County Home Rd	7280	lf	\$65 /ft	\$473,200
2. Bore & Jack Interstate 75	120	lf	\$150 /ft	\$18,000
3. 12-inch waterline County Home Rd to Huffman Rd	8960	lf	\$65 /ft	<u>\$582,400</u>
Sub-Total				\$1,073,600

County Home Road

1. 12-inch waterline Dunbridge/US Rt 6 to Kramer Rd	6160	lf	\$65 /ft	<u>\$400,400</u>
Sub-Total				\$400,400

Huffman Road

1. 12-inch waterline Napoleon Rd to Kramer Rd	7280	lf	\$65 /ft	\$473,200
2. Bore & Jack U.S. Rt 6	120	lf	\$150 /ft	<u>\$18,000</u>
Sub-Total				\$491,200

Total Southeast Quadrant Costs **\$3,764,180**

Northeast Quadrant

Newton Road

1. 30-inch waterline N Main St to Dunbridge Rd	10920	lf	\$135 /ft	\$1,474,200
2. Bore & Jack I-75	120	lf	\$150 /ft	\$18,000
3. Bore & Jack Railroad	80	lf	\$150 /ft	\$12,000
4. 12-inch waterline Dunbridge Rd to Carter Rd	5180	lf	\$65 /ft	<u>\$336,700</u>
Sub-Total				\$1,840,900

Dunbridge Road

1. 24-inch waterline Newton Rd to S of Poe Rd	5040	lf	\$110 /ft	<u>\$554,400</u>
Sub-Total				\$554,400

Carter Road

1. 12-inch waterline Newton Rd to SR 105	8960	lf	\$65 /ft	<u>\$582,400</u>
Sub-Total				\$582,400

State Route 105 (Bowling Green Road East)

1. 12-inch waterline Dunbridge Rd to Carter Rd	5110	lf	\$65 /ft	<u>\$332,150</u>
Sub-Total				\$332,150

Total Northeast Quadrant Costs **\$3,309,850**

Trunk Waterline System Cost Summary

Northwest Quadrant Total	\$2,423,750
Southwest Quadrant Total	\$1,100,900
Southeast Quadrant Total	\$3,764,180
Northeast Quadrant Total	\$3,309,850
Trunk System Construction Total	\$10,598,680

Proposed Wastewater Collection System Improvements

The proposed improvements to the wastewater collection system consist primarily of the development of a plan to provide sanitary sewer service to those portions of the plan area currently without such service and separating existing combined sanitary sewers from storm water sewers. The City's previous Master Plan was used as a basis for this plan. Improvements completed since the previous Plan was completed, growth, usage, and the City's current Zoning Plan determined the improvements suggested in this plan.

The five service areas designated in the previous plan were used to aid in the development of this plan. As in the previous plan, these areas are designated as the Northern Sanitary Sewer District, the Southwestern Sanitary Sewer District, the South Central Sanitary Sewer District, the Southeastern Sanitary Sewer District, and the Dunbridge Road Sanitary Sewer District.

Flows from the five designated sanitary sewer districts are carried to one of two pumping stations that pump the wastewater to the treatment plant. The wastewater is brought to the pumping stations by three trunk sewers.

The pumping station located at the northwest corner of Poe and Mercer Roads receives the flows of the Western Trunk and Eastern Trunk sanitary sewers. The designated Northern, South Central, and Southwestern Sanitary Sewer Districts flow into the Western Trunk, while the Southeastern Sanitary Sewer District will flow east to Dunbridge Road.

A pumping station at the southwest corner of Poe and Dunbridge Roads receives flows from the Dunbridge Road Trunk Sanitary Sewer. The Dunbridge Road Trunk Sanitary Sewer lies within the boundaries of the designated Dunbridge Road Sanitary Sewer District. The wastewater flows of this district, as well as those from the proposed Southeastern District, are carried by this trunk sewer.

This plan also uses the sub-district established in the previous plan. It is necessary to divide each of the five previously designated districts into smaller sub-districts in order to maintain design criteria requirements and provide sanitary sewers to the whole plan area. Each of these sub-districts is served by a pump station that pumps the flows it receives to one of the trunk sewers or to another sub-district.

The following text describes the proposed improvements to each of the five sanitary sewer districts.

Northern District

The Northern District includes the lands within the plan area primarily without sanitary sewer service. This area is located north of the City. It extends north to Newton Road east of Main Street, north to Bishop Road west of Main Street, west to Liberty Hi Road, and east to Interstate 75. This district is further divided into six sub-districts.

Sub-District #1

The proposed sewers for Sub-District #1 include a 12-inch sewer that will flow south along Mitchell Road from Bishop Road to a point 2600' south of Bishop Road. At this point, the sewer will increase in size to 18-inches and continue south along Mitchell Road to Poe Road. From a point 1300' south of Poe Road, an 8-inch sewer will flow north along Mitchell Road to Poe Road where it will meet the previously mentioned 18-inch sewer. A 21-inch sewer will flow east along Poe Road from the intersection of the 18-inch and 8-inch sewers to the existing West Poe Road Pump Station.

The remainder of Sub-District #1 is currently served by sanitary sewers. These sewers carry flows to the West Poe Road Pump Station. Current flows to this pump station do not exceed its operating capacity. However, to accommodate the anticipated increase of flows to the pump station from the improvements proposed in this plan, the pump station will have to be upgraded. The upgrade necessary for this pump station would make the new design capacity 2210 gallons per minute (gpm).

Sub-District #1A

The proposed sewers for Sub-District #1A include an 8-inch sewer that will flow east along Bishop Road from Mitchell Road to Haskins Road, and a 10-inch sewer that will flow west along Bishop Road from a point 2400' east of Haskins Road where it will meet the proposed 8-inch sewer. From that point, a 15-inch sewer will flow south along Haskins Road for 3000'. At this point, the sewer will increase in size to an 18-inch sewer and will flow south along Haskins Road to the proposed Haskins Road Pump Station.

The Haskins Road Pump Station will receive the flows from the sub-district and will pump these flows to Sub-District #1 via the existing 21-inch sewer located along Haskins and West Poe Roads. The design capacity for this pump station is 556 gpm.

Sub-District #2

The proposed sewer for Sub-District #2 will include a 15-inch sewer beginning 3000' west of Brim Road (which will flow east along Bishop Road to Brim Road) and another 15-inch sewer that will flow west along Bishop Road from North Main Street to Brim Road and the previously mentioned 15-inch sewer. These two 15-inch sewers will join an existing 18-inch sewer that flows south along Brim Road to Van Camp Road where it joins an existing 18-inch sewer that flows east along Van Camp Road to the existing Van Camp Road Pump Station.

The Van Camp Road Pump Station pumps through a force main south to the Western Trunk Sanitary Sewer located on West Poe Road via a 18-inch sewer located along the west line of the Bowling Green High School property. The capacity of this pump station is 1835 gpm.

Sub-District #3

The proposed sewers for Sub-District #3 will include a 12-inch sewer that will flow along North Main Street from Bishop Road to an existing 12-inch sewer, which flows south to Newton Road, and a 15-inch sewer that will flow along Newton Road from the Conrail Railroad Tracks to North Main Street where it will join the existing 12-inch sewer on North Main Street. The flows from Sub-District #3 will flow to the North Main Street Pump Station via an existing sewer on Main Street.

Sub-District #4

The proposed sewers for Sub-District #4 include a 12-inch sewer along Newton Road beginning approximately 900' east of North College Drive and flowing west to North College Drive and continues south along North College Drive approximately 2300'. A 12-inch sewer will flow west from the 12-inch sewer on North College Drive crossing the railroad and connecting to the existing 12-inch sewer on Industrial Park Drive. An 8-inch sewer will flow north along North College Drive beginning approximately 2000' south of the Industrial Park Drive/North College Drive connection point.

Flows from Sub-District #4 will discharge via existing sewers on Industrial Parkway and North Main Street to the Existing North Main Street Pump Station. The design capacity of the proposed North College Drive Pump Station is 800 gpm.

Sub-District #5

The proposed sewers for Sub-District #5 include an 8-inch sewer along Conneaut Avenue that begins approximately 2000' east of Liberty Hi Road and flows west to a proposed 8-inch sewer on Liberty Hi Road. The proposed 8-inch sewer on Liberty Hi Road will flow north from the 8-inch sewer on Conneaut Avenue to the proposed Liberty Hi Road pump station near the intersection of Liberty Hi and Poe Roads. An 8-inch sewer along Poe Road will begin approximately 3200' west of Liberty Hi Road and flow west to the proposed Liberty Hi Road pump station. An 8-inch force main along Poe Road will carry the flows from the Liberty Hi Road Pump station to a proposed 8-inch sewer along Poe Road that begins 2000' west of Mitchell Road and flows east to the proposed 21-inch sewer on Poe Road in Sub-District #1. The capacity of this pump station is 310 gpm.

This sub-district also includes an 8-inch sewer along Mitchell Road that begins approximately 1200' north of Conneaut Avenue and flows south to a proposed pump station near the intersection of Conneaut Avenue and Mitchell Road. An 8-inch sewer along Mitchell Road that begins approximately 1200' south of Conneaut Avenue will flow north to the proposed Conneaut Avenue pump station and a 10-inch sewer along Conneaut Avenue (Gorrill Road) that begins approximately 3000' west of Mitchell Road will flow east to the Conneaut Avenue pump station. A 4-inch force main along Conneaut Avenue will carry the flows from the Conneaut Avenue pump station to an existing 10-inch sewer on Conneaut Avenue. The capacity of this pump station is 200 gpm.

In addition to the above-proposed improvements to the Northern Sanitary Sewer District, the existing North Main Street Pump station will need to be upgraded. At the present time, this pump station does not have the capacity to handle the additional flows that are anticipated from the proposed improvements in Sub-Districts #3 and #4. The new design capacity for the North Main Street Pump Station is 2565 gpm.

Estimated Costs of Construction

The estimated costs of the proposed Wastewater Collection System Improvements to the Northern District are based on current prices as of the 2003 construction season. No costs are included for pavement replacement, easement acquisition, contingencies, or project costs. Typically, contingencies would add 10% to the total project cost and project costs would add 15% to the total project cost.

Northern Sub-District #1

Mitchell Road Sewers

1. 18-inch Sewer	5100	If	\$110 /ft	\$561,000
2. 12-inch Sewer	2600	If	\$95 /ft	\$247,000
3. 8-inch Sewer	1300	If	\$85 /ft	<u>\$110,500</u>
Sub-Total				\$918,500

West Poe Road Sewers

1. 21-inch Sewer	2500	If	\$125 /ft	\$312,500
2. Pumping Sta. Modification	1	Is	\$12,500 Is	<u>\$12,500</u>
Sub-Total				\$325,000

Sub-District #1 Total **\$1,243,500**

Northern Sub-District #1A

Bishop Road Sewers

1. 8-inch Sewer W of Haskins Rd	1200	If	\$85 /ft	\$102,000
2. 10-inch Sewer E of Haskins Rd	2500	If	\$90 /ft	<u>\$225,000</u>
Sub-Total				\$327,000

Haskins Road Sewers

1. 18-inch Sewer	3000	If	\$110 /ft	\$330,000
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2. 15-inch Sewer	3000	If	\$105	/ft	\$315,000
3. Pumping Station 556 gpm	1	Is	\$100,000	Is	<u>\$100,000</u>
Sub-Total					\$745,000

Sub-District #1A Total **\$1,072,000**

Northern Sub-District #2

Bishop Road Sewers

1. 15-inch Sewer W of Brim Rd	2600	If	\$105	/ft	\$273,000
2. 15-inch Sewer E of Brim Rd	3800	If	\$105	/ft	<u>\$399,000</u>
Sub-Total					\$672,000

Sub-District #2 Total **\$672,000**

Northern Sub-District #3

North Main Street Sewer

1. 12-inch Bishop Rd to Dayspring	800	If	\$95	/ft	<u>\$76,000</u>
Sub-Total					\$76,000

Newton Road Sewer

1. 15-inch Sewer E of N Main St	2800	If	\$105	/ft	<u>\$294,000</u>
Sub-Total					\$294,000

Sub-District #3 Total **\$370,000**

Northern Sub-District #4

Newton Road Sewers

1. 12-inch Sewer	900	If	\$95	/ft	<u>\$85,500</u>
Sub-Total					\$85,500

Mercer Road Sewer

1. 10-inch Sewer	2500	If	\$90	/ft	<u>\$225,000</u>
Sub-Total					\$225,000

North College Drive /Industrial Parkway Sewers

1. 12-inch Sewer	2600	If	\$95 /ft	\$247,000
2. 8-inch Sewer	2000	If	\$85 /ft	<u>\$170,000</u>
Sub-Total				\$417,000

Sub-District #4 Total **\$727,500**

Northern Sub-District #5

Conneaut Avenue Sewers

1. 10-inch Sewer	3000	If	\$90 /ft	\$270,000
2. 8-inch Sewer	2000	If	\$85 /ft	\$170,000
3. 4-inch Force Main	900	If	\$45 /ft	\$40,500
4. Pump Station 200 gpm	1	Is	\$75,000 Is	<u>\$75,000</u>
Sub-Total				\$555,500

Liberty Hi Road Sewer

1. 8-inch Sewer	2600	If	\$85 /ft	\$221,000
2. Pump Station 310 gpm	1	Is	\$65,000 Is	<u>\$65,000</u>
Sub-Total				\$286,000

Poe Road Sewers

1. 8-inch Sewer	5200	If	\$85 /ft	\$442,000
2. 8-inch Force Main	3300	If	\$55 /ft	<u>\$181,500</u>
Sub-Total				\$623,500

Mitchell Road Sewers

1. 8-inch Sewer	2400	If	\$85 /ft	<u>\$204,000</u>
Sub-Total				\$204,000

Sub-District #5 Total **\$1,669,000**

Improvements to N Main St Pump Sta \$250,000

Total Cost for Northern District **\$6,004,000**

Southwestern District

The Southwestern District includes the lands within the plan area primarily without sanitary sewer service. This area is located south of the corporation limits and extends west to Liberty Hi Road south to Kramer Road and east to the old B & O Railroad right-of-way. This district is divided into six sub-districts.

Sub-District #1

The proposed sewer for Sub-District #1 is a 10-inch sewer along Sand Ridge Road 800' west of Wintergarden Road, which will intersect the existing 21-inch sewer at Wintergarden Road.

Sub-District #2A

The proposed sewers for Sub-District #2A will include an 8-inch sewer flowing north along Mitchell Road from 900 feet south of Bowling Green Road west to a 10-inch sewer on Bowling Green Road west to an existing pump station near Stonegate Boulevard. It also includes an 8-inch sewer along Bowling Green Road from the existing West Wooster Street Pump Station to Wintergarden Road. This sub-district includes an 8-inch sewer along Mitchell Road that begins 1300' north of Bowling Green Road and flows south to join the previously mentioned 10-inch sewer at the intersection of Bowling Green Road and Mitchell Road.

Sub-District #2B

The southern portion of Sub-District #2B will drain to the existing Stone Ridge Pump Station through a proposed 12-inch sewer through the Stone Ridge Subdivision and an 8-inch sewer along Sand Ridge Road. This 8-inch sewer begins 3250' east of Mitchell Road and will flow westerly to Mitchell Road, then continue north along Mitchell Road for 1100' and then flows east and north to the existing sewers in the Stone Ridge Subdivision. The middle portion of Mitchell Road will flow through the Stone Ridge Subdivision to the existing pump station in Stone Ridge. 8-inch sewers will flow south and north along Mitchell Road to the midpoint where they will flow east to Stone Ridge.

Sub-District #3

The proposed sewers for Sub-District #3 will drain to the existing Gypsy Lane Road Pump Station located near the intersection of Rudolph Road and Gypsy Lane Road.

The proposed improvements for this sub-district include an 8-inch sewer beginning on Avery Drive south of Sand Ridge Road that will flow south to Gypsy Lane Road, and an 8-inch sewer beginning at the abandoned B & O Railroad

that will flow west along Gypsy Lane Road to the Gypsy Lane Road Pump Station, and an 8-inch sewer along Gypsy Lane Road that will flow east from Sand Ridge Road to the Gypsy Lane Road Pump Station. The Gypsy Lane Road Pump Station pumps flows west through a 10-inch force main that discharges to an existing 21-inch sewer on Sand Ridge Road. Also intersecting this 21-inch sewer is an 8-inch sewer that flows south along Sand Ridge Road from Rudolph Road.

Sub-District #4

The proposed sewers for Sub-District #4 will include an 8-inch sewer along Rudolph Road, beginning approximately 750' south of Gypsy Lane Road, that will flow south to the proposed pump station on Rudolph Road, just north of the U.S. Route 6 bypass.

The area of Sub-District #4, south of the U.S. Route 6 bypass, will be served by a proposed 10-inch sewer along Kramer Road that begins just west of the abandoned B & O Railroad right-of-way and flows west to a 10-inch sewer along Rudolph Road, and a 10-inch sewer that begins approximately 2600' west of Rudolph Road that flows east along Kramer Road to the 10-inch sewer at Rudolph Road. From the intersection of Kramer Road and Rudolph Road, a 10-inch sanitary sewer will carry flows north along Rudolph Road to the previously mentioned proposed pump station north of the U.S. Route 6 bypass.

The proposed U.S. Route 6 pump station will discharge through a 10-inch force main along Rudolph Road, Gypsy Lane Road, and Sand Ridge Road to the existing 21-inch sewer at the intersection of Wintergarden and Sand Ridge Roads. The design capacity for this pump station is 569 gpm.

Sub-District #5

The proposed sewers for Sub-District #5 will include a 10-inch sewer beginning 2600' east of Mitchell Road on Kramer Road that flows west to Mitchell Road and then north along Mitchell Road approximately 2150' to the proposed Mitchell Road Southern Pump Station. The northern area of Sub-District #5 will drain to the proposed pump station through a proposed 8-inch sewer along Mitchell Road that begins approximately 1500' north of the proposed pump station and flows south to the pump station.

The sewage flows for Sub-District #5 will be pumped north by the Mitchell Road Southern Pump Station through a 6-inch force main along Mitchell Road that extends to Sand Ridge Road, then continues east along Sand Ridge Road to an existing 10-inch sewer approximately 800' west of Wintergarden Road. The design capacity for this pump station is 250 gpm.

Sub-District #6

The proposed sewers for Sub-District #6 will include an 8-inch sewer along Liberty Hi Road that begins approximately 2100' north of Bowling Green Road West and flows south to a proposed pump station near the intersection of Liberty Hi Road and Bowling Green Road West. An 8-inch sewer along Liberty Hi Road that begins near the intersection of U.S. Route 6 will flow north to the proposed Bowling Green Road West Pump Station and an 8-inch sewer along Bowling Green Road West will begin approximately 3200' east of Liberty Hi Road and flow west to the proposed Bowling Green Road West pump station. An 8-inch force main will carry the flows east along Bowling Green Road West from the Bowling Green Road West pump station to a proposed 10-inch sewer along Bowling Green Road West that begins approximately 2000' west of Mitchell Road and flows east to the proposed 12-inch sewer along Mitchell Road in Sub-District #2A. The design capacity for this pump station is 520 gpm.

Rudolph Sanitary Force Main

The Northwestern Water & Sewer District is constructing a sanitary sewer system in the Village of Rudolph. Wastes collected from the Village will flow by gravity sewers to a pump station located in the central part of the Village. This pump station will pump wastes north through a proposed 6-inch force main along Rudolph Road where it will connect to the City's collection system at the intersection of Gypsy Lane Road and Wintergarden Road. Flows from the Village of Rudolph are projected at approximately 63,000 gpd. The Rudolph system will be owned and operated by the Northwest Water and Sewer District.

Estimated Costs of Construction

The estimated costs of the proposed Wastewater Collection System Improvements to the Southwestern District are based on current prices as of the 2003 construction season. No costs are included for pavement replacement, easement acquisition, contingencies, or project costs. Typically, contingencies would add 10% to the total project cost and project costs would add 15% to the total project cost.

Southwestern Sub-District #1

Sand Ridge Road Sewers

1. 10-inch Sewer	800	lf	\$90 /ft	<u>\$72,000</u>
Sub-Total				<u>\$72,000</u>
Sub-District #1 Total				<u>\$72,000</u>

Southwestern Sub-District #2

Bowling Green Road Sewers

1. 8-inch Sewer W of Wintergarden Rd	300	If	\$85 /ft	\$25,500
2. 10-inch Sewer W of Wintergarden Rd	2500	If	\$90 /ft	<u>\$225,000</u>
Sub-Total				\$250,500

Mitchell Road Sewers

1. 8-inch Sewer N of BG	1300	If	\$85 /ft	\$110,500
2. 8-inch Sewer S of BG Road	900	If	\$85 /ft	\$76,500
3. 8-inch Sewer middle of Mitchell Rd	2500	If	\$85 /ft	\$212,500
4. 12-inch Sewer middle of Mitchell Rd	1500	If	\$95 /ft	\$142,500
5. 8-inch Sewer South Mitchell Rd	1700	If	\$85 /ft	\$144,500
6. 12-inch Sewer South Mitchell Rd	3600	If	\$95 /ft	<u>\$342,000</u>
Sub-Total				\$1,028,500

Sand Ridge Road Sewer

1. 8-inch Sewer E of Mitchell Rd	3250	If	\$85 /ft	<u>\$276,250</u>
Sub-Total				\$276,250

Sub-District #2 Total **\$1,555,250**

Southwestern Sub-District #3

Avery Drive Sewer

1. 8-inch Sewer	1000	If	\$85 /ft	<u>\$85,000</u>
Sub-Total				\$85,000

Gypsy Lane Road Sewer

1. 8-inch Sewer	3500	If	\$85 /ft	<u>\$297,500</u>
Sub-Total				\$297,500

Sand Ridge Road Sewer

1. 8-inch Sewer	1000	If	\$85 /ft	<u>\$85,000</u>
Sub-Total				\$85,000

Sub-District #3 Total **\$467,500**

Southwestern Sub-District #4

Kramer Road Sewers

1. 10-inch E of Rudolph Rd	2700	If	\$90 /ft	\$243,000
2. 10-inch W of Rudolph Rd	2600	If	\$90 /ft	<u>\$234,000</u>
Sub-Total				\$477,000

Rudolph Road Sewers

1. 8-inch Sewer N of US Rt 6	1900	If	\$85 /ft	\$161,500
2. 10-inch Sewer S of US Rt 6	3000	If	\$90 /ft	\$270,000
3. Pumping Station 569 gpm	1	Is	\$100,000	\$100,000
4. 10-inch Force Main (w/US Rt 6 Bore)	3600	If	\$65 /ft	<u>\$234,000</u>
Sub-Total				\$765,500

Sub-District #4 Total **\$1,242,500**

Southwestern Sub-District #5

Kramer Road Sewer

1. 10-inch Sewer E of Mitchell Rd	2600	If	\$90 /ft	<u>\$234,000</u>
Sub-Total				\$234,000

Mitchell Road Sewers

1. 8-inch Sewer	1500	If	\$85 /ft	\$127,500
2. 10-inch Sewer	2600	If	\$90 /ft	\$234,000
3. Pumping Station 250 gpm	1	Is	\$65,000	\$65,000
4. 6-inch Force Main	5100	If	\$45 /ft	<u>\$229,500</u>
Sub-Total				\$656,000

Sub-District #5 Total **\$890,000**

Southwestern Sub-District #6

Bowling Green Road W Sewers

1. 8-inch Sewer	3200	If	\$85 /ft	\$272,000
2. 10-inch Sewer	2000	If	\$90 /ft	\$180,000
3. 8-inch Force Main	3300	If	\$55 /ft	\$181,500
4. Pump Station 520 gpm	1	Is	\$100,000 Is	<u>\$100,000</u>
Sub-Total				\$733,500

Liberty Hi Road Sewers

1. 8-inch Sewer	3500	If	\$85 /ft	<u>\$297,500</u>
Sub-Total				\$297,500

Sub-District #6 Total **\$1,031,000**

Total Cost for Southwestern District **\$5,258,250**

South-Central District

The South-Central District includes the lands within the plan area primarily without sanitary sewer service. This area is located south of Gypsy Land Road and is bounded on the west by the abandoned B & O Railroad right-of-way, on the south by U.S. Route 6, and on the east by the Conrail Railroad right-of-way. The sewage flows from this district will ultimately drain to the Eastern Trunk Sanitary Sewer via the existing South Main Street Pump Station, to Napoleon Road, to South College Drive, and then to Scott Hamilton Avenue.

Currently, flows in this area (from South Main Street to Colony Lane) enter the Colony Lane Pump Station and are pumped north to the existing South Main Street Pump Station. To serve this area, an 8-inch sewer extension along South Main Street from U.S. Route 6 would carry flows north to the Colony Lane Pump Station.

Additionally, a pump station to serve the Toledo Molding and Die facility on East Gypsy Lane Road, east of the Consolidated Railroad Tracks was constructed in 1999. This pump station directs flows from this facility to the South Main Street Pump Station via a force main along Gypsy Lane Road. Future development of this area and the subsequent installation of gravity sanitary sewers will collect flows from this facility and will allow the eventual abandonment of the Toledo Molding and Die Pump Station.

Estimated Costs of Construction

The estimated costs of the proposed Wastewater Collection System Improvements to the south-central District are based on current prices as of the 2003 construction season. No costs are included for pavement replacement, easement acquisition, contingencies, or project costs. Typically, contingencies would add 10% to the total project cost and project costs would add 15% to the total project cost.

South-Central District

South Main Street Sewer

1. 8-inch Sewer	1100	lf	\$85 /ft	<u>\$93,500</u>
Sub-Total				\$93,500

Total Costs for South-Central District **\$93,500**

Southeastern District

The Southeastern District includes the lands within the plan area currently without sanitary sewer service. This area is located south of the City in Sub-District #1, extending west to the Conrail Railroad Tracks, south to U.S. Route 6 and east to Interstate 75, and in Sub-District #2 that lies south of US Route 6, extending south to Kramer Road, east to Interstate 75, and west to the abandoned B & O Railroad right-of-way. The sewage flows from these two sub-districts will drain into the Dunbridge Road sanitary sewer.

The Dunbridge Road sanitary sewer is available as a 24-inch sewer at the intersection of Dunbridge and Gypsy Lane Roads, east of Interstate 75. The proposed sewer serving the Southeast District would cross Interstate 75 as a 21-inch sewer or as a 15-inch force main and connect to the 24-inch sewer at Dunbridge and Gypsy Lane Roads.

The extension of the 21-inch sewer along Gypsy Lane Road to Dunbridge Road would replace approximately 1800' of existing 10-inch and 15-inch sewers that currently serve County facilities in this area.

Sub-District #1

The proposed sewers for Sub-District #1 will include a 10-inch sewer on Gypsy Lane Road beginning east of the railroad right-of-way (at Toledo Molding and Die) and flow east to a point determined as development occurs. At this point a temporary pump station (size to be determined) can be constructed which will pump east through a 6 to 10-inch diameter force main depending upon flow needs. As development dictates, the gravity sewer can be extended further east. The presence of high bedrock will add significantly to the cost of the gravity sewers. Eventually, 15-inch and 18-inch gravity sewers will be extended to I-75, where two options are available. A 2200 gpm pump station can be constructed which will pump across I-75 through a 15-inch force main to the existing 24-inch gravity sewer. The other option is to extend a 21-inch sewer across I-75. An 8-inch sewer is proposed along Klotz Road north of Gypsy Lane Road that will flow south to Gypsy Lane Road, and a 10-inch sewer is proposed along Klopfenstein Road that will flow north from U.S. Route 6 to Gypsy Lane Road. At the intersection of Klopfenstein and Gypsy Lane Roads, the proposed sewers will flow east along Gypsy Lane Road through a proposed 18-inch sewer to Campbell Hill Road.

Also, included in this sub-district is a proposed 225 gpm pump station at the intersection of Napoleon and Campbell Hill Roads. This pump station will collect

flows from 8-inch sewers along Campbell Hill Road and Napoleon Road. The proposed sewers for this area include an 8-inch sewer that begins approximately 1000' north of Napoleon Road and flows south along Campbell Hill Road to Napoleon Road, an 8-inch sewer that begins north of Gypsy Lane Road and flows north along Campbell Hill Road to Napoleon Road, an 8-inch sewer that begins west of Interstate 75 and flows west along Napoleon Road to Campbell Hill Road, and an 8-inch sewer that begins approximately 1300' west of Campbell Hill Road and flows east along Napoleon Road to Campbell Hill Road. A 6-inch force main will carry the flows from the pump station at this intersection south and discharge to the proposed 21-inch sewer on Gypsy Lane Road.

Sub-District #2

The proposed sewers for Sub-District #2 will include an 8-inch sewer that will flow east along Kramer Road from the abandoned B & O Railroad right-of-way to South Main Street and an 8-inch sewer that will flow south along South Main Street from U.S. Route 6 to Kramer Road. From the intersection of these 8-inch sewers, a 10-inch sewer will flow east along Kramer Road from South Main Street to Klopfenstein Road. An 8-inch sewer will flow west along Kramer Road from Interstate 75 to Klopfenstein Road. An 8-inch sewer will flow south along Klopfenstein Road to Kramer Road. Flows from these sewers will collect at a pump station at the intersection of Kramer and Klopfenstein Roads. The pump station would be sized to handle up to 600 gpm. Sewage from the pump station will be pumped north through a 6-inch force main along Klopfenstein Road, crossing U.S. Route 6, and discharge to the 10-inch sewer located north of U.S. Route 6.

Estimated Costs of Construction

The estimated costs of the proposed Wastewater Collection System Improvements to the Southeastern District are based on current prices as of the 2003 construction season. No costs are included for pavement replacement, easement acquisition, contingencies, or project costs. Typically, contingencies would add 10% to the total project cost and project costs would add 15% to the total project cost.

Southeastern Sub-District #1

Klotz Road Sewer

1. 8-inch Sewer	600	If	\$85 /ft	<u>\$51,000</u>
Sub-Total				\$51,000

Klopfenstein Road Sewer

1. 10-inch Sewer	2400	If	\$90 /ft	<u>\$216,000</u>
Sub-Total				\$216,000

Gypsy Lane Road Sewer (Option 1)

1. 10-inch Sewer	2700	If	\$110 /ft	\$297,000
2. 15-inch Sewer	1800	If	\$120 /ft	\$216,000

3. 18-inch Sewer	1000	If	\$130	/ft	\$130,000
4. 21-inch Sewer	800	If	\$145	/ft	\$116,000
4. Pump Station	1	Is	\$225,000	Is	\$225,000
4. I-75 Bore	500	If	\$200	/ft	\$100,000
5. 15-inch Force Main	1300	If	\$75	/ft	<u>\$97,500</u>
Sub-Total					\$1,181,500

Gypsy Lane Road Sewer (Option 2)

1. 10-inch Sewer	2700	If	\$110	/ft	\$297,000
2. 15-inch Sewer	1800	If	\$120	/ft	\$216,000
3. 18-inch Sewer	1000	If	\$130	/ft	\$130,000
4. I-75 Bore	500	If	\$500	/ft	\$250,000
5. 21-inch Sewer	2000	If	\$145	/ft	<u>\$290,000</u>
Sub-Total					\$1,183,000

Campbell Hill Road Sewers

1. 8-inch Sewer	3700	If	\$85	/ft	\$314,500
2. 6-inch Force Main	2500	If	\$45	/ft	\$112,500
3. Pumping Station 225 gpm	1	Is	\$65,000	Is	<u>\$65,000</u>
Sub-Total					\$492,000

Napoleon Road Sewers

1. 8-inch Sewer	2100	If	\$85	/ft	<u>\$178,500</u>
Sub-Total					\$178,500

Sub-District #1 Total **\$3,302,000**

Southeastern Sub-District #2

South Main Street Sewer

1. 8-inch Sewer	2400	If	\$85	/ft	<u>\$204,000</u>
Sub-Total					\$204,000

Kramer Road Sewers

1. 8-inch Sewer E of Klopfenstein	2100	If	\$85	/ft	\$178,500
2. 8-inch Sewer W of S Main St	2400	If	\$85	/ft	\$204,000
3. 10-inch Sewer E of S Main St	4000	If	\$90	/ft	<u>\$360,000</u>

Sub-Total \$742,500

Klopfenstein Road Sewers

1. 8-inch Sewer	2700	If	\$85 /ft	\$229,500
2. 6-inch Force Main	2700	If	\$55 /ft	\$148,500
3. Pumping Station 600 gpm	1	Is	\$135,000 Is	<u>\$135,000</u>
Sub-Total				\$513,000

Sub-District #2 Total \$1,459,500

Total Cost for Southeastern District \$4,761,500

Dunbridge Road District

The Dunbridge District includes the lands within the plan area primarily without sanitary sewer service. This area extends east of Interstate 75, north to Newton Road, south to Kramer Road and East to Huffman and Cloverdale Roads. This district is further divided into eleven sub-districts. Nine of these sub-districts will drain to pump stations that will pump the flows of the sub-district to either the proposed trunk sewer or another sub-district.

The proposed main pumping station, with an ultimate design capacity of 7440 gpm, is located at the southwest corner of Poe and Dunbridge Roads and currently receives flows from the southern branch of the Dunbridge Road Trunk Sanitary Sewer. This branch serves the area south of Poe Road and currently terminates just south of Gypsy Lane Road at the Wood County Detention Center. The Dunbridge Road District also receives flows from the Village of Portage and two (2) ODOT rest areas along I-75 south of U.S. Route 6.

Sub-District #1

The southern branch of the Dunbridge Road Trunk Sewer begins at the intersection of Linwood Road and County Home Road as a 10-inch sewer and flows north and east along County Home Road to the north side of U.S. Route 6. From the north side of U.S. Route 6 it increases to a 21-inch sewer and continues north along County Home Road to an existing 24-inch sewer south of Gypsy Lane Road. The flows from the existing 24-inch sewer continue north along Dunbridge Road to Napoleon Road. At Napoleon Road the existing sewer increases in size to 27-inch and continues north along Dunbridge Road to Bowling Green Road. At Bowling Green Road the existing sewer increases in size to a 30-inch and continues north on Dunbridge Road to the Dunbridge Road Pump Station at the intersection of Dunbridge and Poe Roads. The Dunbridge Road Trunk Sewer also receives flows in this sub-district from an existing 10-inch sewer that flows east along Gypsy Lane Road from a point 1600' west of Dunbridge Road to the Dunbridge Road Trunk Sewer.

Additional improvements proposed within this sub-district include: a 18-inch sewer that begins approximately 700' east of Dunbridge Road and flows west along U.S. Route 6 to the Dunbridge Road Trunk Sewer; a 10-inch sewer that

begins approximately 1400' east of Dunbridge Road and flow west along Gypsy Lane Road to the Dunbridge Road Trunk Sewer; a 10-inch sewer that begins approximately 1250' west of Dunbridge Road and flow east along Napoleon Road to the Dunbridge Road Trunk Sewer; a 15-inch sewer will flow west along Napoleon Road from a point approximately 2700' east of Dunbridge Road to the Dunbridge Road Trunk Sewer. Also included in this sub-district is a 10-inch sewer that begins at the intersection of Carter Road and Bowling Green Road and flows west along Bowling Green Road approximately 1350' where it increases to a 12-inch sewer and continues west along Bowling Green Road approximately 1400' where it increases to a 18-inch sewer and continues west to the Dunbridge Road Trunk Sewer.

Sub-District #1A

The sewage collected in Sub-District #1A will flow to Sub-District #1. The improvements in the sub-district include an 8-inch sewer along Cloverdale Road that begins approximately 1900' south of Bowling Green Road East and flows north to the proposed 8-inch sewer on Bowling Green Road East. An 8-inch sewer will continue west along Bowling Green Road East approximately 2500' from the Cloverdale Road sewer and flow west to a proposed pump station located approximately 264' east of Dirlam Road on Bowling Green Road East. The design capacity for the proposed Bowling Green Road East pump station is 330 gpm. An 8-inch force main will carry the flows from the pump station west along Bowling Green Road East to the proposed 10-inch sewer at the intersection of Bowling Green Road East and Carter Road.

An 8-inch sewer along Bowling Green Road East beginning approximately 1800' east of Dirlam Road will flow west to the Bowling Green Road East pump station. An 8-inch sewer that begins approximately 1700' southeast of Dirlam Road will flow north along Cuckle Creek Road approximately 1200' to a pump station. An 8-inch sewer beginning approximately 1600' south of Cuckle Creek Road will flow northeast along Dirlam Road to the intersection of Cuckle Creek and Dirlam Road and an 8-inch sewer that begins approximately 150' north of Cuckle Creek Road will flow southerly along Dirlam Road to the intersection of Cuckle Creek and Dirlam Roads. From the intersection of these sewers, an 8-inch sewer will flow southeasterly along Cuckle Creek Road approximately 500' to the Cuckle Creek Road pump station. An 6-inch force main will carry the flows from the Cuckle Creek Road pump station northwesterly along Cuckle Creek and Dirlam Roads to a proposed 8-inch sewer along Dirlam Road that begin approximately 1000' south of Bowling Green Road East and flows north to the proposed 8-inch sewer on Bowling Green Road East that flows to the Bowling Green Road East pump station. The design capacity for the proposed Cuckle Creek Road pump station is 210 gpm. 900' of 8-inch flows east along Bowling Green Road East to the proposed 10-inch at Carter Road.

Sub-District #2

The northern branch of the Dunbridge Road Trunk Sewer will begin at Newton Road as a 15-inch sewer and will flow south along Dunbridge Road to Gallier Road, where it will increase to a 18-inch sewer and continue south to the Dunbridge Road Pump Station at the intersection of Dunbridge and Poe Roads.

Additional improvements proposed within this sub-district include a 15-inch sewer that will flow west along Newton Road from a point 1300' east of Dunbridge Road to the Dunbridge Road Trunk Sewer, 1300' of 8-inch that will flow east along Newton Road from I-75, a 12-inch sewer that will flow west along Gallier Road from a point 2700' east of Dunbridge Road to the Dunbridge Road Trunk Sewer, and a 15-inch sewer that will flow west along Poe Road from a point 2550' west of Dunbridge Road to the Dunbridge Road Trunk Sewer.

No individual pump station will be needed for Sub-District #2 since all flows will drain directly to the northern branch of the Dunbridge Road Trunk Sewer.

Sub-District #3

The proposed sewer for Sub-District #3 will include a 10-inch sewer that will flow north along Huffman Road from Kramer Road to Linwood Road and an 8-inch sewer that begins approximately 800' west of Huffman Road and flows east along Linwood Road to Huffman Road. From the junction of the 8-inch and 10-inch sewers, the 10-inch sewer will continue north along Huffman Road to U.S. Route 6. An 8-inch sewer will flow south along Huffman Road from Gypsy Lane Road to U.S. Route 6 and the previously described 10-inch sewer.

From the junction of the 8-inch and 10-inch sewer located at U.S. Route 6 and Huffman Road, a 12-inch sewer will flow west along U.S. Route 6 approximately 1300' where it will increase in size to 15-inch and continue west for 2100' where it will increase to 18-inch and continue west along U.S. Route 6 to the proposed pump station.

A 10-inch sewer will flow east along Linwood Road from a point 2900' west of Dirlam Road to Dirlam Road. A 10-inch sewer will flow north along Dirlam Road from Kramer Road to the previously described 10-inch sewer on Linwood Road. From the intersection of these two 10-inch sewers, a 12-inch sewer continues east along Linwood Road approximately 450'. An 8-inch sewer will flow west along Linwood Road from a point 2700' east of the end of the 12-inch sewer to the 12-inch sewer. From this junction of the 8-inch and 12-inch sewer a 15-inch sewer will flow north to the junction of the previously described 15-inch and 18-inch sewer located along U.S. Route 6.

The design capacity for the proposed pump station located along U.S. Route 6 is 1110 gpm. This pump station will pump the flows it receives from Sub-District #3 and #3A to Sub-District #1 to the South Branch of the Dunbridge Road Trunk Sanitary Sewer.

Sub-District #3A

The proposed sewers for Sub-District #3A will include a 10-inch sewer that will flow east along Kramer Road from a point 3500' west of Dirlam Road to a proposed pump station to be located at the intersection of Dirlam and Kramer Roads. An 8-inch sewer will flow west along Kramer Road from a point 3100' east of Dirlam Road to the proposed pump station.

The design capacity for the proposed pump station for Sub-District #3A is 225 gpm. This pump station will pump the flows it receives to Sub-District #3.

Sub-District #4

The proposed sewers for Sub-District #4 include a 10-inch sewer that will flow west along Kramer Road from a point 900' east of County Home Road to County Home Road. The 10-inch sewer will continue north along County Home Road approximately 3800' to a proposed pump station located at the intersection of County Home and Linwood Roads.

The design capacity for the proposed pump station for Sub-District #4 is 85 gpm. This pump station will pump flows to Sub-District #1 at the South Branch of the Dunbridge Road Trunk Sanitary Sewer.

Sub-District #5

The proposed sewers for Sub-District #5 include an 8-inch sewer that will flow north along Huffman Road from Gypsy Lane Road to Napoleon Road. This sewer will then flow west approximately 1300' along Napoleon Road, then increase in size to a 10-inch sewer, and continue west along Napoleon Road to Dirlam Road. From the intersection of Napoleon and Dirlam Roads, the 10-inch sewer will continue west along Napoleon Road approximately 600' to the proposed pump station for this district.

Additional improvements proposed within this sub-district include an 8-inch sewer that will flow west 1250' along Gypsy Lane Road from Huffman Road; an 8-inch sewer that will flow east along Gypsy Lane Road from a point 1750' west of the west end of the previously mentioned 8-inch sewer on Gypsy Lane Road; from the junction of these two 8-inch sewers, a 10-inch sewer that will flow north to the junction of the 8-inch and 10-inch sewers proposed along Napoleon Road; a 10-inch sewer that will flow northerly along Dirlam Road from Gypsy Lane Road to the 10-inch sewer proposed along Napoleon Road; a 10-inch sewer that will begin 3100' north of Napoleon Road and flow in a southerly direction along Dirlam Road to the 10-inch sewer proposed on Napoleon Road.

The design capacity for the proposed pump station for Sub-District #5 is 615 gpm. This pump station will pump flows to Sub-District #1 at the South Branch of the Dunbridge Road Trunk Sanitary Sewer.

Sub-District #5A

The sewage collected in Sub-District #5A will flow to Sub-District #5. The proposed improvements for this sub-district include an 8-inch sewer that begins approximately 1200' north of the intersection of Cuckle Creek Road and Napoleon Road and flows south along Cuckle Creek Road to a proposed pump station at the intersection of Napoleon and Cuckle Creek Roads. An 8-inch sewer that begins approximately 700' south of Napoleon Road will flow north along Cuckle Creek Road to the Cuckle Creek Road pump station and an 8-inch sewer that begins approximately 1000' west of Cuckle Creek Road will flow east along Napoleon Road to the Cuckle Creek Road pump station. An 6-inch force main will carry the flows from the pump station west along Napoleon Road to a proposed 8-inch sewer that begins approximately 1500' east of Huffman Road and flows west along Napoleon Road to the intersection of Huffman and Napoleon Roads where it connects to the proposed 8-inch sewer along Napoleon Road in Sub-District #5. The design capacity for the proposed Cuckle Creek Road pump station is 210 gpm.

Additional improvements in this district include an 8-inch sewer that begins approximately 1900' north of Napoleon Road will flow south along Cloverdale Road to the intersection of Napoleon and Cloverdale Roads and an 8-inch sewer that begins approximately 1300' south of Napoleon Road will flow north along Cloverdale Road to the intersection of Napoleon and Cloverdale Roads. From this intersection, an 8-inch sewer will flow west along Napoleon Road approximately 1400' to a pump station. The design capacity for the proposed Napoleon Road pump station is 130 gpm. An 6-inch force main will carry the flows from the Napoleon Road pump station east to the Cuckle Creek Road pump station.

Sub-District #5B

The sewage from Sub-District #5B will flow to Sub-District #5. The proposed sewers for this sub-district include an 8-inch sewer that begins approximately 1400' north of Gypsy Lane Road and flows south along Cuckle Creek Road to a proposed 8-inch sewer along Gypsy Lane Road. An 8-inch sewer that begins approximately 400' east of Cuckle Creek Road and flows west approximately 2300' along Gypsy Lane Road to a pump station and an 8-inch sewer that begins approximately 700' west of this pump station and flows east along Gypsy Lane Road to the pump station. An 8-inch force main will carry the flows from the proposed Gypsy Lane Road pump station west along Gypsy Lane Road to the proposed 8-inch sewer on Huffman Road in Sub-District #5. The design capacity for the proposed Gypsy Lane Road pump station is 100 gpm.

Sub-District #6

The proposed sewers for Sub-District #6 include a 10-inch sewer that will flow north along Carter Road from Bowling Green Road. 1300' north of Bowling Green Road, this 10-inch sewer will increase to 12-inch and continue north along Carter Road to Poe Road. An 8-inch sewer will flow south along Carter Road from Gallier Road for 1300', then increase in size to a 10-inch sewer, and continue south along Carter Road to the previously mentioned 12-inch sewer at the intersection of Carter and Poe Roads. From the junction of the 10-inch and 12-inch sewers at the intersection of Poe and Carter Roads, a 12-inch sewer will flow west along Poe Road to the proposed pump station for this sub-district.

An 8-inch sewer will flow west along Gallier Road from Carter Road and a 12-inch sewer will flow east along Gallier Road 1300' west of the previously described 8-inch sewer. From the junction of the 8-inch and 12-inch sewer, a 12-inch sewer will flow south to the proposed 12-inch sewer along Poe Road.

The design capacity for the proposed pump station for Sub-District #5 is 460 gpm. This pump station will pump flows to Sub-District #2 at the North Branch of the Dunbridge Road Trunk Sanitary Sewer.

Sub-District #7

The proposed sewers for Sub-District #7 will include a 10-inch sewer that will flow north along Carter Road from Gallier Road to Newton Road. At Newton Road this 10-inch sewer will flow west along Newton Road for approximately 2650' where it will increase in size to 12-inch and continue west along Newton Road to the proposed pump station for this sub-district.

The design capacity for the proposed pump station for Sub-District #7 is 230 gpm. This pump station will pump flows to Sub-District #2 at the North Branch of the Dunbridge Road Trunk Sanitary Sewer.

Sub-District #8

The proposed sewer for Sub-District #8 includes 1600' of 10-inch east along Newton Road to the intersection of Newton and Mercer Road, and continues east as a 12-inch sewer along Newton Road approximately 3000' where it increases to a 15-inch sewer and continues east approximately 400' to the proposed Newton Road pump station. A 10-inch sewer 2600' along Mercer Road flows north to the proposed 12-inch sewer on Newton Road. The proposed pump station will discharge through a 10-inch force main that crosses I-75.

The design capacity for the proposed pump station for Sub-District #8 is 500 gpm. Flows from this sub-district will discharge to a proposed 15-inch sewer on Newton Road east of I-75 to the proposed sewer that flows south on Dunbridge Road to the existing Dunbridge Road pump station.

Portage and ODOT Rest Area Flows

The Village of Portage and two (2) ODOT rest areas located along I-75 south of U.S. Route 6 contribute to the Dunbridge Road interceptor via a force main, which currently discharges to a manhole located on Dunbridge Road north of U.S. Route 6 and south of Gypsy Lane Road. Flows from the Village of Portage average 70,000 gpd while flows from the rest areas average 15,000 gpd. Peak flows from the rest area can be as high as 125,000 gpd. In addition, flows from the Wood County Historical Society property also discharge to this force main. This flow is insignificant when compared to the flows from Portage and the ODOT rest areas. When gravity sewers are extended to Kramer and Huffman Roads, flows from the existing force main and the Historical Society will be diverted to the new gravity sewers. These systems are managed by the Northwest Water and Sewer District and ODOT.

Estimated Costs of Construction

The estimated costs of the proposed Wastewater Collection System Improvements to the Dunbridge Road District are based on current prices as of the 2003 construction season. No costs are included for pavement replacement, easement acquisition, contingencies, or project costs. Typically, contingencies would add 10% to the total project cost and project costs would add 15% to the total project cost.

Dunbridge Road Trunk Sub-District #1

Dunbridge Road Sewer

1. 21-inch Sewer	1000	If	\$125 /ft	<u>\$125,000</u>
Sub-Total				\$125,000

County Home Road Sewers

1. 10-inch Sewer	2300	If	\$90 /ft	<u>\$207,000</u>
Sub-Total				\$207,000

U.S. Route 6 Sewer

1. 18-inch Sewer	700	If	\$110 /ft	<u>\$77,000</u>
Sub-Total				\$77,000

Gypsy Lane Road Sewers

1. 10-inch Sewer	1400	If	\$90 /ft	<u>\$126,000</u>
Sub-Total				\$126,000

Napoleon Road Sewers

1. 10-inch Sewer	1250	If	\$90 /ft	\$112,500
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2. 15-inch Sewer	2700	lf	\$105	/ft	<u>\$283,500</u>
Sub-Total					\$396,000

Bowling Green Road (SR 105) Sewers

1. 10-inch Sewer	1350	lf	\$90	/ft	\$121,500
2. 12-inch Sewer	1400	lf	\$95	/ft	\$133,000
3. 18-inch Sewer	2200	lf	\$110	/ft	<u>\$242,000</u>
Sub-Total					\$496,500

Sub-District #1 Total **\$1,427,500**

Dunbridge Road Trunk Sub-District #1A

Cloverdale Road Sewers

1. 8-inch Sewer	1900	lf	\$85	/ft	<u>\$161,500</u>
Sub-Total					\$161,500

Bowling Green Road East Sewers

1. 8-inch Sewer	5300	lf	\$85	/ft	\$450,500
2. 8-inch Force Main	3000	lf	\$55	/ft	\$165,000
3. Pump Station 330 gpm	1	ls	\$65,000	ls	<u>\$65,000</u>
Sub-Total					\$680,500

Dirlam Road Sewers

1. 8-inch Sewer	2800	lf	\$85	/ft	\$238,000
2. 6-inch Force Main	250	lf	\$50	/ft	<u>\$12,500</u>
Sub-Total					\$250,500

Cuckle Creek Road Sewers

1. 8-inch Sewer	1700	lf	\$85	/ft	\$144,500
2. 6-inch Force Main	600	lf	\$50	/ft	\$30,000
3. Pump Station 210 gpm	1	ls	\$65,000	lf	\$65,000
Sub-Total					<u>\$239,500</u>

Sub-District #1A Total **\$1,332,000**

Dunbridge Road Trunk Sub-District #3

Dirlam Road Sewers

1. 10-inch Sewer	2800	If	\$90 /ft	\$252,000
2. 15-inch Sewer	1300	If	\$105 /ft	<u>\$136,500</u>
Sub-Total				\$388,500

Huffman Road Sewers

1. 8-inch Sewer N of US Rt 6	1300	If	\$85 /ft	\$110,500
2. 10-inch Sewer S of US Rt 6	1250	If	\$90 /ft	\$112,500
3. 10-inch Sewer S of Linwood Rd	2800	If	\$90 /ft	<u>\$252,000</u>
Sub-Total				\$475,000

Linwood Road Sewers

1. 10-inch Sewer	2900	If	\$90 /ft	\$261,000
2. 12-inch Sewer	450	If	\$95 /ft	\$42,750
3. 8-inch Sewer E of Dirlam Rd	2700	If	\$85 /ft	\$229,500
4. 8-inch Sewer W of Huffman Rd	800	If	\$85 ls	<u>\$68,000</u>
Sub-Total				\$601,250

U.S. Route 6 Sewers

1. 18-inch Sewer	1300	If	\$110 /ft	\$143,000
2. 15-inch Sewers	2100	If	\$105 /ft	\$220,500
3. 12-inch Sewers	1300	If	\$95 /ft	\$123,500
4. Pump Station	1	ls	\$140,00 ls	<u>\$140,000</u>
Sub-Total				\$627,000

Sub-District #3 Total

\$2,091,750

Dunbridge Road Trunk Sub-District #3A

Kramer Road Sewers

1. 10-inch W of Dirlam Rd	3500	If	\$90 /ft	\$315,000
2. 8-inch E of Dirlam Rd	3100	If	\$85 /ft	\$263,500
3. Pump Station 225 gpm	1	ls	\$65,000 ls	<u>\$65,000</u>
Sub-Total				\$643,500

Sub-District #3A Total

\$643,500

Dunbridge Road Trunk Sub-District #4

County Home Road and Kramer Road Sewers

1. 10-inch Sewer	4700	If	\$90	/ft	\$423,000
2. Pumping Station 85 gpm	1	Is	\$65,000	Is	<u>\$65,000</u>
Sub-Total					\$488,000

Sub-District #4 Total **\$488,000**

Dunbridge Road Trunk Sub-District #5

Huffman Road Sewer

1. 8-inch Sewer	1800	If	\$85	/ft	\$153,000
Sub-Total					\$153,000

Gypsy Lane Road Sewers

1. 8-inch Sewer W of 10-inch Sewer	1750	If	\$85	/ft	\$148,750
2. 8-inch Sewer E of 10-inch Sewer	1250	If	\$85	/ft	\$106,250
3. 10-inch Sewer Gypsy Ln to Napoleon	1850	If	\$90	/ft	<u>\$166,500</u>
Sub-Total					\$421,500

Dirlam Road Sewers

1. 10-inch Sewer S of Napoleon Rd	2600	If	\$90	/ft	\$234,000
2. 10-inch Sewer N of Napoleon Rd	3100	If	\$90	/ft	<u>\$279,000</u>
Sub-Total					\$513,000

Napoleon Road Sewers

1. 8-inch Sewer	1300	If	\$85	/ft	\$110,500
2. 10-inch Sewer	1300	If	\$90	/ft	\$117,000
3. Pumping Station 615 gpm	1	Is	\$85,000	Is	<u>\$85,000</u>
Sub-Total					\$312,500

Sub-District #5 Total **\$1,400,000**

Dunbridge Road Trunk Sub-District #5A

Cloverdale Road Sewers

1. 8-inch Sewer	3200	If	\$85	/ft	<u>\$272,000</u>
Sub-Total					\$272,000

Cuckle Creek Road Sewers

1. 8-inch Sewer	1900	If	\$85	/ft	\$161,500
2. Pump Station 210 gpm	1	Is	\$65,000	Is	<u>\$65,000</u>
Sub-Total					\$226,500

Napoleon Road Sewers

1. 8-inch Sewer	4800	If	\$85	/ft	\$408,000
2. 6-inch Force Main	2200	If	\$50	/ft	\$110,000
3. Pump Station 130 gpm	1	Is	\$65,000	Is	<u>\$65,000</u>
Sub-Total					\$583,000

Sub-District #5A Total **\$1,081,500**

Dunbridge Road Trunk Sub-District #5B

Cuckle Creek Road Sewers

1. 8-inch Sewer	1400	If	\$85	/ft	<u>\$119,000</u>
Sub-Total					\$119,000

Gypsy Lane Road Sewers

1. 8-inch Sewer	3000	If	\$85	/ft	\$255,000
2. 6-inch Force Main	800	If	\$50	/ft	\$40,000
3. Pump Station 100 gpm	1	Is	\$65,000	Is	<u>\$65,000</u>
Sub-Total					\$360,000

Sub-District #5B Total **\$479,000**

Dunbridge Road District (South Branch) Total **\$8,943,250**

Dunbridge Road Trunk Sub-District #2

Dunbridge Road Sewers

1. 15-inch Sewer	2640	If	\$105	/ft	\$277,200
2. 18-inch Sewer	2650	If	\$110	/ft	<u>\$291,500</u>
Sub-Total					\$568,700

Newton Road Sewer

1. 15-inch Sewer	2600	If	\$105	/ft	<u>\$273,000</u>
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Sub-Total \$273,000

Gallier Road Sewer

1. 12-inch Sewer 2700 lf \$95 /ft \$256,500

Sub-Total \$256,500

Poe Road Sewer

1. 15-inch Sewer 2550 lf \$105 /ft \$267,750

Sub-Total \$267,750

Sub-District #2 Total \$1,365,950

Dunbridge Road Trunk Sub-District #6

Carter Road Sewers

1. 8-inch Sewer 1300 lf \$85 /ft \$110,500

2. 10-inch Sewer 2700 lf \$90 /ft \$243,000

1. 12-inch Sewer 1700 lf \$95 /ft \$161,500

Sub-Total \$515,000

Cross-Country Sewer

1. 12-inch Sewer 2650 lf \$95 /ft \$251,750

Sub-Total \$251,750

Gallier Road Sewers

1. 12-inch Sewer 1150 lf \$95 /ft \$109,250

2. 8-inch Sewer 1300 lf \$85 /ft \$110,500

Sub-Total \$219,750

East Poe Road Sewers

1. 12-inch Sewer 2400 lf \$95 /ft \$228,000

2. Pump Station 460 gpm 1 ls \$85,000 ls \$85,000

Sub-Total \$313,000

Sub-District #6 Total \$1,299,500

Dunbridge Road Trunk Sub-District #7

Carter Road Sewer

1. 10-inch Sewer 2400 lf \$90 /ft \$216,000

Sub-Total \$216,000

Newton Road Sewers

1. 10-inch Sewer	2650	If	\$90 /ft	\$238,500
2. 12-inch Sewer	1200	If	\$95 /ft	\$114,000
3. Pump Station 230 gpm	1	Is	\$65,000 Is	<u>\$65,000</u>
Sub-Total				\$417,500

Sub-District #7 Total \$633,500

Dunbridge Road Trunk Sub-District #8

Newton Road Sewers

1. 10-inch Sewer	1600	If	\$90 /ft	\$144,000
2. 12-inch Sewer	3000	If	\$95 /ft	\$285,000
3. 15-inch Sewer	400	If	\$105 /ft	\$42,000
4. Pump Station 500 gpm	1	Is	\$85,000 Is	<u>\$85,000</u>
Sub-Total				\$556,000

Newton Road Sewers

1. 10-inch Sewer	2600	If	\$90 /ft	<u>\$234,000</u>
Sub-Total				\$234,000

Sub-District #8 Total \$790,000

Dunbridge Road District (North Branch) Total \$4,088,950

Total Cost for Dunbridge Road Trunk District \$13,032,200

Combined Sewer Service Areas

Combined sewers service a large part of the community. These sewers convey collected wastewater to the Poe Road interceptor and storm water overflow and diversion structure located at Poe and Mercer Roads. The part of the City served by combined sewers, whose existence dates to the earliest provision of sanitary and storm water facilities, include Bowling Green State University, the Downtown Business District, the Main Street corridor from Poe Road to Napoleon Road, Clough Street south of the University, and the Country Club Area from Poe Road to Sand Ridge Road. For purposes of this study, the City's combined sewer collection areas have been divided into three districts, the University district, the Enterprise/Summit Street District, and the Grove Street District. In addition to these districts, the study also includes a new interceptor on Poe Road to serve the Grove Street and Enterprise/Summit Street Districts.

In order to evaluate the combined district in the City, certain assumptions were made concerning the feasibility to separate flows. First, conflicts with existing sewers were not considered. Instead, it was assumed that sanitary sewers could be installed deeper than existing storm drainage facilities. In some cases, it may be preferable to install new storm sewers, converting existing combined sewers to sanitary only flows.

Secondly, rock was not considered to be a limiting factor in the construction of new sewers. While this will not always be the case, rock would have little impact on location, but rather will influence the decision to use deeper sewers in lieu of shallower sewers and additional pump stations.

Finally, it was assumed that the existing storm water retention/overflow system would remain in service indefinitely, allowing the proposed system to be constructed in phases over the course of ten to fifteen years. In this way, construction can be phased to meet the economic and developmental needs of the community.

University District

The University District includes the area generally east of the Consolidated Railroad right-of-way, bounded by Scott Hamilton Avenue on the south, Poe Road on the north, and Mercer Road on the east. Flows from the area would be further divided into the North, Central, Wooster Street, and Clough Street Sub-Districts as described below:

University North District

The University North District includes the area north of Ridge Street along the Thurstin Avenue Corridor. A 12-inch collector sewer would run north from Ridge Street on Thurstin Street to Poe Road where it would discharge to a main separated collector along Poe Road. 8-inch and 10-inch lateral collectors would flow into the 12-inch trunk from the railroad to the west and from North College Drive to the east.

University Central District

The University Central District includes the area along Ridge Street from the Consolidated Railroad right-of-way to the eastern interceptor on Mercer Road. Also included in this district is Merry Avenue, from 1100' west of Willard Drive east to Mercer Road. A 12-inch sewer would run east from Thurstin Street along

Ridge Street to Mercer Road. 8-inch and 10-inch sewers would serve areas around Thurstin Street. An 8-inch sewer would serve areas along Merry Avenue.

University Wooster Street District

The University Wooster Street District includes the area from the Consolidated Railroad right-of-way east to Mercer Road in a direct corridor along Wooster Street. Primarily, service will be to the University buildings along Wooster Street to the north, with limited service to the south, through a 12-inch sewer.

Clough Street District

The Clough Street District will serve the area south of Wooster Street, from the Consolidated Railroad right-of-way to Mercer Road, which is currently served by combined sewers. A 10-inch sewer will run from the railroad to Mercer Road, with 8-inch laterals serving the connecting streets.

Estimated Costs of Construction

The estimated costs of the improvements to the University District are based on current prices as of the 2003 construction season. No costs are included for pavement replacement, easement acquisition, contingencies, or project costs. Typically, contingencies would add 10% to the total project cost and project costs would add 15% to the total project cost.

University North District

1. 12-inch Collector Sewer	2485	lf	\$95	/ft	\$236,075
2. 8-inch Local Sewer	3320	lf	\$85	/ft	\$282,200
3. Sanitary Manhole	19	ea	\$2,500	ea	<u>\$47,500</u>
Sub-Total					\$565,775

University Central District

1. 12-inch Collector Sewer	3540	lf	\$95	/ft	\$336,300
2. 8-inch Local Sewer	1365	lf	\$85	/ft	\$116,025
3. 8-inch Local Sewer (Merry Avenue)	2480	lf	\$85	/ft	\$210,800
4. Sanitary Manhole	22	ea	\$2,500	ea	<u>\$55,000</u>
Sub-Total					\$718,125

University Wooster Street District

1. 12-inch Collector Sewer	4060	lf	\$95	/ft	\$385,700
2. 8-inch Local Sewer	750	lf	\$85	/ft	\$63,750
3. Sanitary Manhole	15	ea	\$2,500	ea	<u>\$37,500</u>
Sub-Total					\$486,950

Clough Street District

1. 10-inch Collector Sewer	4020	lf	\$90 /ft	\$361,800
2. 8-inch Local Sewer	5750	lf	\$85 /ft	\$488,750
3. Sanitary Manhole	50	ea	\$2,500 ea	<u>\$125,000</u>
Sub-Total				\$975,550

Total University Area Costs **\$2,746,400**

Poe Road Interceptor

A new interceptor along Poe Road will be installed to serve the Grove Street and Enterprise/Summit Street Districts and the University North Collector. The Poe Road Interceptor will collect flows from the Grove Street District at the west and flow east to the Poe Road Pump Station. As this point, it will join waste from the Western and Eastern Interceptors, which is pumped to the wastewater treatment plant.

The Interceptor sewer will begin at Grove Street as a 24-inch sewer and flow east to Enterprise Street where it will increase to a 42-inch sewer and continue to the Poe Road Pump Station, intercepting the flows from the University North District at Thurstin Street. Local sewers will join the interceptor at Fairview Avenue, Owens Avenue, North Main Street, North Prospect Street, Summit Street, and Enterprise Street.

Estimated Costs of Construction

The estimated costs of the improvements to the Poe Road Interceptor are based on current prices as of the 2003 construction season. No costs are included for pavement replacement, easement acquisition, contingencies, or project costs. Typically, contingencies would add 10% to the total project cost and project costs would add 15% to the total project cost.

Poe Road Interceptor Costs

1. 42-inch Interceptor Sewer	4350	lf	\$165 /ft	\$717,750
2. 24-inch Interceptor Sewer	2040	lf	\$125 /ft	\$255,000
3. 8-inch & 10-inch Local Sewers	3500	lf	\$95 /ft	\$332,500
4. Sanitary Manhole	30	ea	\$2,500 ea	\$75,000
5. Railroad Bore	140	lf	\$250 ea	<u>\$35,000</u>
Sub-Total				\$1,415,250

Total Poe Road Interceptor Costs **\$1,415,250**

Enterprise/Summit Street District

The Enterprise/Summit Street District includes the area from Main Street on the west to the Consolidated Railroad right-of-way on the east, and from Poe Road on the North to Napoleon Road on the south. It includes the Central Downtown Business District on the east side of Main Street. The main trunk for this area is a 24-inch interceptor sewer that begins north of Napoleon on South Summit Street and flows north to Ridge Street, east on Ridge Street to North Enterprise Street, and north along North Enterprise Street to the proposed Poe Road Interceptor sewer. Areas along this trunk are served by 8-inch and 10-inch local sewers. This area is further divided into four sub-districts, Enterprise/Summit Street North, Enterprise/Summit Street North Business, Enterprise/Summit Street South Business, Enterprise/Summit Street South.

Enterprise/Summit Street North

The North area extends from Poe Road on the north, to Merry Avenue on the South. Laterals collect sewage from the west to the 24-inch trunk beginning east of Main Street, and collect sewage from the east beginning at the CSX Railroad right-of-way. Local laterals are 8-inch and 10-inch sewers.

Enterprise/Summit Street North Business

This area begins at Wooster Street and extends north along Summit Street to Merry Avenue (the Enterprise/Summit Street North District). It serves businesses and residences in the North Downtown Business area. Local laterals are 8-inch and 10-inch sewers.

Enterprise/Summit Street South Business

This area begins at Lehman Avenue and extends north to Wooster Street (the Enterprise/Summit Street South Business District). It serves businesses and residences in the South Downtown Business area. Local laterals are 8-inch and 10-inch sewers.

Enterprise/Summit Street South

This area begins north of Napoleon Road and extends north to Lehman Avenue. This area is primarily residential. Local laterals are 8-inch and 10-inch sewers.

Estimated Costs of Construction

The estimated costs of the improvements to the Enterprise/Summit Street District are based on current prices as of the 2003 construction season. No costs are included for pavement replacement, easement acquisition, contingencies, or project costs. Typically, contingencies would add 10% to the total project cost and project costs would add 15% to the total project cost.

Enterprise/Summit St North

1. 24-inch Interceptor Sewer	1700	lf	\$125	/ft	\$212,500
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2. 8-inch & 10-inch Local Sewer	6460	lf	\$95	/ft	\$613,700
3. Sanitary Manhole	26	ea	\$2,500	ea	<u>\$65,000</u>
Sub-Total					\$891,200

Enterprise/Summit St North Business

1. 24-inch Interceptor Sewer	2580	lf	\$125	/ft	\$322,500
2. 8-inch & 10-inch Local Sewer	7350	lf	\$95	/ft	\$698,250
3. Sanitary Manhole	34	ea	\$2,500	ea	<u>\$85,000</u>
Sub-Total					\$1,105,750

Enterprise/Summit St South Business

1. 24-inch Interceptor Sewer	1740	lf	\$125	/ft	\$217,500
2. 8-inch & 10-inch Local Sewer	8800	lf	\$95	/ft	\$836,000
3. Sanitary Manhole	33	ea	\$2,500	ea	<u>\$82,500</u>
Sub-Total					\$1,136,000

Enterprise/Summit St South

1. 24-inch Interceptor Sewer	2200	lf	\$125	/ft	\$275,000
2. 8-inch & 10-inch Local Sewer	8280	lf	\$95	/ft	\$786,600
3. Sanitary Manhole	38	ea	\$2,500	ea	<u>\$95,000</u>
Sub-Total					\$1,156,600

Total Enterprise/Summit St Area Costs **\$4,289,550**

Grove Street Interceptor District

The Grove Street Interceptor District includes the area west of Main Street from Poe Road to Sand Ridge Road, and west to Western, Dunbar, and Coleman, where the existing separated system begins. The Grove Street District is further divided into five sub-districts, North (from Poe Road to Liberty Avenue), North Central (from Conneaut Avenue to Court Street), Central (Wooster Street/Bowling Green Road West Corridor), South Central (Pearl Street and Ordway Avenue Corridors), and South (Sand Ridge Road Corridor). The combined sewer area at west Wallace Avenue and Haskins Road, referred to as the West Area District, will flow to the existing separated system and the Western Trunk sanitary sewer.

Grove Street North

The Grove Street North sub-district includes the area from Poe Road to Liberty Avenue. The sewers for the district include a 24-inch interceptor on Grove Street with 8-inch and 10-inch local sewers collecting flows from side streets between Fairview Avenue and Main Street. This area is primarily residential.

Grove Street North Central

The Grove Street north-central sub-district includes the area along Conneaut Avenue from west of Faye Avenue, Wallace Avenue from east of Haskins Road, and the Clay and Oak Street area that is west of Main Street and the connected side streets along these routes. The sewers for this district include a 24-inch interceptor on Grove Street and a 12-inch collector sewer along Conneaut Avenue with 8-inch and 10-inch local sewers collecting from side streets. This area is a mixture of residential, commercial, and institutional users.

Grove Street Central

The Grove Street Central sub-district includes the area long Wooster Street (Bowling Green Road West) from Western Avenue east to Main Street and the connected side streets along this route. The sewers for this district include a 24-inch interceptor on Grove Street and a 12-inch collector sewer along Wooster Street from Haskins Road to Grove Street, with 8-inch and 10-inch local sewers collecting from side streets. This area is a mixture of residential, commercial, and institutional users.

Grove Street South Central

The Grove Street south-central sub-district includes the area on the east side of Grove Street from west of Main Street along the Washington Street and Ordway Avenue corridors (including part of South Church Street), and the Pearl Street corridor from Hillcrest to Grove Street, the Ordway Avenue corridor from Erie Street to Grove Street, and the connected side streets along these routes. The sewers for this district include a 24-inch interceptor on Grove Street and a 12-inch collector along Pearl Street with 8-inch and 10-inch local sewers collecting from side streets. This area is primarily residential, with some commercial and institutional users.

Grove Street South

The Grove Street South sub-district includes the area along the Sand Ridge Road corridor, west of Grove Street from Coleman Avenue and east of Grove Street from Main Street, including the side streets along this route. The sewers for this district include a 24-inch interceptor on Grove Street and a 12-inch collector sewer along Sand Ridge Road, with 8-inch and 10-inch local sewers collecting from side streets. This area is primarily residential and commercial users.

West Area

Flows from the West Area district are not collected by the Grove Street Interceptor. Rather the flows are collected at an existing 24-inch sewer on West Wallace Avenue. This area includes Haskins Road south of Conneaut Avenue to West Wallace Street and Haskins Road north of Wooster Street to West Wallace Street, and Lambert Drive, Vine Street, Parker Avenue and Keil Court. The sewers in this area are 8-inch and 10-inch local sewers. This area is primarily residential.

Estimated Costs of Construction

The estimated costs of the improvements to the Grove Street Interceptor District are based on current prices as of the 2003 construction season. No costs are included for pavement replacement, easement acquisition, contingencies, or project costs. Typically, contingencies would add 10% to the total project cost and project costs would add 15% to the total project cost.

Grove St North

1. 24-inch Interceptor Sewer	2480	lf	\$125 /ft	\$310,000
2. 8-inch & 10-inch Local Sewer	6630	lf	\$95 /ft	\$629,850
3. Sanitary Manhole	39	ea	\$2,500 ea	<u>\$97,500</u>
Sub-Total				\$1,037,350

Grove St North-Central

1. 24-inch Interceptor Sewer	1480	lf	\$125 /ft	\$185,000
2. 12-inch Collector Sewer	2370	lf	\$110 /ft	\$260,700
3. 8-inch & 10-inch Local Sewer	7920	lf	\$95 /ft	\$752,400
4. Sanitary Manhole	43	ea	\$2,500 ea	<u>\$107,500</u>
Sub-Total				\$1,305,600

Grove St Central

1. 24-inch Interceptor Sewer	1050	lf	\$125 /ft	\$131,250
2. 12-inch Collector Sewer	1860	lf	\$110 /ft	\$204,600
3. 8-inch & 10-inch Local Sewer	10025	lf	\$95 /ft	\$952,375
4. Sanitary Manhole	50	ea	\$2,500 ea	<u>\$125,000</u>
Sub-Total				\$1,413,225

Grove St South Central

1. 24-inch Interceptor Sewer	1610	lf	\$125 /ft	\$201,250
2. 12-inch Collector Sewer	2620	lf	\$110 /ft	\$288,200
3. 8-inch & 10-inch Local Sewer	14100	lf	\$95 /ft	\$1,339,500
4. Sanitary Manhole	70	ea	\$2,500 ea	<u>\$175,000</u>
Sub-Total				\$2,003,950

Grove St South

1. 12-inch Collector Sewer	2350	lf	\$110 /ft	\$258,500
2. 8-inch & 10-inch Local Sewer	6750	lf	\$95 /ft	\$641,250

3. Sanitary Manhole	36	ea	\$2,500	ea	<u>\$90,000</u>
Sub-Total					\$989,750

West Area

1. 8-inch & 10-inch Local Sewer	4100	lf	\$95	/ft	\$389,500
2. Sanitary Manhole	15	ea	\$2,500	ea	<u>\$37,500</u>
Sub-Total					\$427,000

Total Grove Street & West Area Costs **\$7,176,875**

Drainage Areas and Storm Systems

Existing Drainage Areas and Storm Systems

Bowling Green is located on a rather flat area of ground with higher elevations located within the City. The ground falls off in all directions from the City to the natural drainage outlets. Plate 1 is a reproduction of a USGS Quadrangle Map for the Bowling Green Area showing topographic features. The City has drainage outlets consisting of several shallow man-made ditches having nearly flat slopes and limited capacities. The shallow ditches are tributary on the west and northwest to the Maumee River, on the east, south, southeast, and central portions of the City to the North Branch of the Portage River, and on the north and northeast to the Toussaint Creek. In general, all area storm runoff is carried away by separate storm sewer systems except for portions of the central City. Those portions of the central City are served by a combined sewer system, which captures both sanitary flows and storm runoff and directs them to the wastewater treatment plant. This combined system is discussed in more detail in the section on existing wastewater sewer systems. A plan for separation is included as well. All storm runoff eventually drains to either the Maumee River, the North Branch of the Portage River, or the Toussaint Creek. Plate 2 shows the areas of the City that drain to each of the basins.

The Maumee River drains nearly 6,600 square miles in Ohio, Indiana, and Michigan and is the largest river flowing into the Great Lakes. There is only about 20 feet of fall over a distance of approximately 6 2/3 miles extending north and west of Bowling Green to the Maumee River.

The North Branch of the Portage River has its origin about 12 miles southwest of Bowling Green and flows in a general northeasterly direction through the Village of Portage and south and east of Bowling Green. Nearly one-half of the storm flow of Bowling Green area drains into this outlet.

The Toussaint Creek has its origin in the Bowling Green study area. Its natural point of origin was in the vicinity of U.S. Route 25 and Newton Road. However, through man-made extensions, it now has an origin along Haskins Road north of Poe Road. The creek discharges to the Toussaint River, which in turn discharges to Lake Erie approximately 33 miles northeast of Bowling Green.

Drainage areas and design of the numerous ditches of the Bowling Green study area are the responsibility of the Wood County Engineer. Many of the ditches serving Bowling Green are on County Maintenance as shown on Plate 2. In general, the drainage areas follow the topography of the ground and the direction in which runoff or tile drainage flows. The width, depth, and slope of the ditches have been determined by basing calculations on agricultural runoff. Where increased capacity is necessary to handle runoff from new development, it is the responsibility of the developer to provide for the necessary detention and improvements to reduce runoff to predevelopment conditions.

Plate 2 shows the approximate area served by each of the major drainage outlets and the smaller drainage areas that exist within the major areas. Each of the smaller drainage areas have one main ditch as the principal storm drainage feature. Individual storm sewer systems provide drainage of storm flows to the ditches. Unlike the sanitary sewer system, which bring all flow to a common point at the treatment plant, the storm sewers flow away from the City in a number of directions to the respective ditches for the area.

Tables Nos. 1, 2, and 3 list the existing ditches that drain storm runoff for the Maumee, North Branch of the Portage River, and the Toussaint drainage areas.

**TABLE 1
EXISTING DITCHES TRIBUTARY TO THE MAUMEE RIVER**

Name	Number	Location
Asmus Ditch	2090	Originates 1/4 mile west of Brim Road and 1/8 mile north of Van Camp - flows east to Brim Road thence north along Brim Road.
Belleville Ditch	2313	Originates south of Sheffield Drive and west of Stonegate Boulevard - flows north across Conneaut Avenue, Poe Road, and the abandoned B & O Railroad to Haskins Road.
Belleville Ditch, Branch #1	2313	Originates south of Pearl Street and near Mitchell Road - flows west across Mitchell Road thence north parallel to Mitchell Road to main Belleville Ditch.
Belleville Ditch, Branch #3	2313	Originates north of U.S. Route 6 and west of Mitchell Road - flows north to ditch 2313 Branch #1.
Rahdert Ditch	2380	Originates south of Sand Ridge Road and west of Mitchell Road - flows west to Liberty Hi Road then north.
Gillespie Ditch	2413	Originates south of U.S. Route 6 between Rudolph and Mitchell Roads - flows west across Mitchell Road and continues west and north.

**TABLE 2
EXISTING DITCHES TRIBUTARY TO THE NORTH BRANCH OF THE PORTAGE RIVER**

Name	Number	Location
Zimmerman Ditch	732	Originates north of Kramer Road at South Main Street and flows east to I-75.
Roe Ditch	1468	Originates south of Sand Ridge Road and west of Rudolph Road - flows south.
McElmurry Ditch	2121	Originates south of Napoleon Road and west of Klotz Road - flows northeasterly to Hyduke Ditch.
Russell Ditch	2166	Originates south of Gypsy Lane Road and east of CSX Railroad - flows east.
Hyduke Ditch	2314	Originates east of South College Drive and north of Robinwood Lane - flows north-easterly to Wooster Street thence east.
Carpenter Ditch	2346	Originates south of Sand Ridge Road and east of Rudolph Road - flows south.
Carter Ditch	2347	Originates south of Napoleon Road and west of Campbell Hill Road - flows east.
Portage Township Trustees Ditch	2358	Originates south of Kramer Road and east of South Main Street - flows east.
Fearnside Ditch	2408	Originates north of Poe Road and west of Mercer Road - flows north thence east.
Curtice-Davis Ditch	2414	Originates north of U.S. Route 6 and east of South Main Street - flows east.
Poe Road	-----	Originates south of Poe Road and east of Mercer Road - flows east.

TABLE 3 EXISTING DITCHES TRIBUTARY TO THE TOUSSAINT CREEK		
Name	Number	Location
Catherine Knauss Ditch	1145	Originates south of Newton Road and east of Dunbridge Road - flows east.
Newton Ditch	1159	Originates south of Newton Road at North College Drive - flows east to Mercer Road thence north.
Catherine Knauss Ditch	1318	Originates north of Gallier Road and east of Dunbridge Road - flows east to Reber Ditch.
Haswell Ditch	1909	Originates north of Gallier Road and west of Dunbridge Road - flows north.
Euler Ditch	1959	Originates north of Newton Road and east of Dunbridge Road - flows north.
George Knauss Ditch	2116	Originates south of Bishop Road between North Main Street and Brim Road - flows south thence east.
North Main Street Ditch	-----	Originates north of Parkview Drive and west of CSX Railroad - flows north parallel to the railroad tracks.

Storm Water Runoff Design Criteria

For this report the rate of storm water runoff is calculated by using the Rational Method as was used in past updates to the report. This method yields fairly accurate results for the Bowling Green area. This design method calculates the quantity of flow with input of rainfall intensity, rainfall frequency, coefficient of runoff and acres in the drainage area.

The formula used when calculating the rate of storm water runoff is: $Q = CiA$.

Q = the quantity of flow in cubic feet per second.

C = the coefficient of runoff, 0.10 is the figure used in this study because all new development requires on-site retention to release flow at an equivalent rate for pre-development C factor. Impervious areas have a coefficient of .90.

I = the average rainfall intensity in inches per hour taken from the City of Toledo/U.S. Department of Commerce two year storm curve, 25 year per ODOT Zone A for Bowling Green area.

A = the drainage area in acres.

The design of culverts is also based on the Rational Method. The condition of the numerous ditches in the Bowling Green study area greatly affects how efficiently storm water runoff is carried away. The design and maintenance of most of the ditches in the study, with the exception of Poe Ditch and North Main Street Ditch, is the

responsibility of the Wood County Engineer. Therefore, in the computation of ditch capacities, the Wood County Engineer's ditch profiles were used.

Nearly all future development in the Bowling Green study area will require the construction of detention basins to reduce runoff from the development. This is required in order to prevent the ditches from receiving more storm water than their design capacity, which could cause the ditch to overflow its banks and flooding.

Detention Basin Design Criteria

Detention basins shall be designed to store the storm water volume generated by a 25-year storm using post development runoff minus the allowable discharge to the receiving ditch or sewer.

The allowable discharge from any design area to the receiving ditch or sewer shall be equal to the flow generated by a 2 year - 30 minute storm at an agricultural discharge of $C = 0.10$. The allowable $Q_{out} = 0.10 \times 1.80 \times A = 0.18A$.

Proposed Drainage System Improvements

General Drainage Improvements

As previously mentioned, the Wood County Engineer is responsible for the maintenance of most of the drainage ditches that transport storm water runoff away from Bowling Green. It is the responsibility of the City to ensure that the runoff from the City reaches these ditches in the most direct manner while at the same time preventing downstream flooding caused by too great a volume of water in the ditches. The City's detention requirements will help reduce the peak flows from new developments, although the overall volume of runoff will increase.

In general, proposed improvements to the storm sewer system will follow the recommendations made in the previous Master Plan. The recommendations of the previous Master Plan offer reasonable solutions to the problems of properly managing area storm water runoff. The storm sewer sizing is based on current City design standards with the assumptions shown in the calculations in Appendix A.

All areas within the current land use plan were considered in the calculations. Areas that may possibly develop outside the study limits of this plan should be handled on a case-by-case basis taking into consideration the type of development proposed and the impact it would have on the existing drainage area.

There are several smaller drainage areas within each of the three major drainage areas. See Plate 2. Each of these smaller drainage areas has a county ditch to serve as the outlet for storm water. Each of the ditches in the study area are designated by a county ditch name and county ditch number with the exception of Poe Ditch and North Main Street Ditch which were constructed by the City of Bowling Green. The county ditch names sometimes change and are named for the person who most recently petitioned the county for improvements to the ditch. The county ditch numbers, however, do not change. Because of these facts, the following report will refer initially to the ditches by name and by number; all subsequent reference to the ditches will be by ditch number only.

Wherever any ditches referred to in the report are not recommended for improvements, the following should be understood. If and when development occurs in those areas, storm drainage design shall be treated on a case-by-case basis. Any ditch or storm sewer

improvements that are proposed must be of sufficient capacity to convey storm runoff from the proposed site as well as storm runoff that could be generated by all upstream areas of the watershed.

Complete drainage calculations must be submitted for all proposed developments. The calculations must be prepared by the developer's engineer and must be approved by the Wood County Engineer for all properties outside the Corporate Limits and by the City of Bowling Green's Director of Public Works for all properties within, or adjacent to, the Corporate Limits.

No work will be permitted on proposed drainage improvements until after the respective approvals are obtained.

Maumee Watershed Proposed Improvements

Asmus Ditch - County Ditch #2090

This ditch serves as the drainage outlet for lands adjacent to Brim Road lying north of Van Camp Road and south of Bishop Road. Development is occurring in the drainage area; but with proper on-site storm water management, the ditch should be adequate. However, if it becomes desirable to enclose the ditch, calculations have been completed to show the proper sewer sizes. Estimated Cost: \$3,945,240.

At this time, no improvements are recommended for County Ditch #2090 until development occurs in the watershed, which may require enclosure.

Belleville Ditch - County Ditch #2313

This ditch serves as the drainage outlet for lands east and west of the ditch and West Wooster Street on the south. The developed areas tributary to the ditch include all of the Belleville Acres Subdivision, the Quail Hollow Subdivision, the Brown Estates Subdivisions, Sequoia Heights, Coventry, Foxgate Farms, and Greenwood Gardens, and Stonegate Subdivisions south of Conneaut Avenue as far west as Beech Lane. Areas served by this ditch that include lands north of the Corporate Limits to Bishop Road; the land adjacent to the ditch between the south line of the Quail Hollow Subdivision on West Poe Road; and the lands lying west of Wintergarden Road between the south line of Greenwood Gardens Plat I and West Wooster Street and east of Wintergarden Road between the south line of Brown Estates Plats 2 and 3 and West Wooster Street. Storm Sewer Improvements proposed in this drainage area are:

1. The construction of 27" through 36" storm sewer along Wintergarden Road between Conneaut Avenue and West Wooster Street. Estimated Cost: \$200,668.
2. The construction of 24" through 36" storm sewer along Haskins Road from County Ditch #2313. Estimated Cost: \$287,630.

A detention basin to be located west of Haskins Road where County Ditch #2313 meets Haskins Road was recommended in the 1979 Belleville Ditch Drainage Study. However, the City improvements and maintenance program has reduced the need for this basin. If it becomes necessary to construct this basin in the future, it is estimated that it will cost \$688,000 to construct.

Belleville Ditch Branch # 1 - County Ditch #2313

This ditch serves as the drainage outlet for lands adjacent to Mitchell Road lying north of Sand Ridge Road and south of Bishop Road. The developed areas tributary to the ditch include all of the Westgate area, Oak Meadows Plats 1, 2, and 3, Old Hickory Estates Plat 1, Stone Ridge

Golf Course Subdivision, Greenwood Gardens Plat 2 and the part of Greenwood Gardens Plat 1 lying west of Beech Lane. Areas served by this ditch that are still undeveloped include some of the land between Bowling Green Road West lying east of Mitchell Road; land bounded by the corporate limits on the east and south, Mitchell Road on the west, and West Poe Road and the abandoned railroad from Mitchell Road to the Corporate Limits; the land adjacent to Mitchell Road between the abandoned railroad and Bishop Road.

Storm Sewer Improvements

Storm Sewer Improvements proposed in this drainage area include:

1. The construction of a 30" through 54" storm sewer along Mitchell Road from Sand Ridge Road north for a distance of approximately 3,600 feet. Estimated Cost: \$564,455. Recommended improvements were not made in this area. An 18" to 24" storm sewer has been constructed for part of this length. Future extensions to the south should be 18" storm sewers.
2. The construction of a 21" through 42" storm sewer along Bowling Green Road West from the Pearl/Wooster intersection west to Mitchell Road. Estimated Cost: \$564,350.
3. A 24" to 36" storm sewer along West Poe Road from Mitchell Road easterly for approximately 1,700 feet. Estimated Cost: \$200,473.
4. A 27" and 42" storm sewer along West Poe Road discharging to a sewer flowing northerly from Poe Road to the abandoned railroad. Estimated Cost: \$286,663.
5. A 24", 30", and 36" storm sewer is also proposed on Martindale Road from Melrose Street, which is presently a City Park where no development will be permitted. Estimated Cost: \$208,775.

Ditch Improvements

Proposed ditch improvements in this drainage area include the following:

1. A new ditch along the south side of the abandoned railroad east of Mitchell Road for a distance of approximately 2,400 feet. This ditch will outlet to branch #1 of County Ditch # 2313 on the west side of Mitchell Road and will intercept storm water flows from the north-south sewer beginning at West Poe Road. The estimated project cost is \$50,000.
2. Increasing the capacity of Branch #1 of County Ditch #2313 by widening from 3,500 feet south Bowling Green Road West to a point approximately 2,100 feet north of the abandoned railroad on Mitchell Road. The estimated cost is \$540,000.

Detention Basin

A detention basin is another proposed improvement. The location of the proposed detention basin will be on Mitchell Road north of the abandoned railroad. Construction of this basin should not be considered until the drainage area is further developed and impact of increased runoff is known. After the drainage area is more fully developed it is possible that the proposed retention basin could be eliminated or constructed smaller than shown in the calculations. Estimated Cost: \$750,000.

Estimated Construction Costs Maumee Watershed

The estimated costs of the recommended proposed Drainage System Improvements to the Maumee Watershed are based on prices current as of 2003 and include 10 percent for the contingencies and 20 percent for design, legal, and other costs. The Asmus Road Ditch enclosure cost is not included as it is highly speculative.

Belleville Ditch Watershed	
Sewer	Estimated Cost
Wintergarden Road Sewer	\$200,668.00
Haskins Road Sewer	\$287,630.00
Haskins Road Retention Basin	\$688,000.00
BELLEVILLE DITCH WATERSHED TOTAL	\$1,176,298.00
Belleville Ditch Branch #1 Watershed	
Mitchell Road Sewer	\$564,455.00
Bowling Green Road Sewer	\$564,350.00
West Poe Road	\$200,473.00
Poe Road Sewer to North	\$286,663.00
Martindale Road Sewer	\$208,775.00
New Abandoned Railroad Ditch	\$50,000.00
Belleville Ditch Branch #1 Widening	\$540,000.00
Mitchell Road Retention Basin	\$750,000.00
BELLEVILLE DITCH BRANCH #1 WATERSHED TOTAL	\$3,164,716.00
MAUMEE WATERSHED TOTAL	\$4,341,014.00

Portage Watershed Proposed Improvements

Zimmerman Ditch - County Ditch #732

This ditch serves as the drainage outlet for land lying north of Kramer Road between South Main Street and the North Branch of the Portage River. No improvements are recommended for County Ditch #732 until development occurs in the area.

Roe Ditch - County Ditch #1468

This ditch serves as the drainage outlet for developed land north of Sand Ridge Road to north of North Street; and lands presently undeveloped adjacent to the ditch between Sand Ridge Road and Kramer Road.

Proposed improvements in the county ditch #1468 drainage area include the following:

1. Enclosure of the ditch with 42" to 48" storm sewer from Sand Ridge Road to U.S. Route 6. Estimated Cost: \$629,876.
2. Construction of a 9 acre-ft. retention basin south of U.S. Route 6. Estimated Cost: \$261,000.

McElmurray Ditch - County Ditch #2121

This ditch serves as the drainage outlet for lands lying south of Napoleon Road between the railroad and Cherry Hill Drive and land north of Napoleon Road between South College Drive and the Corporation line east of the ditch. The ditch outlets to the Hyduke Ditch at Scott Hamilton Drive and State Street.

The proposed improvements in the County Ditch #2121 drainage area include the following:

1. Enclosure of the ditch from Klotz Road to the east side of Cherry Hill Drive and enclosure of the ditch from Napoleon Road to the proposed enclosure of the Hyduke Ditch at State Street. Costs for both improvements are estimated at \$783,314.

Russell Ditch - County Ditch #2166

This ditch serves as the drainage outlet for lands adjacent to East Gypsy Lane Road between the Conrail Railroad and the North Branch of the Portage River.

The proposed improvements to the County Ditch #2166 drainage area include the following:

1. Construction of a trunk storm sewer in the location of the existing ditch from the railroad to the existing 60" culvert under Interstate 75 and of a storm sewer along Campbell Hill Road from approximately 1200' north of East Gypsy Lane Road to East Gypsy Lane Road. Estimated Cost: \$1,124,557.
2. Cleaning and widening the existing ditch between Interstate 75 and the North Branch of the Portage River to provide adequate capacity for design flows. Estimated Cost: \$80,000.

Hyduke Ditch - County Ditch #2314

This ditch serves as the drainage outlet for the lands lying between Ninth Street and Clough Street from the Conrail Railroad to High Street; between Scott Hamilton Drive to the alley between Baldwin Avenue and State Street; and lands lying south of East Wooster Street from the alley between Baldwin Avenue and State Street to Interstate 75.

The proposed improvements to the County Ditch #2314 drainage area include the following:

1. Enclosure of the ditch from East Wooster Street south to the Corporation Line along the south side of Amherst Village with twin horizontal elliptical reinforced concrete pipe (HERCP) and from the southeast corner of Amherst Village to Scott Hamilton Drive at State Street with twin HERCP and the ditch along Scott Hamilton Drive from State Street to the existing twin 36" with twin 42" HERCP. Estimated Cost: \$1,183,364.

Carpenter Ditch - County Ditch #2346

This ditch serves as the drainage outlet for lands lying north of Sand Ridge Road to the Corporation Line between Baker Drive and Wintergarden Road except for the area of North Street, South Street, and Sharon; between Sand Ridge Road and West Gypsy Lane Road between Rudolph Road and the Slippery Elm Trail; and south of West Gypsy Lane Road to U.S. Route 6 from just west of Rudolph Road to the Gypsy Lane Estates Mobile Home Park.

The proposed improvements to the County Ditch #2346 drainage area include the following:

1. Construction of a storm sewer beginning on Baker Drive extending south to Sand Ridge Road; then west along Sand Ridge Road to Rudolph Road; then south along Rudolph Road to West Gypsy Lane Road and County Ditch #2346 and of a storm sewer beginning on Avery Drive extending south to West Gypsy Lane Road; then west along West Gypsy Lane Road to Rudolph Road and County Ditch #2346 and of storm sewers on West Gypsy Lane Road and Sand Ridge Road west of Rudolph Road. Estimated Cost: \$837,216.
2. Construction of a storm water retention basin on the south side of U.S. Route 6, which will empty into County Ditch #2346. Estimated Cost: \$397,300.
3. Cleaning and widening County Ditch #2346 between West Gypsy Lane Road and U.S. Route 6. Estimated Cost: \$40,000.

Carter Ditch - County Ditch #2347

This ditch serves as the drainage outlet for lands lying adjacent to Napoleon Road from the County Ditch #2121 eastern drainage boundary to the North Branch of the Portage River.

The proposed improvements to the County Ditch #2347 drainage area include the following:

1. Construction of a storm sewer along Napoleon Road from the corporate limits to Interstate 75. This proposed sewer will be installed in the existing open ditch and empty to the ditch on the east side of Interstate 75 through an existing 60" culvert under Interstate 75 and construction of storm sewers along Campbell Hill Road to approximately 900 feet south of Napoleon Road. Estimated Cost: \$1,124,557.
2. Cleaning and widening the existing ditch between Interstate 75 and the North Branch of the Portage River to provide adequate capacity for design flows. Estimated Cost: \$68,000.

Portage Township Trustees Ditch - County Ditch #2358

This ditch serves as the drainage outlet for lands lying south of Sand Ridge Road to Gypsy Lane Road between South Main Street and the Slippery Elm Trail; south of Napoleon Road to Gypsy Lane Road between South Main Street and the Conrail Railroad; and south of Gypsy Lane Road to U.S. Route 6 adjacent to South Main Street area. This area was also studied in 1994 and 1999. The recommendations and cost estimates for this area are developed from these studies.

The proposed improvements to serve this area include the following:

1. Ditch widening and cleaning is estimated at \$176,000.

2. Construction of a storm trunk sewer along South Main Street from Gypsy Lane Road to Kramer Road. Estimated Cost: \$1,010,000.
3. Construction of an 11.2-acre detention pond south of Colony Lane. Estimated Cost: \$200,000.
4. Construction of storm sewers along South Main Street from West Gypsy Lane Road to Napoleon Road. Estimated Cost: \$1,621,000.
5. Proposed storm pump station, force main and detention pond near Maple Street extended. Estimated Cost \$610,000. The detention pond will intercept flows from the existing combined sewer on Maple Street and redirect flows south via a force main to Gypsy Lane Road at Avery Drive. This change in drainage area will require approval of the Wood County Commissioners.

Fearnside Ditch - County Ditch #2408

This ditch serves as the drainage outlet for lands lying north of East Poe Road and south of Newton Road from the west side of Wood County Airport property to Interstate 75 and lands lying south of Gallier Road from Interstate 75 to Carter Road. No improvements are recommended for County Ditch #2408 until development occurs in the drainage area.

Curtis - Davis Ditch - County Ditch #2414

This ditch serves as the drainage outlet for lands adjacent to U.S. Route 6 from South Main Street to just east of Klopfenstein Road and drains through County Ditch #2414 to the North Branch of the Portage River.

The proposed improvements to the County Ditch #2414 drainage area include the following:

1. Construction of a sewer on the north side of and parallel to U.S. Route 6 that will outlet to County Ditch #2414 through an existing 42 inch culvert under U.S. Route 6. Estimated Cost: \$614,276.
2. Construction of a sewer along Klopfenstein Road beginning approximately 1,000 feet south of Gypsy Lane Road and extending south across U.S. Route 6 to County Ditch #2414. The existing 21-inch culvert across U.S. Route 6 is inadequate and will have to be replaced with a new 42-inch culvert. Estimated Cost: \$329,095.
3. Cleaning and widening of the portion of County Ditch #2414 lying south of U.S. Route 6 to the North Branch of the Portage River. Estimated Cost: \$121,800.

Poe Ditch

This ditch serves as the drainage area for all of the Enterprise-Summit Area; the Fairview-Meeker-Gorrell Area; the BGSU Campus and areas adjacent to the ditch. This includes all of the area of the City that is served by combination sewers and drains through Poe Ditch to the North Branch of the Portage River at East Poe Road and State Route 105.

The proposed improvements to the Poe Ditch Drainage area include the following:

1. Culvert replacement at Dunbridge Road and the construction of a 140 acre-foot retention pond adjacent to Poe Ditch and east of Dunbridge Road. Costs are estimated at \$950,000.
2. Replacement of the three culverts downstream from the proposed retention basin. Costs are estimated at \$360,000.
3. Cleaning of Poe Ditch from the proposed retention pond to State Route 105. Costs are estimated at \$58,000.
4. Enclosure of that part of Poe Ditch from Mercer Road to Interstate 75. Costs are estimated at \$4,395,820.
5. Although the areas of the City that are drained by combined sewers to Poe Ditch appear to be adequately served by the existing combined trunk sewers, it should be mentioned that the Fairview, Meeker, Gorrell system should be extended to the west along West Wooster Street from Meeker Street to Western Avenue. Costs are estimated at \$323,123.

Other areas of the City that are served by existing combined sewers that experience drainage problems can be served with lateral extensions from the existing combined trunk mains as needed. The CSO separation plan must be considered when future storm sewer extensions are planned.

Estimated Construction Costs Portage Watershed

The estimated costs of the proposed Drainage System Improvements to the Portage Watershed are based on prices current as of 2002, and include 10 percent for contingencies and 20 percent for design, legal, and other costs.

Roe Ditch Watershed	
Ditch Enclosure	\$629,876.00
Retention Basin	\$261,000.00
ROE DITCH WATERSHED TOTAL	\$890,876.00

McElmurry Ditch Watershed	
Ditch enclosure on and north of Napoleon Road	\$783,314.00
MCELMURRY DITCH WATERSHED TOTAL	\$783,314.00
Russell Ditch Watershed	
East Gypsy Lane Road and Campbell Hill Road Sewer	\$1,124,557.00
Russell Ditch Widening	\$80,000.00
RUSSELL DITCH WATERSHED TOTAL	\$1,204,557.00
Hyduke Ditch Watershed	
Ditch Enclosure	\$1,183,364.00
HYDUKE DITCH WATERSHED TOTAL	\$1,183,364.00
Carpenter Ditch Watershed	

West Gypsy Lane Road and Sand Ridge Road Sewer	\$837,216.00
Carpenter Ditch Cleaning/Widening	\$40,000.00
Rudolph Road Retention Basin	\$397,300.00
CARPENTER DITCH WATERSHED	\$1,274,516.00
Carter Ditch Watershed	
Napoleon Road and Campbell Hill Road Sewer	\$1,124,557.00
Clean and Widen Carter Ditch	\$68,000.00
CARTER DITCH WATERSHED	\$1,192,557.00
Portage Township Trustees Ditch Watershed	
Ditch Improvements	\$176,000.00
South Main Street Sewer Gypsy Lane to Kramer Road	\$1,010,000.00

South Main Street Sewer Gypsy Lane to Napoleon Road	\$1,621,000.00
Maple Street Improvements	\$610,000.00
PORTAGE TOWNSHIP TRUSTEES DITCH WATERSHED TOTAL	\$3,417,000.00
Curtis - Davis Ditch Watershed	
U.S. Route 6 Sewer	\$614,276.00
Klopfenstein Road Sewer	\$329,095.00
Clean and Widen Curtis - Clean Ditch	\$121,800.00
CURTIS - DAVIS WATERSHED TOTAL	\$1,065,171.00
Poe Ditch Watershed	
Dunbridge Road Culvert and Retention Basin	\$950,000.00
Culvert Replacements	\$360,000.00

Ditch Cleaning	\$58,000.00
Enclosure (Mercer Road to I-75)	\$4,395,820.00
North College Drive Sewer	\$180,000.00
West Wooster Street Sewer	\$323,123.00
POE DITCH WATERSHED TOTAL	\$6,266,943.00
PORTAGE WATERSHED TOTAL	\$17,278,298.00

Toussaint Watershed Proposed Improvements

Toussaint Watershed

The 1983 Toussaint Creek Drainage Study was completed to determine the capacity of Toussaint Creek and the effect of runoff from developed property within the City of Bowling Green on areas downstream. The study encompassed the Toussaint Creek from its upper terminus in the City of Bowling Green downstream to Dunbridge Road.

The Toussaint Creek Drainage Study still serves as the basis for the recommended improvements outlined in the text that follows for the Drainage Master Plan.

For the purposes of the Drainage Master Plan and the Toussaint Creek watershed will be separated into two parts. One is that part of the watershed lying basically within the corporate limits; the second is that part lying north and east of the corporate limits in Center Township and the area in Plain Township in the vicinity of Bishop Road that is tributary to the Toussaint, via the George Knauss Ditch (County Ditch #2116).

The existing ditches tributary to the Toussaint Creek that lie within the Master Plan Study area are shown on the map. No improvements are recommended for most of these ditches. Drainage improvements in those areas will be handled on a case by case basis through the Wood County Engineer's Office and, if the lands are annexed to the City, through the Engineering Division of the City of Bowling Green.

Toussaint Creek West of North Main Street

The Toussaint Creek Drainage Study shows that continued development within the City, south of Van Camp Road, will increase the volume of runoff into Center Township, but not the peak rate of runoff. The peak rate of runoff is controlled by the 54-inch pipe enclosure of the Toussaint Creek along North Main Street.

The Toussaint Creek west of North Main Street, during heavy rainfalls, occasionally overtops its banks. This situation may happen more frequently in the future, as more development occurs because the 54-inch pipe along North Main Street, while controlling the peak rate of runoff downstream, has the opposite effect upstream. As development occurs upstream of the 54 inch pipe, the rate of flow in the open creek will increase to a point where it could be greater than the capacity of the pipe during more frequent rainfall occurrences, which will cause overtopping of the banks more often.

The following improvements are recommended for that portion of the Toussaint Creek west of North Main Street:

1. Widen the creek bottom from the existing 4-foot width to a proposed 12-foot width between Fairview Avenue and North Main Street for a length of approximately 1,250 feet. Costs are estimated at \$43,000.
2. Another proposed improvement is the construction of a storm detention pond to be located in the industrial park area west of North Main Street. The pond would provide 31 acre-feet of storage. Costs are estimated at \$1,260,000.
3. Enclosure of Catherine Knauss and Haswell Ditches along Newton Road. Costs are estimated at \$3,761,030.

It is suggested that all other improvements to the ditch be implemented before the construction of the proposed detention basin. This will enable the City to better evaluate the impact of those improvements on the watershed and perhaps be able to construct a smaller detention basin. Until such time as the proposed detention basin is constructed, all developments in the areas tributary to the Toussaint Creek west of North Main Street will be required to provide individual detention facilities to regulate storm water discharge.

It should be noted that the lands north of Van Camp Road that are tributary to the Toussaint Creek and the lands drained by the North Main Street Ditch shall require storm water detention so that the peak rate of runoff is controlled and the City does not alter the capacity of the enclosed Toussaint Creek along North Main Street. The peak rate of discharge into Center Township should not exceed the current peak flows.

Estimated Construction Costs Toussaint Watershed

The estimated costs of the proposed Drainage System Improvements to the Toussaint Watershed are based on prices current as of 2003 construction include 10 percent for contingencies and 20 percent for technical costs. No costs have been included for property or easement acquisitions.

TOUSSAINT CREEK WATERSHED	
Creek Widening (Fairview to North Main)	\$43,000.00
Detention Basin	\$1,260,000.00
Catherine Knauss/Haswell Ditch Enclosure	\$3,761,030.00
TOUSSAINT CREEK WATERSHED TOTAL	\$5,064,030.00

FINANCING

General

Public improvements may be financed in several ways, based upon a combination of methods available under Ohio laws. The method chosen depends on the nature of the improvements, which will benefit from the improvements, and the ability of the community to assume additional financial indebtedness. Alternate methods for financing capital improvements are discussed below.

Current Revenues

Current revenues may be used to finance improvement projects. Such revenues may be derived from general taxation, fees, charges for services, special funds, or special assessments. The advantages of this method include: the community saves the interest costs that would be charged on borrowed money, and the community retains greater budget flexibility for future projects.

The major disadvantage is the need to have uncommitted cash available, which often precludes the financing of extensive capital improvements in a small community.

Reserve fund financing may also be used. Under this procedure, funds are accumulated in advance for the construction of capital projects. The accumulation may result from surplus or "earmarked" operational revenues that are set aside, depreciation accounts, or from the sale of capital assets.

General Obligation Bonds (Excluding Self-Supporting Bonds)

General obligation bonds are secured by an unconditional pledge of the municipality's credit, including its taxing powers. General obligation bonds are retired by a levy against the property over the stated period of the bond issue, including interest costs.

Voter-approved indebtedness is outside the 10-mill debt limitation; nonvoted indebtedness is included within the 10-mill debt limitation. Both, however, are still subject to the statutory debt limitations of 10-1/2% of assessed valuation.

General Obligation Bonds (Self-Supporting)

Self-supporting bonds are secured by an unconditional pledge of the municipality's credit. These bonds are retired from revenues of a municipal water, sewer, or other utility, which are in excess of revenues required for the operating expenses of the utility and of any other bond retirement.

Self-supporting bonds are included within the 10-mill debt limitation, unless approved by the electorate. In either case, these bonds are subject to the statutory limitation of 10.5% of assessed valuation.

A revenue experience record of six months to one year, at the rate schedule necessary to support the bond issue, is normally required to determine that bonds are self-supporting. However, an experience record is not required for bonds falling within the limitation of non-voted

bonds, as described in the previous summary on General Obligation Bonds. In such cases, the 10-mill or 10.5% percent debt limitation would also apply until an experience record was established.

In the event that revenues are not sufficient to retire self-supporting bonds, a levy against property must be made. This levy takes precedence over all other unvoted levies within the 10-mill limitation.

Special Assessments

Special assessments may be levied on a front foot, benefits derived, or tax valuation basis, against all properties within the area served by the improvement. Once levied, special assessments may be paid in cash or by a levy against the property to be paid on an annual basis over the stated period of the bond issue. Interest costs are included in the assessed amount.

Special assessment bonds also are secured by an unconditional pledge of the municipality's credit. They are not subject to the statutory debt limitation, but are included within the constitutional 10-mill limitation.

In the event that collections are not sufficient to retire special assessment bonds, a levy against all property must be made. This levy takes precedence over all other unvoted levies within the 10-mill limitation.

Mortgage Revenue (M.R.) Bonds

Mortgage revenue bonds are secured only by the income received by the municipality for the specific improvements being funded by the bond. They are self-liquidating obligations.

Revenue Bonds are not included within the statutory debt limitations or 10-mill limitation. From a practical standpoint, however, a mortgage revenue issue is limited by the ability to market the bonds at reasonable rates and by a rate schedule acceptable to the consumers of the system.

Since M.R. bonds are secured only by revenue, the rate schedules established must be sufficient to provide for operation and maintenance costs of the utility and for the annual principal and interest payments on the bonds, and to produce "coverage", or additional revenue, until specified reserve amounts are established.

Mortgage Revenue Bonds are often discounted or sold for less than par value, and generally carry higher-interest rates than other bonds.

Notes

Notes are often used as a means of initial financing in anticipation of the issuance of bonds. Notes may be issued for a period of up to one year and generally, may be renewed seven times for a maximum life of eight years. Notes can be used for general obligation and special assessment issues, but not for mortgage revenue issues.

RD (USDA Rural Development)
(formerly Farmers Home Administration)
(formerly Rural Economic and Community Development Services)

RD provides grants and loans to rural communities (less than 10,000 population) under its water and wastewater program. The income of households within the community and the community's ability to repay the debt determine whether the community is eligible for a grant, a low-interest loan, a mid-range interest rate loan, or a market interest rate loan. The determination for eligibility is made by RD, upon receipt of a pre-application. Up to forty-year terms are provided on RD loans.

RD also has a Community Facilities Loan program for communities of less than 20,000 population. Utility extensions in rural areas may be eligible under this program, when funds are available.

RD may also provide loan guarantees to lower conventional bank interest rates. Loan guarantees may be for up to 80% of the principal financed.

Ohio Water Development Authority (OWDA)

The OWDA has loan funds available to communities for water and sewer improvements. Terms are 40 years in hardship cases only and 10 to 25 years in all other cases. All users are eligible and the market rates are lower than conventional financing rates usually attainable by most small communities. This indebtedness is outside the statutory debt limitations of the community.

There are low interest (2%) loans available in cases of extreme hardship and economic need.

Planning Loans (OWDA)

OWDA also has planning loans available to initiate projects within a community. Loans are available at attractive rates for five-year terms.

Community Development Block Grants (CDBG)

Public improvements may be funded by CDBG funds, if the project meets program criteria as established by the Department of Housing and Urban Development (HUD) and the Ohio Department of Development (ODOD). The Ohio Department of Development and the various offices within that Department can be contacted at (1-800-848-1300).

Funds may be acquired under the "Formula" program for public improvements. Small cities and non-urban counties receive formula grants from the State based on distress criteria. (Communities receiving less than \$25,000 year must request their funds from the County.) Eligible projects must demonstrate a "net effect" of benefiting low and moderate income persons or removal of slums and blight.

Funds may be acquired under the "Housing Rehabilitation" program for public improvements directly associated with the housing rehab. Water, sewer, street, sidewalk, drainage, park, and other public improvements associated with housing rehab may be eligible for funding under this program, but must have a direct benefit to low and moderate income households and must meet other program requirements.

Funds may be acquired under the "Economic Development" program for public improvements directly associated with an economic development project. Water, sewer, street, drainage, and other public improvements may be eligible if they are required by a business or industry in order to expand existing facilities or locate a new facility in a community. Projects are rated on the

number of newly created or retained jobs by the business or industry, private investment made by the business or industry, other dollars contributed to the project, a determination as to whether the expenditure of public funds is necessary and appropriate, as well as other program criteria.

Funds may be acquired under the CDBG "Imminent Threat" program for public improvements required to alleviate threats to public health and safety. Eligible projects must be unique and must pose an imminent threat. The community must have no other funds available and can only use these funds to mitigate the emergency condition.

CDBG Water and Sanitary Sewer Competitive Program

Goal: The primary goal of the Water and Sanitary Sewer Program is the creation of a safe and sanitary living environment for Ohio citizens, through the provision of safe and reliable drinking water and proper disposal of sanitary waste.

Total Funds: Approximately \$9.4 million in 1995.

Grant Ceiling: The awards may not exceed \$500,000. Grantees will be allowed up to 26 months to complete and closeout their program.

Eligible Jurisdictions: Counties, cities and villages. Counties must apply on behalf of townships and unincorporated areas. A County may submit only one application either on behalf of itself or on behalf of one or more eligible subunits of general local government (townships, village and cities within the county jurisdiction). Jurisdictions which were funded under this program in the most recent round will not be eligible for funding under the upcoming competition; however, counties which were funded in the most recent round are allowed to apply on behalf of a different subunit of government within their jurisdiction.

Eligible Activities: The Water and Sanitary Sewer Program will only fund projects, which provide water and/or sanitary sewer service to primarily residential users (minimum 60% of total users.)

Application Timing:

Full Application: May 1996 (with open funding cycle to continue until funds are depleted)

Award: July 1996

Local Program Benefit: The program is targeted at distressed communities or areas in Ohio, which have a low- and moderate-income population of at least 51%.

Administrative Cost: A maximum of 5% of the total grant amount may be used for general administration, environmental review, audit and close-out.

Program Benefit Survey: The grantee may qualify a project on the basis of the 1990 Census Data or an income survey of the benefit area (or service area) of an activity according to the Ohio Housing and Community Partnerships (OHCP) Survey Methodology which shows that at least 51% of the activity beneficiaries will be of low or moderate income. The grantee is required to submit appropriate survey information with the original application of the State. Use of any additional database will be allowed though prior OHCP approval.

Program Amendments: Because of the nature of the application and grant award, which are based on competitive criteria, Water and Sanitary Sewer grantees are discouraged from changing their programs. OHCP will consider on a case-by-case basis only those minor

changes that do not affect the competitiveness of their approved applications for which the original grant award was made. If the grantee is considering a change in program scope, location or design, number and type of beneficiaries or anticipated accomplishments, it must notify OHCP of the proposed changes in writing. Formal written OHCP approval is required.

Local Program Period: FY 1995 Water and Sanitary Sewer grantees must complete their programs according to the following deadlines: (1) all activities (except audit and balance of administration) must be completed by June 30, 1997; (2) all drawdown requests must be submitted to OHCP by July 31, 1997; and (3) all funds must be disbursed, expended and final performance report submitted by August 31, 1997.

Application Submission: The application must be received by the OHCP by 5:00 p.m. on the date set as the deadline of application submission. OHCP will not consider any application that either arrive after that deadline or are incomplete. OHCP reserves the right to request additional information from the applicant.

Assessments and Fees:

- (1) Definition of special assessment: The term "special assessment" means a fee or charge levied or filed as a lien against a parcel of real estate as a direct result of benefit derived from the installation of a public improvement, such as streets, water or sewer lines, curbs, and gutters. The amount of the fee represents the prorated share of the capital costs of the public improvement levied against the benefiting public improvement. This term does not relate to taxes, or the establishment of the value of real estate, property, and ad valorem taxes, nor does it include periodic charges based on the use of public improvements, such as water or sewer user charges, even if such charges include the recovery of all or some portion of the capital costs of the public improvement.
- (2) Special assessments to recover capital costs: Where CDBG funds are used to pay all or part of the costs of a public improvement, special assessments may be used to recover capital costs as follows:
 - (a) Special assessments to recover the CDBG funds may be made only against properties owned and occupied by households not of low and moderate income. **Such assessments constitute program income.**
 - (b) Special assessments to recover the non-CDBG portion may be made provided that CDBG funds are used to pay the special assessment in behalf of all properties owned and occupied by low- and moderate-income households; except that CDBG funds need not be used to pay the special assessments on behalf of properties owned and occupied by moderate-income households if the grant recipient certifies that it does not have sufficient CDBG funds to by the assessment in behalf of all the low- and moderate-income, owner-occupant households. Funds collected through such special assessments are not program income.
- (3) Other uses of CDBG funds for special assessments: Program funds may be used to pay all or part of special assessments levied against a property when such assessments are used to recover the capital costs of eligible public improvements financed solely from sources other than CDBG funds, provided that:

- (a) The assessment represents that property's share of the capital cost of the improvements;
- (b) The installation of the public improvements was carried out in compliance with requirements applicable to activities assisted under this part of the CDBG Regulations including environmental, citizen participation, and Davis-Bacon requirements; and
- (c) The installation of public improvements meets a national objective criterion.

Note:

- (1) Special assessments may no longer be paid for low/moderate income persons where the public improvements itself does not meet a national objective.
- (2) "To pay" an assessment for a low/moderate income person means to pay 100% of the assessment in the form of a grant.

Rating System Principles:

All applications will be competitively rated against the following criteria:

- (1) Benefit Impact (15 points): percent and number of low- and moderate- income persons benefiting from the program;
- (2) Leverage (15 points): each CDBG dollar must leverage at least one dollar of other public or private funds in the project's fixed cost and this commitment must be in writing in the application;
- (3) Program Impact (25 points): communities under EPA mandates with documented health and safety concerns will be given priority (relationship of proposed activities to identified needs);
- (4) Program Readiness (20 points): the engineering has been completed and the project is ready to bid;
- (5) Community's Financial Capacity and Rate Structure (25 points).

Economic Development Administration (EDA)

EDA has grant funds available for public improvements directly related to industrial development projects. An overall Economic Development Plan (OEDP) must be approved for the County in which the project is located in order for a community to be eligible to receive funds. Job creation/retention by industries is also a prerequisite for eligibility.

Ohio Water and Sewer Rotary Commission

Ohio Water and Sewer Rotary Commission may provide loans to communities for water and sewer lines in an amount equal to the assessments for farmland, provided that the farmland is in a designated agricultural district. Once the land use is changed from agricultural to any other use, the landowner must reimburse the community for the assessment.

Village Capital Improvement Fund (VCIF) (Planning Loan)

The Environmental Protection Agency (EPA) has loan funds available to Villages to pay all or part of the cost to prepare plans and specifications for water and sewer construction projects. Loans are interest free and are repaid at the time financing is acquired for construction of the project or in equal installments (ten or less) if the project does not go to construction within two years.

This requires ten (10) years of equal interest-free payments starting at the end of the second year unless the project is financed sooner, at which time it will be repaid in full. Maximum loan amount range is from \$25,000 to \$50,000.

Ohio Public Works Commission (Issue II)

The Ohio Public Works Commission (OPWC) has up to 90% grants for repair/replacement type projects, 50% grants for new construction, and zero interest to low interest loans. There are four programs: Issue II District Funds, Small Government Funds, Local Transportation Improvement Projects, and Emergency Projects. OPWC also offers credit enhancement or loan assistance to offset interest costs of funds borrowed from non-OPWC sources.

OWDA Research and Development Grants

These grants are for 50% matching funds to investigate innovative/alternative water, wastewater, and solid waste research projects. Funds are available through the Ohio Water Development Authority.

Water Pollution Control Loan Fund

The source of the Water Pollution Control Fund is the Ohio Environmental Protection Agency and Ohio Water Development Authority. This Fund was developed to improve water quality within the State. With the passage of the Water Quality Act of 1987 (P.L. 100-4), Congress established the State Revolving Fund (SRF) program to provide a permanent replacement for the Construction Grant program, for which federal funding ended after FY 1990. Funds are available for construction, short-term construction (up to 5 years) and also planning and design loans. Communities with high economic needs may secure financing for up to 20 years at a lower interest rate.

NatureWorks Program and the Ohio Parks and Natural Resources Fund (Issue 1)

The NatureWorks Program and the Ohio Parks and Natural Resources Fund (Issue 1) authorizes the State of Ohio to issue bonds, which will be retired from general State revenues, to finance Capitol Improvements for state and local parks and recreational areas and to preserve Ohio's natural areas and habitats. Issue 1 also permits the State to make grants and assist local governments with Capitol Improvements Projects related to natural resources and require at least twenty percent (20%) of the proceeds of the first two hundred million dollars (\$200,000,000) of these bond dollars will be available to Ohio communities for such local Capitol Improvements. The Ohio Parks and Natural Resources Fund provides 75 percent reimbursement assistance to eligible political subdivisions (townships, joint recreation districts, municipalities, park districts, counties, and conservancy districts), for acquiring and/or developing public recreation areas.

Transportation Enhancement Program

The Intermodal Surface Transportation Efficiency Act of 1991 established funding for Transportation Enhancement Activities. The Act directs that at least 10% of a State's surface Transportation Program funds must be set-aside for this program. For Ohio, this equates to approximately \$10 million per year. This criteria is for a two-year program of Transportation Enhancement projects for the Fiscal Year 1996 and 1997 period.

Transportation Enhancement projects must have a direct relationship to the intermodal transportation system. The Transportation Enhancement Program provides a means of stimulating additional activities that go beyond the cultural or environmental mitigation required when developing a transportation improvement project. The intent of the program is to more creatively integrate transportation facilities into their surrounding communities and the natural environment.

State and Federal Funding Programs
for
Water Treatment Systems

Introduction

The following summary is designed to provide municipalities and other public entities in Ohio with information about federal and state funding programs available to finance the construction and improvement of water treatment systems.

The summary for each program description includes the following information categories:

- (1) Purpose of the program
- (2) Eligibility requirements
- (3) Funding guidelines
- (4) Priority criteria
- (5) Application procedures

Some of the sources outlined also are available for wastewater and solid waste projects.

General questions may be directed to OEPA, Division of Water Pollution Control, Economic Analysis Unit (614) 644-2001.

SOURCE: Village Capital Improvement Account (VCIF) (formerly referred to as EVCISA or Emergency Village Capital Improvement Special Account Fund)
Administered by the Ohio Environmental Protection Agency, Division of Environmental and Financial Assistance

PURPOSE: To aid Ohio villages in financing the preparation of preliminary engineering plans, detailed engineering plans, feasibility studies, plans and applications for financing the project, and legal costs incurred for the planning phases of wastewater treatment and/or public water supply systems. This is an interest-free loan program.

ELIGIBILITY: Any Ohio village, which by ordinance or resolution of its legislative authority, has determined it to be necessary to construct or improve their wastewater treatment system or public water supply. Equal consideration will be given for the purposes of preparing plans for wastewater treatment facilities or public water supplies. Application for a loan from the VCIF program must be made prior to the preparation of the plans, study, or design for which funds are being requested. A plan of study outlining the nature and scope of the project, along with a schedule of tasks and cost estimates is required with the application materials. Villages are evaluated on the financial and technical need for their water service planning projects. The village must maintain an adequate rate structure to cover its loan obligations, including the VCIF advancement. A loan repayment schedule must also be established. Communities with a MHI of over \$40,000 are ineligible. For wastewater design loans, communities must have a population of 500 or less if, MHI is \$25,375 to \$40,000. If MHI is less than \$25,375, then population size is not a factor.

FUNDING: Financial assistance through the VCIF is in the form of an advancement. When financing for construction of the project is completed, the full amount of the loan will be due. Villages will be required to sign an agreement with the Ohio EPA, which sets forth the conditions under which funds will be paid, and the use and repayment of these funds. Should the project fail to be financed within two years from the date of the final advancement, repayment shall not exceed ten years and may be restricted to three to five years. Application for an advance from the VCIF must be made prior to preparation of the plans, study, or design work for which funds are being requested. A maximum of \$25,000 - \$50,000 can be awarded for each phase per project (either water or sewer). Planning loans have a ceiling of \$25,000. Design loans maintain a \$50,000 ceiling per phase.

PRIORITY: Loans are processed on a first-come, first-served basis. However, because VCIF funds are limited, priority consideration is involved when requests for loans exceed the funds available. Priority would be given to villages meeting the following criteria:

- (1) Villages with documented health problems concerning their public water supply or wastewater treatment system.
- (2) Equal consideration will be given to planning projects for either wastewater treatment systems or public water supplies.

- (3) Villages with no existing wastewater treatment system or public water supply system.
- (4) Villages under administrative or judicial orders to proceed with construction of wastewater treatment facilities or public water supply projects.
- (5) Villages which need to improve their wastewater treatment system or public water supply.

APPLICATION: For application and further information contact:

VCIF Coordinator
Division of Environmental and Financial Assistance
Ohio Environmental Protection Agency
P.O. Box 163669
1800 Watermark Drive
Columbus, Ohio 43216-3669
(614) 644-2798

SOURCE: Ohio Water Development Authority (OWDA)
State of Ohio

PURPOSE: To provide financing for local municipalities in the State of Ohio for the construction of wastewater, solid waste, and water treatment facilities necessary to comply with water pollution control standards. Any such Ohio project is eligible to receive OWDA financing, provided plans have been approved by the Ohio EPA and local rate legislation enacted to insure project system revenues adequate to meet annual loan repayments to OWDA. No additional coverage requirement is necessary.

ELIGIBILITY: Applicants must be an Ohio local government agency and must have the legal authority to borrow funds. Applicants must have in existence or be willing to establish a rate structure sufficient to amortize a loan. Loan repayment may not be funded through general tax revenues. The proposed project must be in accordance with any comprehensive management plan in existence or in preparation by the OEPA.

FUNDING: Cooperative Agreements are approved by the Authority each month based upon a contract interest rate which is determined by adding 50 basis points to the average of the "Bond Buyers" 20-Bond Index interest rate for the eight weeks ending on the last publication of the Index which occurs just prior to each two month period. That interest rate will prevail during the next two month period. The term of years over which the loan is repaid can be from 10 to 25 years, with the first semiannual repayment to commence on the January or July 1st next following the project completion date but not more than twenty-nine months from the date of the Cooperative Agreement. The local government authority can, prior to entering into the Agreement, elect either to make equal monthly or annual principal repayments to the Authority. Interest charged during construction will be the same as the contract rate.

When the Agreement has been approved, the Authority can then certify the availability of funds to the local government authority so that construction contracts can be signed.

The Agreement provides for the Authority to pay all construction costs, which have been approved for payment by the local government authority, directly to the contractor. All other costs such as engineering, legal, inspection, etc. are reimbursed directly to the local government authority. The Authority charges a one-time administrative fee of .35% (.0035) of total estimated project costs. The current lending rate for May/ June 1996 is 6.36%.

PRIORITY: To date, all eligible applicants have been funded.

APPLICATION: The time required by OWDA to evaluate an application is minimal. Therefore, the applicant must be ready to accept the funds when the application is approved.

Applications and further information can be obtained by contacting:

Ohio Water Development Authority
88 East Broad Street
Columbus, Ohio 43215
(614) 466-5822

SOURCE: Ohio Water and Sewer Rotary Commission
State of Ohio

- PURPOSE:** To provide interest free loans to pay that portion of the cost of a sewer or water line extension project which otherwise would have been paid by assessments on agricultural land. Such assessments may be deferred for 20 years under Ohio Revised Code Chapter 1525, or may be exempted from collection under ORC Chapter 929, the so-called "Agricultural District Act", until such time as the property involved changes to a use other than agricultural.
- ELIGIBILITY:** Counties, municipalities, and certain special districts are eligible applicants for agricultural district loans. Only counties may apply for the 20-year loans under ORC Chapter 1525.
- FUNDING:** A rotary loan fund is the source of all Commission loans. In recent years, the Commission has loaned an average of \$2 million per year. There are no minimum or maximum loan limits.
- PRIORITY:** In addition to meeting legal requirements, all applications are reviewed using the following criteria:
- (1) Evidence that the proposed water or sewer project will result in the creation or retention of permanent jobs;
 - (2) Evidence that the project will directly or indirectly generate tax revenues benefiting local government;
 - (3) Evidence that the project is in conformity to locally adopted water and sewer plans, and land use plans, and that it reflects the applicant's efforts to preserve prime agricultural lands;
 - (4) Evidence that the construction of the project will help to eliminate or alleviate serious pollution problems;
 - (5) Evidence that indicates the time in which the advanced monies could be expected to be repaid;
 - (6) Evidence that the approval of the requested advance will permit the applicant to secure or retain other financial assistance commitments;
 - (7) Evidence that the proposed project has the support of the community;
 - (8) Evidence that the loan amount is reasonable in relationship to the agricultural lands being preserved;
 - (9) The total amount of funds already received by the applicant, with the applicant having received more funds given lower priority.
- APPLICATION:** Applications may be submitted at any time. For application forms and further information, contact:
- Secretary
Ohio Water and Sewer Rotary Commission
Department of Development
P.O. Box 1001
Columbus, Ohio 43266-0101
1-800-848-1300
- SOURCE:** Economic Development Administration (EDA)
U.S. Department of Commerce
- PURPOSE:** To provide grants and loans to generate employment and improve living standards in communities and areas burdened by high unemployment or low per capita incomes.

Funding is available for public wastewater treatment system construction or improvements which serve industrial and commercial users.

ELIGIBILITY: To be eligible for EDA funding, the entity must be within an EDA designated area or an economic development district. Primarily, high unemployment and low per capita incomes are the criteria for an EDA designated area.

Any local government or political subdivision in an EDA designated area may apply for funding.

A list of eligible areas will be provided upon request.

FUNDING: EDA funding is generally in the form of direct or supplemental grants. While empowered to loan funds, historically, allocations have been in the form of grants.

Grant rates may vary from 50 to 80 percent of total eligible project cost depending on the level of economic distress.

PRIORITY: Funding assistance from EDA is evaluated on the following criteria:

- (1) The degree of economic distress in the area (unemployment rate).
- (2) The amount of new and permanent jobs created by the project.
- (3) The resultant leverage with other public and private funds.

APPLICATION: Applicants should contact the local EDA representative at the address listed below for applications and further information:

U.S. Department of Commerce
Economic Development Administration
Federal Building, Room 607
200 North High Street
Columbus, Ohio 43215-2408
(614) 469-7314

SOURCE: Rural Development (RD)
(Formerly Farmers' Home Administration - FmHA)
U.S. Department of Agriculture

PURPOSE: RD administers a loan and grant program for the installation or improvement of water, sanitary sewer, storm sewer, and solid waste facilities in rural areas and towns of up to 10,000 in total population.

Funds may be used for construction and non-construction costs including land, equipment, engineering services, legal services, capitalized interest, and initial operating funds. RD administers direct loan and grant programs, as well as providing guarantees for conventionally financed projects.

ELIGIBILITY: Public bodies such as municipalities, counties, special purpose districts, and authorities, as well as non-profit corporations are eligible. The projects must be located in rural areas or incorporated rural communities of up to 10,000 population.

Funding may be obtained through RD only when the applicant is unable to secure funding from other sources at reasonable rates and terms.

The applicant must have the legal capacity to borrow and repay loans, to pledge security for the loans, and to operate and maintain the facilities. The applicant must be financially sound and able to manage the facility effectively as well as have a financially sound facility based upon taxes, assessments, revenues, fees, or other satisfactory sources of income to pay the cost of operating, debt service, and reserve. The project design must be satisfactory to USDA Rural Development.

FUNDING: Loans are available with a maximum term of 40 years. Interest rates depend upon the median household income (MHI) of the service area and change quarterly based on the current market rate for municipal obligations. All MHI data used is from the 1990 U.S. Census. The interest rates are as follows for the quarter beginning January 1, 1996.

Poverty (4.5%) - MHI is less than \$25,090 (80% of State's non-metropolitan MHI) and facility required to meet a health or sanitary standard.

Intermediate (4.875%) - MHI is less than \$31,363 (100% of the State's non-metropolitan MHI).

Market (5.375%) - MHI more than \$31,363.

Supplemental Grants may be awarded in addition to loans if the MHI of the service area is less than \$31,363. A project is eligible for grant consideration if the debt service cost will exceed the following rule of thumb:

-0.5% of MHI when median household income of the service area is less than \$25,090.

-1.0% of MHI when median household income of the service area is greater than \$25,090 but less than \$31,363.

Grants are used to reduce the debt service cost for residential sized customers down to the above noted percentages, or to where the total user charge is considered reasonable. USDA Rural Development's maximum grant is 75% of eligible project costs where the MHI of the service area is

\$25,090 or less, and 55% of the eligible project costs where the MHI is between \$25,090 and \$31,363.

PRIORITY:

Funding is on a first come, first served basis with priority to lower income communities, to communities with populations of less than 5,500 and for projects necessary to meet established health or sanitary standards.

In addition, applications are evaluated on the basis of:

- Improved operating efficiency.
- Extension of service to additional rural residents.
- Amount of funds provided from private, local, or state sources.
- Financial soundness.
- Quality of USDA Rural Development funding required.

APPLICATION:

Pre-applications may be obtained from one of the USDA Rural Development District Offices which are located in Bluffton (419-358-6647), Hillsboro (513-393-9996), Wooster (216-345-6791), Marietta (614-373-7113), and Pataskala (614-927-2978), or contact the USDA Rural Development office listed below for further information:

USDA Rural Development
Federal Building, Room 740
200 North High Street
Columbus, Ohio 43215
(614) 469-5400

SOURCE: Appalachian Regional Commission (ARC)
Administered by the Governor's Office of Appalachia

PURPOSE: Promotion of economic development in the 28 counties of the Appalachian region of Ohio is the major goal of the ARC. ARC also aims to develop and improve the quality and quantity of social services available and to maintain and improve the environmental quality of the area. Funds can also be used to assist in the development of infrastructure facilities.

ARC is able to fund wastewater treatment facilities given that the project complies with the above stated goals. The funding is in the form of a supplemental grant only; ARC will never be the lead agency.

ARC will fund a project to a maximum of 80% of the total cost of the project. The 80% refers not only to the grants obtained from ARC, but to the total grant amount received from other government agencies.

ELIGIBILITY: Any local entity within the 28 Appalachian counties of Ohio is eligible to apply for funding. Multi-jurisdictional entities such as county or regional projects are also eligible.

FUNDING: The funding consists of supplemental grants available from the federally-funded Appalachian Regional Commission.

PRIORITY: Priority for funding is determined by a combination of factors. Foremost, is the amount of economic development which will result from the project, namely growth in jobs and investment.

In addition, projects which are ready to begin will receive a higher priority.

APPLICATION: Applications should be submitted as soon as possible since approximately 1 - 1 ½ years are required for funding decisions.

The 28 Ohio Appalachian counties are divided into three jurisdictions, to be administered by local government units. These three jurisdictions are referred to as Local Development Districts (LDD).

Applications are categorized at the local level. Pre-applications should be sent to the local development district for local review. The higher priority projects are then sent to the state ARC office where a composite of all LDD submittals, plus state initiated projects are then sent to the Federal ARC for funding approval.

General information may be obtained for all 28 counties by contacting:

Director
Governor's Office of Appalachia
Ohio Department of Development
State Office Tower
P.O. Box 1001
Columbus, Ohio 43266-0101
1-800-848-1300

Below is a listing of Ohio Appalachian counties and the LDD into which they are divided. Applications and further information may be obtained by contacting the LDD in your district:

- (1) Ohio Mid-Eastern Governments Association (OMEGA)
326 Highland Avenue
P.O. Box 130
Cambridge, Ohio 43725
(614) 439-4471
This district covers the following counties: Belmont, Carroll, Columbiana, Coshocton, Guernsey, Harrison, Holmes, Jefferson, Muskingum, and Tuscarawas.

- (2) Buckeye Hills-Hocking Valley Regional Development District (BH-HVRDD)
Route 1, Box 299D
Marietta, Ohio 45750
(614) 374-9436
This district covers the following counties: Athens, Hocking, Meigs, Monroe, Morgan, Noble, Perry, and Washington.

- (3) Ohio Valley Regional Development Commission (OVRDC)
740 Second Street
Portsmouth, Ohio 45662-4088
Fax No. (614) 353-6353
(614) 354-7795
(800) 223-7491
This district covers the following counties: Adams, Brown, Clermont, Gallia, Highland, Jackson, Lawrence, Pike, Ross, Scioto, and Vinton.

- SOURCE:** Department of Housing and Urban Development (HUD)
- PURPOSE:** The Housing and Community Development Act was enacted to aid housing and community development activities principally for low and moderate income persons. In addition, the goals of the Act are designed to aid in the correction of deficiencies that pose a serious and immediate threat to public health or safety where other financial resources are not available to meet such needs, and to aid in the prevention or elimination of slums and blight.
- Community Development Block Grant funds may be used to construct a wastewater treatment system if it is determined to meet one of the three broad national objectives mentioned above.
- ELIGIBILITY:** Any general local government unit that does not receive funds as an entitlement community is eligible to apply for grant funds through the State of Ohio's Office of Housing and Community Partnerships (OHCP).
- FUNDING:** Grants are made directly to entitlement communities through HUD. The Small Cities Block Grant Program administrated by the OHCP includes a non-competitive (formula) program and several competitive programs, including a water and sewer competitive program introduced in FY'93.
- PRIORITY:** In the State of Ohio's Small Cities Block Grant Program, priority for funding of competitive programs is determined by the rating of applications or pre-applications according to rating systems established by OHCP. Single purpose programs refer to those involved with funding for one type of activity, (i.e., economic development) comprehensive programs deal with funding for development plans for an area, (i.e., Comprehensive Housing/Neighborhood Revitalization Competitive Program or Downtown Revitalization Competitive Program, Water and Sewer Competitive Program).
- When a pre-application process is used by OHCP, after the initial ranking is completed, full applications will be requested in accordance with available funding.
- APPLICATION:** Information and applications for participation in the Small Cities Block Grant Program may be obtained by contacting:

Office of Housing and Community Partnerships
77 S. High Street
P.O. Box 1001
Columbus, Ohio 43266-0101
1-800-848-1300, Ext. 6-2285

SOURCE: Industrial Plant Inducement Account (Program 412)
Ohio Department of Development
State of Ohio

PURPOSE: To assist Ohio counties, municipalities, township, or any other political subdivision of the state for the purpose of expediting the creation, location, or expansion of industrial, distribution, commercial, or research facilities in the state. Industrial Inducement Funds can be used for the construction or installation of streets, sidewalks, storm sewers, sanitary sewers and sewage disposal works, water lines, and water supply facilities. A plan for the use of money loaned must be judged to be economically sound and must benefit the people of the state by increasing opportunities for employment and strengthening the economy.

ELIGIBILITY: Any local government, political subdivision, or business entity may apply for funding.

FUNDING: Both loans and grants are available through the Industrial Inducement Fund. However, the vast majority of funding is in the form of grants. The Director of Development, with State Controlling Board approval, may lend or grant funds to political subdivisions or business entities. There is no maximum grant amount an entity may request. Up to 50% of the project may be funded from this program. Most Industrial Inducement grants are matched by other state, federal, and local funding sources, as well as business entities.

APPLICATION: Information concerning this program may be obtained by contacting:

Business Development Division
Ohio Department of Development
77 South High Street, 28th Floor
Box 1001
Columbus, Ohio 43266-0101
1-800-848-1300

SOURCE: Water Pollution Control Loan Fund
Ohio Environmental Protection Agency
and
Ohio Water Development Authority

PURPOSE: The Water Pollution Control Loan Fund is used to realize improved water quality within the State. With the passage of the Water Quality Act of 1987 (P.L. 100-4), Congress established the State Revolving Fund (SRF) program to provide a permanent replacement for the Construction Grant program, for which federal funding ended after FY 1990. The federal government provides a series of capitalization grants to the states through the year 2000 at \$2.5 billion/year. These grants, along with the required state matches, will be used by the states to provide small community assistance for planning and design, to establish revolving loan funds designed to operate in perpetuity to provide low interest loans, and other forms of financial assistance for water pollution control projects. This is a cooperative inter-agency program administered by the Ohio Water Development Authority. Besides financing municipal wastewater treatment construction, the fund can also be used to finance non-point source pollution control projects, which include items such as agricultural run-off controls, storm water treatment projects, and strip mine reclamation.

Certain federal requirements must be met in the loan program; beyond those requirements, the loan program is essentially a state program. In Ohio, the SRF is called the Water Pollution Control Loan Fund (WPCLF).

ELIGIBILITY: Initially, eligibility for funding from the WPCLF is directed toward municipal dischargers who are not in compliance with their NPDES permit limits and towards refinancing construction costs for smaller communities of 25,000 or less who undertook construction before July 1, 1988 to meet the National Municipal Policy goals for NPDES permit compliance. However, Ohio EPA recognizes the importance of funding a variety of different approaches to water pollution control, including non-point source pollution controls, and fully intends to fund such projects after the initial priorities of the program have been met. Eligible projects include: storm water and combined sewer overflow (CSO) controls; implementation of designated watershed management plans; Lakewide Management Plans and Remedial Action Plans under the Great Lakes Initiative, Lake Protection projects under the Clean Lakes Program; Animal Waste Management Facilities; subsurface sewage disposal (septic tank) management organization; land, easements, and rights-of-way for POTW construction; state technical assistance for facilities planning and design to small communities (population <10,000); unsewered area improvements; nonpoint source pollution control projects, wastewater treatment plants not meeting effluent limits; other existing wastewater treatment needs; future wastewater treatment needs; and extension or replacement of sewers.

FUNDING: Funding of projects in the WPCLF program in any given federal fiscal year is based on the availability of funds, priority sequence of the projects, and readiness to proceed on the part of the applicants implementing the projects. Readiness to proceed is defined as the ability of applicants to meet the program deadlines for submission of facilities plans, detailed plans and specifications, loan application, and the ability of applicants to initiate construction no later than six months after the end of the fiscal year from which they will receive funding.

PRIORITY:

The WPCLF ranking system has ten different project categories, reflecting the different project types which can be funded in the loan program. The priority sequence of the project categories is based on their relative importance in terms of water quality and public health benefits. It is consistent with the intent of the Water Quality Act of 1987, as expressed in the first use requirement, which stipulates that only non-complying National Municipal Policy (NMP) projects be funded until all NMP communities are either; a) in compliance, or b) on an enforceable schedule, or c) have an enforcement action filed, or d) have a funding commitment during or prior to the first year covered by the Intended Use Plan (IUP).

Projects are initially identified as to which project category they belong, and then they are ranked within their project category using the ranking factors specific to each category. All projects are ranked on a single project priority list based both on the priority ranking of their category and also on their ranking within their particular category. For example, if each project category contained 10 projects, then on the priority list non-complying NMP projects would have priority numbers of 1-10, other non-compliance projects would be ranked 11-20, etc.

Communities with projects that are not ranked on the priority list may nominate themselves for placement on the list by obtaining a nomination application from the Ohio EPA.

Projects are ranked within each category based on water quality-related factors, and for the nine categories which contain municipal wastewater treatment projects, also on the basis of economic need. Giving consideration to economic need recognizes the role it plays in the ability of communities to attain permit compliance in a timely manner. In that sense, including the economic need factor in the ranking system for municipal wastewater treatment projects supports the over-all WPCLF goal of enhancing water quality.

The ten project categories, listed according to their priority sequence, are shown below:

1. Non-complying Municipal Dischargers (3 categories prioritized in this item)
 - a) National Municipal Policy (NMP) projects
 - b) Other publicly operated treatment works (POTW) non-compliance projects.
 - c) Unfunded segments of previously non-complying NMP construction grants projects.
2. Refinancing A - Refinancing for NMP communities with an incorporated population of 25,000 or less or, if unincorporated, with a service area population of 25,000 or less, who initiated construction of the project prior to July 1, 1988.
3. Combined Sewer Overflow Projects
4. Unsewered Area Projects
5. Non-point Source Pollution Control Projects

6. Refinancing B - Other Refinancing Projects
7. Existing Needs Projects
8. Future Needs Projects

Communities are assigned either a 4.04% or 2.2% interest rate, based on a system which considers the size of the communities, and also their median household incomes and the percentages of their populations below poverty level. All median household income data used is from the 1990 U.S. Census data. Short-term construction loans (up to 5 years) are available at 3.2%: planning loans (up to 5 years) at 3.2%; and design loans (up to 5 years) at 3.2%.

APPLICATION: Any questions concerning application or further information should be directed to:

Ohio EPA
Assistance Administration Section
1800 Watermark Drive
Columbus, Ohio 43266-0149
(614) 644-2832

- SOURCE:** Ohio Public Works Commission
(Administrative Agency for State Issue 2 Monies)
- PURPOSE:** The Ohio Public Works Commission (OPWC) was created in 1988, and renewed by the voters in 1995, to deliver the State Issue 2 Local Public Infrastructure Financial Program. This program assists municipal corporations, counties, townships, and regional water and/or sewer districts in keeping their roads, bridges, waste water treatment systems, water supply systems, solid waste disposal facilities, and storm water and sanitary collection, storage, and treatment facilities in vital working order and of adequate service capacity.
- ELIGIBILITY:** Only those infrastructure improvements listed above are eligible for funding. Local subdivision projects are recommended for funding through 19 public works districts that cover the state. In each district, a review is completed of each proposed project by the district committee. The districts make recommendations to the OPWC which has final approval authority.
- FUNDING:** Annually, OPWC awards approximately \$120 million as grants, loans, and other forms of assistance toward completing a project's construction funding needs. A discretionary program with an annual budget of \$12 million is set aside for small government use only. Emergency funds are also available in a limited amount annually.
- PRIORITY:** No particular type of infrastructure project has priority over another. Those projects of most critical need within a district should receive district recommendation for funding.
- APPLICATION:** Ohio Public Works Commission
65 East State Street, Suite 312
Columbus, Ohio 43266
(614) 466-0880

- SOURCE:** NatureWorks Program and the Ohio Parks and Natural Resources Fund 1) by the Ohio Department of Natural Resources
- PURPOSE:** The Ohio Parks and Natural Resources Fund provides up to 75 percent reimbursement assistance to eligible political subdivisions (townships, joint recreation districts, municipalities, park districts, counties, and conservancy districts), for acquiring and/or developing public recreation areas.
- ELIGIBILITY:** Only local governments (for example: cities, villages, townships, joint recreation districts, park districts, counties, and conservancy districts) are eligible to apply for up to 75 percent reimbursement under the NatureWorks program. The applicant must be able to finance the project and maintain it as a public recreation facility. Recognizing that other federal/state funding programs may be matchable with the NatureWorks program, the Ohio Department of Natural Resources acknowledges the need for involvement of local funds to assure a commitment to the proper operation and maintenance of the project. Therefore, the Ohio Department of Natural Resources requires that a minimum of twenty percent (20%) of the project costs be local funds.
- FUNDING:** The NatureWorks program is an up-to-75 percent reimbursement program. The local government must have adequate funds to finance the project. Payments to participants will be made on a reimbursement basis.
- PRIORITY:** Priority ratings for each local project application will be based on the following criteria:
- (1) Projects that fall within the county's allocation level
 - (2) Projects that give evidence of meeting an immediate and serious recreation need.
 - (3) Projects that provide quality recreation for Ohio's citizens.
 - (4) Projects that (a) are normally beyond the financial capabilities of the political subdivision, and (b) are most applicable to the intended purposes of the state funds.
 - (5) Projects that are in balance with existing and probable future recreation developments by private, state, and other political subdivisions within the area to be served.

APPLICATION: For application and further information contact:

The Ohio Department of Natural Resources
 Fountain Square, Building C4
 Columbus, Ohio 43224

- SOURCE:** Transportation Enhancement Program by the Ohio Department Of Transportation (ODOT).
- PURPOSE:** The Transportation Enhancement Program provides a means of stimulating additional activities that go beyond the customary cultural or environmental mitigation required when developing a transportation improvement project. The intent of the program is to more creatively integrate transportation facilities into their surrounding communities and the natural environment.
- ELIGIBILITY:** Eligible applicants are limited to political subdivisions of the State of Ohio, park districts, and other agencies of state government, including ODOT. Any citizen's group or other private organization may sponsor a project by coordinating with and making application through the eligible entity having jurisdiction over the transportation facilities involved.
- APPLICATION:** For further information regarding the Transportation Enhancement Program criteria in general, contact:

Karen K. Young
Transportation Enhancement Program Coordinator
Ohio Department Of Transportation, Room 608
25 South Front Street
Columbus, Ohio 43215
(614) 644-7584