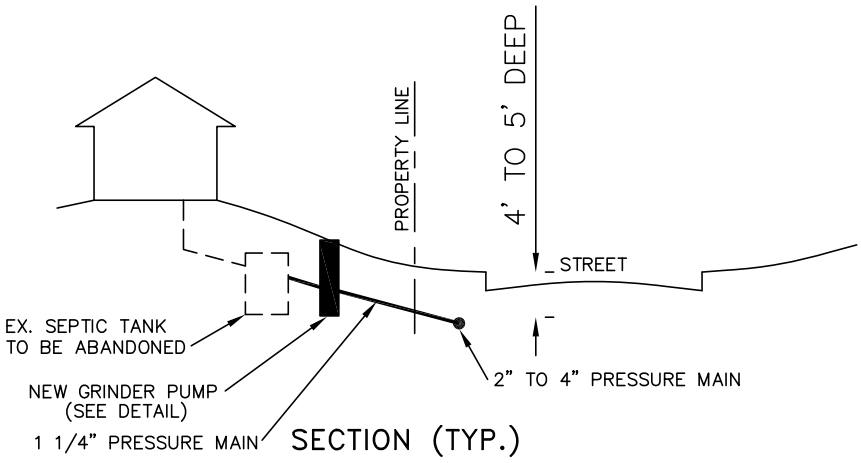
IBI GROUP
635 Brooksedge Boulevard
Westerville OH 43081 USA
tel 614 818 4900 fax 614 818 4901
ibigroup.com

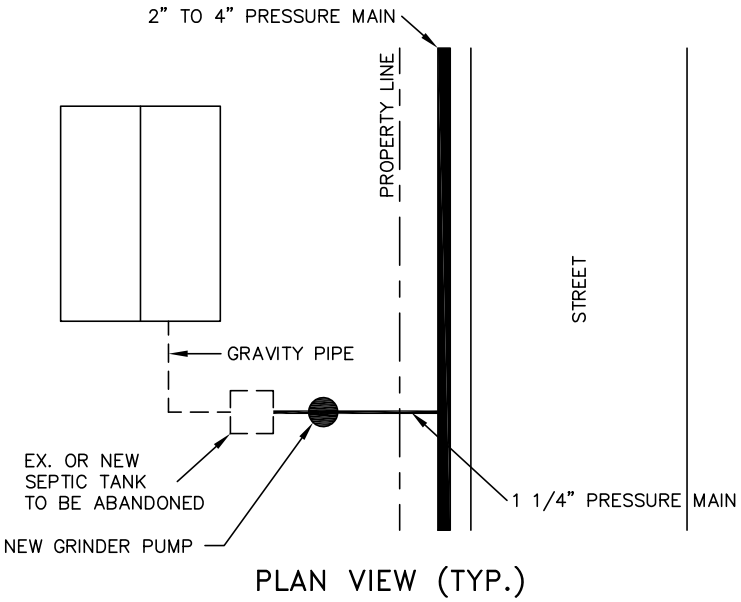
GLENWOOD AREA

MVRPC UNSEWERED COMMUNITIES

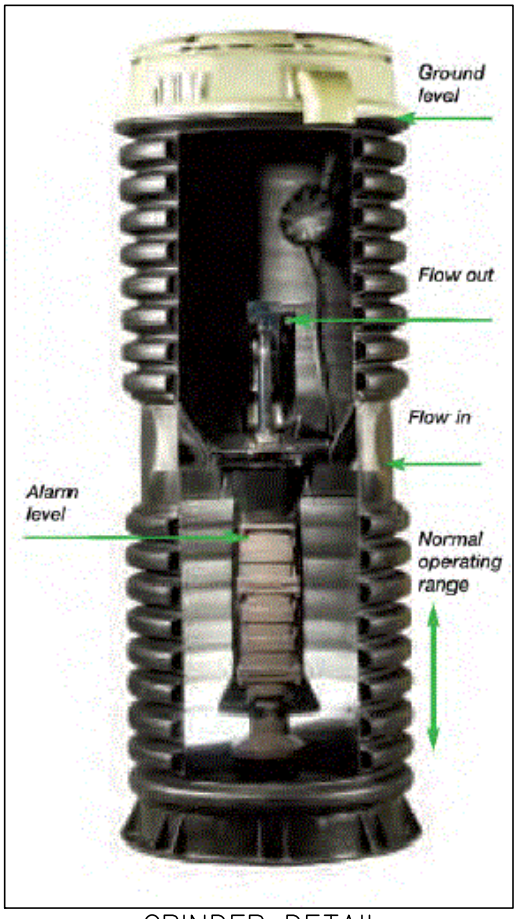
FIGURE 5-4: CONVENTIONAL GRINDER SEWER CONNECTION



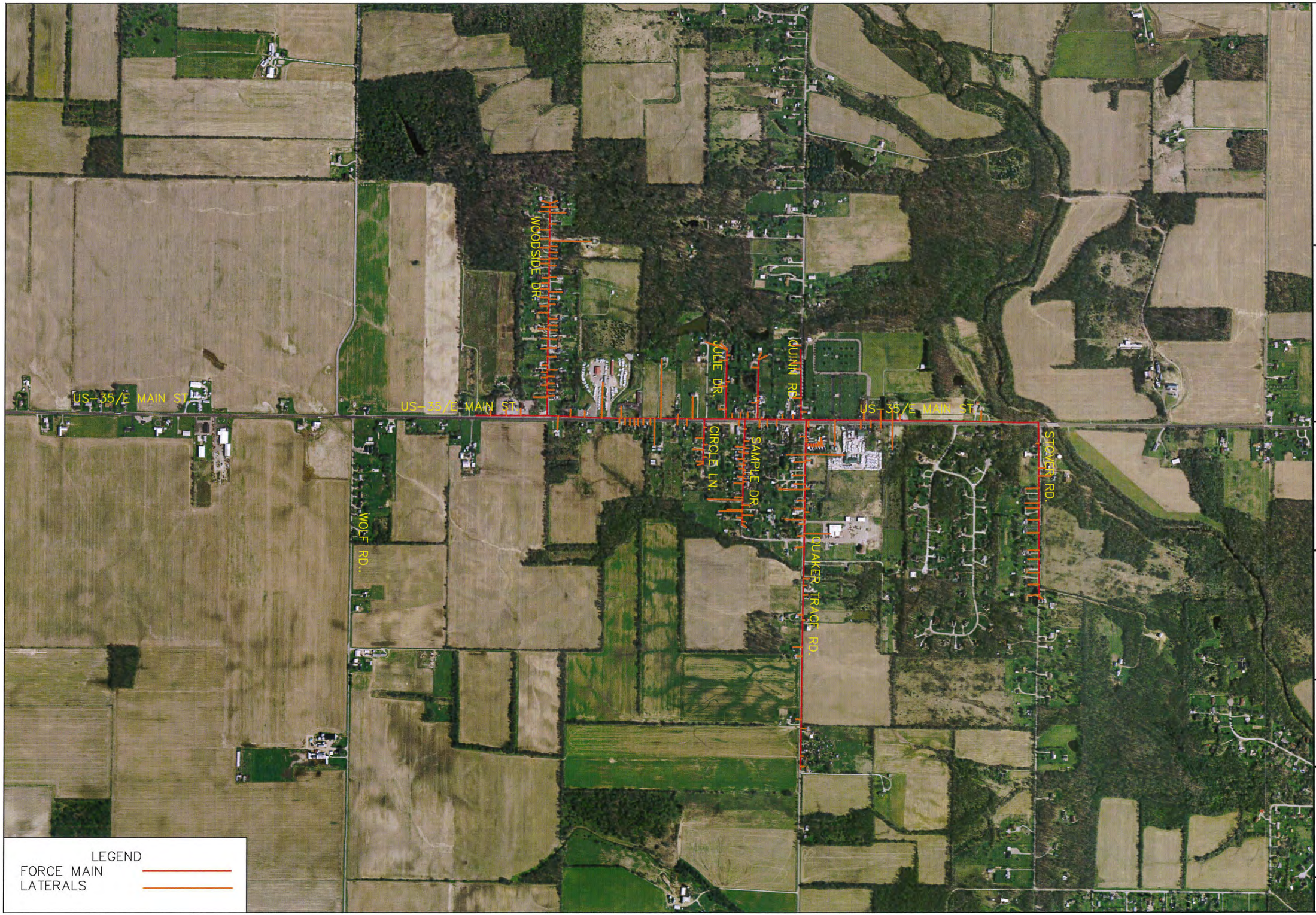
SECTION (TYP.)



PLAN VIEW (TYP.)



GRINDER DETAIL



GRAPHIC SCALE

0 500 1000

(IN FEET)

1 inch = 1000 ft.

IBI

IBI GROUP
635 Brooksedge Boulevard
Westerville OH 43081 USA
tel 614 818 4900 fax 614 818 4901
ibigroup.com

REVISION:

SUBMISSION:

GLENWOOD AREA

MVRPC UNSEWERED COMMUNITIES STUDY

SECTION NO.

SHEET TITLE:

STEP/GRINDER SEWER SYSTEM LAYOUT

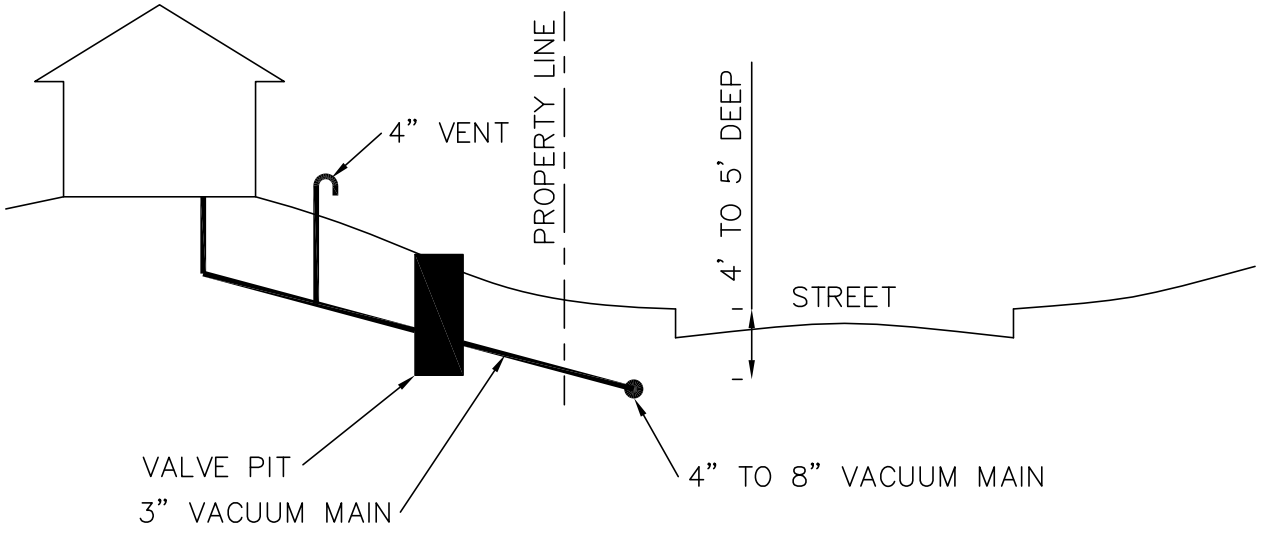
FIGURE 5-5

IBI GROUP
635 Brooksedge Boulevard
Westerville OH 43081 USA
tel 614 818 4900 fax 614 818 4901
ibigroup.com

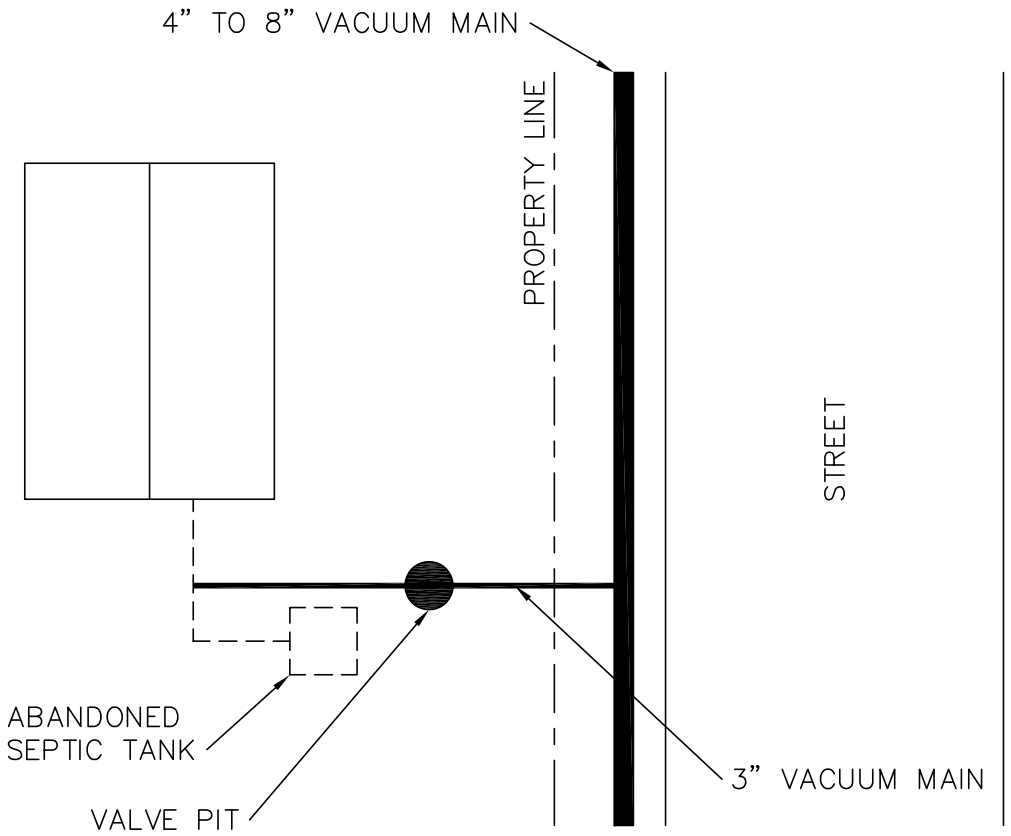
GLENWOOD AREA

MVRPC UNSEWERED COMMUNITIES

FIGURE 5-6: CONVENTIONAL VACUUM SEWER SYSTEM CONNECTION



SECTION (TYP.)



PLAN VIEW (TYP.)

GRAPHIC SCALE

0 500 1000

(IN FEET)

1 inch = 1000 ft.

IBI

IBI GROUP
635 Brooksedge Boulevard
Westerville OH 43081 USA
tel 614 818 4900 fax 614 818 4901
ibigroup.com

REVISION:

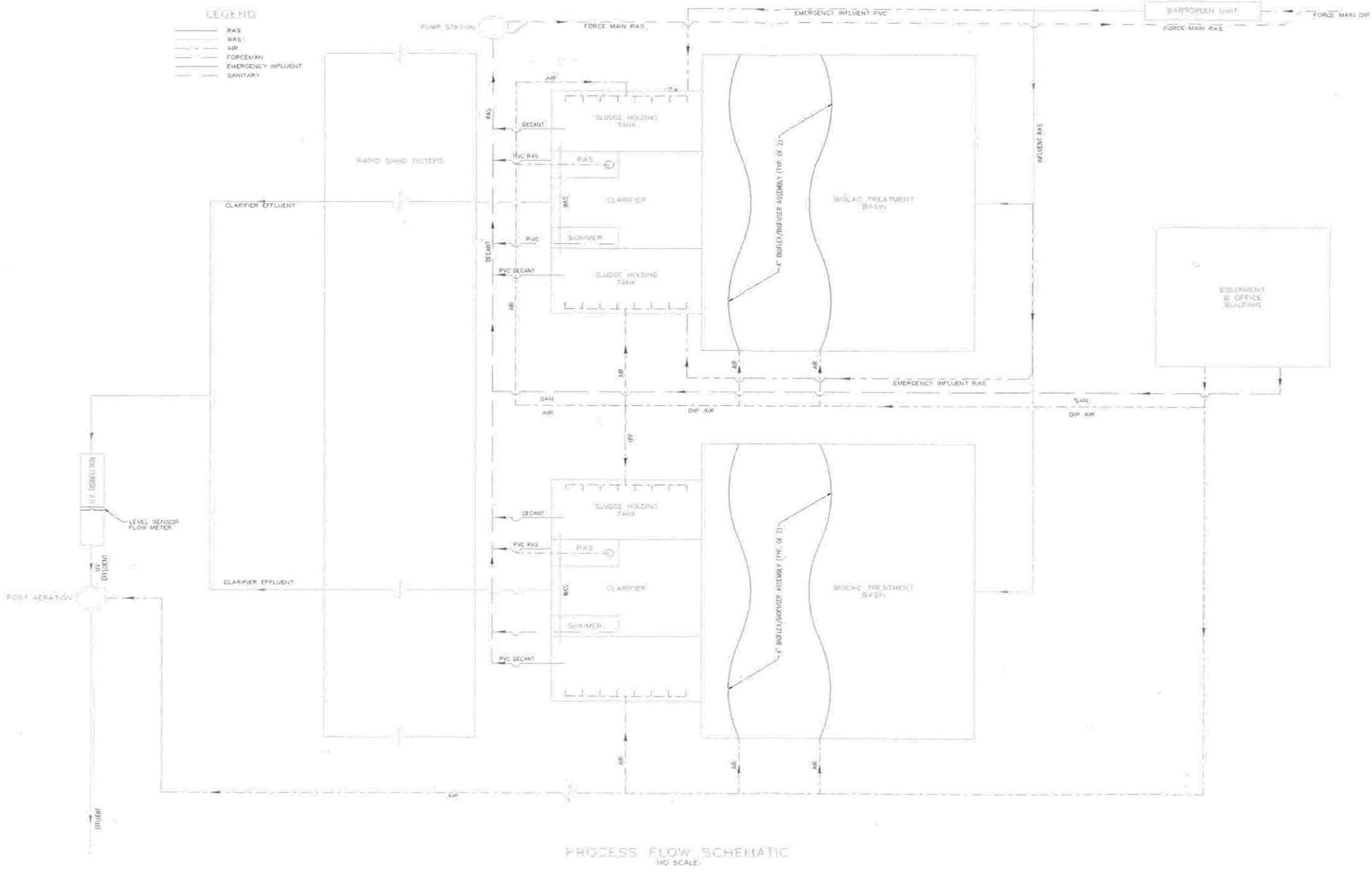
SUBMISSION:

GLENWOOD AREA
MVRPC
UNSEWERED
COMMUNITIES

SHEET TITLE:

VACUUM SEWER
LAYOUT

FIGURE 5-7



PROCESS FLOW SCHEMATIC
NO SCALE

IBI

IBI GROUP
635 Brooksedge Boulevard
Westerville OH 43081 USA
tel 614 818 4900 fax 614 818 4901
ibigroup.com

REVISION:

SUBMISSION:

GLENWOOD AREA
MVRPC
UNSEWERED
COMMUNITIES

SHEET TITLE:

EXTENDED
AERATION
TREATMENT
PROCESS

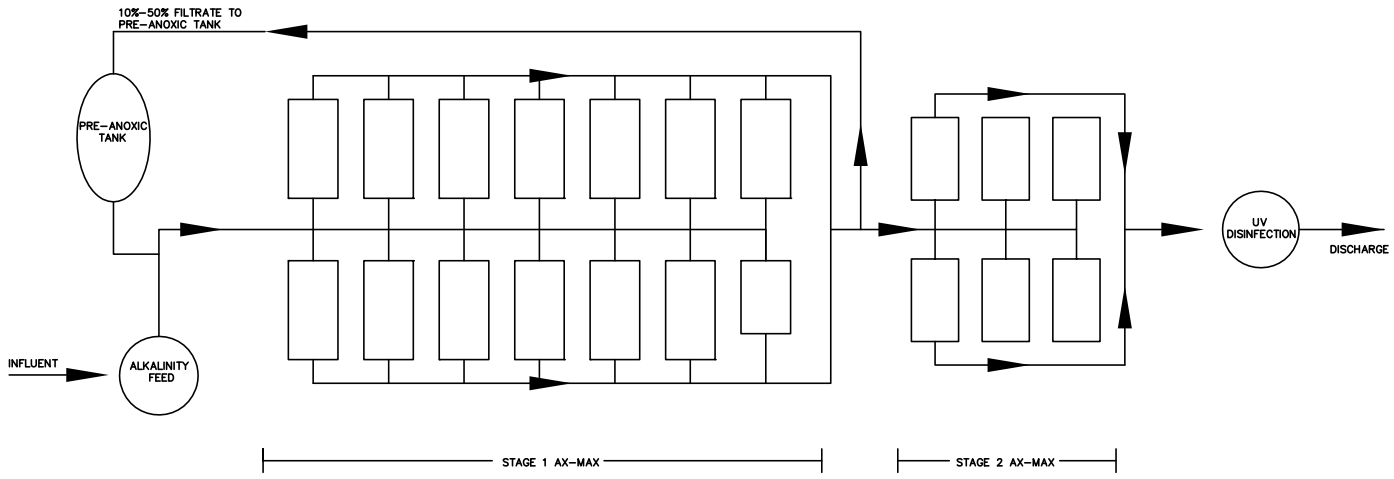
FIGURE 5-8

IBI GROUP
635 Brooksedge Boulevard
Westerville OH 43081 USA
tel 614 818 4900 fax 614 818 4901
ibigroup.com

GLENWOOD AREA

MVRPC UNSEWERED COMMUNITIES

FIGURE 5-9: PACKED BED MEDIA TREATMENT SYSTEM LAYOUT



GRAPHIC SCALE

0 700 1400

(IN FEET)

1 inch = 1400 ft.

IBI

IBI GROUP
635 Brooksedge Boulevard
Westerville OH 43081 USA
tel 614 818 4900 fax 614 818 4901
ibigroup.com

REVISION:

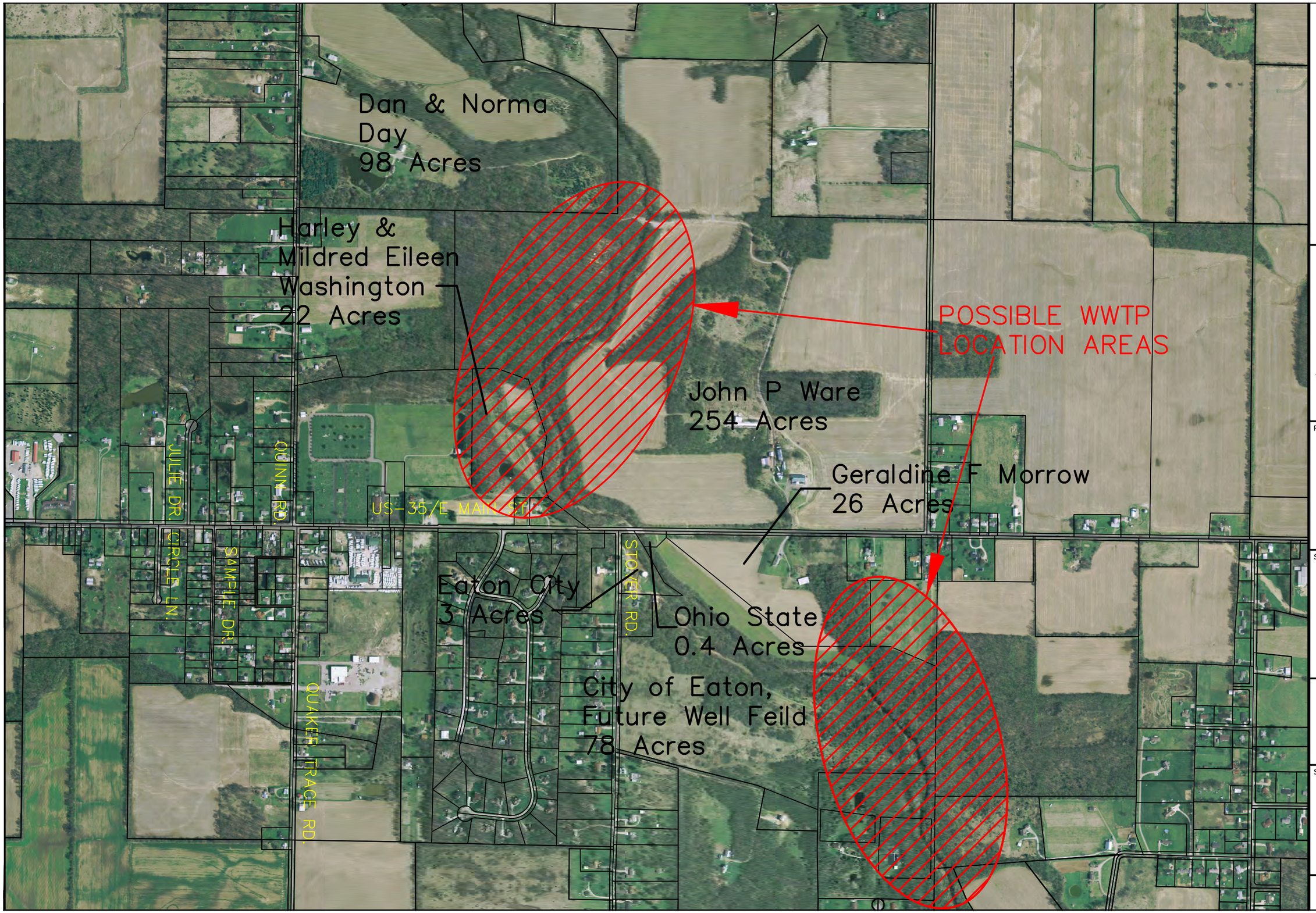
SUBMISSION:

GLENWOOD AREA
MVRPC
UNSEWERED
COMMUNITIES

SHEET TITLE:

FORCE MAIN TO
WEST ALEXANDRIA

FIGURE 5-10



GRAPHIC SCALE

0 400 800

(IN FEET)

1 inch = 800 ft.

IBI GROUP
635 Brooksedge Boulevard
Westerville OH 43081 USA
tel 614 818 4900 fax 614 818 4901
ibigroup.com

REVISION:

SUBMISSION:

GLENWOOD AREA
MVRPC
UNSEWERED
COMMUNITIES

SHEET TITLE:

POSSIBLE WWTP
LOCATION

FIGURE 5-11

Chapter 6 – Other Cost

The alternatives presented in this study are evaluated economically by comparing their present worth. The present worth of an alternative is the amount of money invested at 6.5 percent, which would provide the funds needed for all expenses during the life of the project (including O,M&R, but not including inflation). This provides a method of comparing the real costs of each system in its entirety, as opposed to the comparison of construction costs only. The procedures used in developing present worth are as follows:

Contingency

Contingency costs are capital costs incurred to purchase and install each component of a collection alternative. These costs are estimates for a future construction date and include a 10 percent design contingency. Contingency costs typically costs for the following:

- Sewers, force mains, and pump stations
- Fittings and valves
- Earthwork
- Pavement replacement
- Grading and seeding
- Boring and jacking under railroads, highways, and streams
- Granular backfill Bid margin
- Design contingency
- Appurtenances

Contingency cost estimates for the various alternatives are included in the individual estimates.

Non - Construction Costs

Non-construction costs are calculated at 20 percent of the sum of the construction cost and contingency cost. They include the following:

- Engineering, legal, and administrative cost
- Easements
- Interest during construction
- Initial operation
- Construction inspection and administration
- Financing/Funding Administration

Operation, Maintenance, and Repair

O,M&R costs are those costs associated with the daily or periodic inspection/ upkeep of the proposed collection system. They include, but are not limited to, the following:

- Salary – Labor costs are based on the number of operating personnel required including benefits.
- Pump Stations - O,M&R costs including inspections, repairs to impellers and bearings, etc.
- Collection System – Maintenance costs are historically calculated at a unit cost per mile of collection pipe. Unit costs vary according to type of system.
- Electrical – Electrical costs associated with pump stations, effluent pumps, and vacuum stations.
- Office & Overhead – Costs associated with the monthly billing operations such as paper, stamps, computers, and personnel.

The O,M&R costs associated with the gravity, STEP, vacuum, and grinder collection systems are as follows:

Table 6-1: Collection System O,M&R Costs

Gravity Collection System

		BASE	Alt. Area 1	Alt. Area 2	Alt. Area 3	Alt. Area 4
ITEM	**DESCRIPTION**	**COST**	**COST**	**COST**	**COST**	**COST**
1	PUMP STATION POWER	$4,000	$2,000	$2,000	$2,000	$2,000
2	COLLECTION SYSTEM MAINTENANCE	$4,000	$1,000	$1,000	$1,000	$1,000
3	EQUIPMENT REPLACEMENT	$6,000	$1,500	$1,500	$1,500	$1,500
TOTAL		**$14,000**	**$4,500**	**$4,500**	**$4,500**	**$4,500**

Septic Tank Effluent Pump Collection System

		BASE	Alt. Area 1	Alt. Area 2	Alt. Area 3	Alt. Area 4
ITEM	**DESCRIPTION**	**COST**	**COST**	**COST**	**COST**	**COST**
1	PRIMARY TANK PUMP OUT (based on 7 year frequency @ $300 per tank)	$8,500	$1,300	$1,300	$800	$2,000
2	PRO-ACTIVE PREVENTITIVE MAINTENANCE (pump and controls inspection annually)	$5,000	$2,000	$2,000	$1,500	$2,500
3	REACTIVE MAINTENANCE (repairs to pump components)	$3,000	$1,500	$1,500	$1,000	$2,000
4	EQUIPMENT REPAIR AND REPLACEMENT (pump replacement frequency 10 years)	$7,000	$3,000	$3,000	$2,500	$3,500
TOTAL		**$23,500**	**$7,800**	**$7,800**	**$5,800**	**$10,000**

Grinder Pump Collection System

ITEM	DESCRIPTION	BASE COST	Alt. Area 1 COST	Alt. Area 2 COST	Alt. Area 3 COST	Alt. Area 4 COST
1	PRO-ACTIVE PREVENTITIVE MAINTENANCE (pump and controls inspection annually)	$5,000	$2,500	$2,500	$2,000	$3,000
2	REACTIVE MAINTENANCE (repairs to pump components)	$10,000	$4,000	$4,000	$3,000	$5,000
3	EQUIPMENT REPAIR AND REPLACEMENT (pump replacement frequency 10 years)	$16,000	$7,000	$7,000	$6,000	$8,000
TOTAL		**$31,000**	**$13,500**	**$13,500**	**$11,000**	**$16,000**

Vacuum Collection System

ITEM	DESCRIPTION	BASE COST	Alt. Area 1 COST	Alt. Area 2 COST	Alt. Area 3 COST	Alt. Area 4 COST
1	VACUUM STATION POWER	$14,000	$6,000	$6,000	$5,000	$7,000
2	PRO-ACTIVE PREVENTITIVE MAINTENANCE	$6,000	$3,000	$3,000	$2,500	$4,000
3	REACTIVE MAINTENANCE	$3,000	$1,500	$1,500	$1,000	$2,000
4	EQUIPMENT REPAIR AND REPLACEMENT	$13,000	$6,000	$6,000	$5,000	$6,500
TOTAL		**$36,000**	**$16,500**	**$16,500**	**$13,500**	**$19,500**

The O,M&R costs associated with the treatment systems are as follows:

Table 6-2: Treatment Systems O,M&R Costs

Extended Aeration Treatment

ITEM	DESCRIPTION	BASE COST	ALL AREAS COST
1	LABOR & ADMINISTRATION	$30,000	$30,000
2	CHEMICALS	$1,200	$1,500
3	POWER	$3,000	$3,500
4	LABORATORY	$1,500	$2,000
5	SLUDGE HANDLING	$2,500	$3,000
6	EQUIPMENT REPAIR AND REPLACEMENT	$5,000	$7,000
TOTAL		**$43,200**	**$60,000**

Lagoon Treatment System

ITEM	DESCRIPTION	BASE COST	ALL AREAS COST
1	LABOR & ADMINISTRATION	$20,000	$20,000
2	CHEMICALS	$2,000	$2,500
3	POWER	$3,500	$4,000
4	LABORATORY	$3,500	$4,000
5	EQUIPMENT REPAIR AND REPLACEMENT	$4,000	$5,000
TOTAL		**$33,000**	**$35,500**

Packed Bed Media Treatment System

ITEM	DESCRIPTION	BASE COST	ALL AREAS COST
1	LABOR & ADMINISTRATION	$20,000	$20,000
2	CHEMICALS	$1,500	$2,000
3	POWER	$2,500	$3,000
4	LABORATORY	$1,500	$2,000
5	EQUIPMENT REPAIR AND REPLACEMENT	$5,000	$6,000
TOTAL		**$30,500**	**$33,000**

Transport to West Alexandria

ITEM	DESCRIPTION	BASE COST	ALL AREAS COST
1	FORCEMAIN MAINTENANCE	$1,000	$1,000
2	ODOR CONTROL	$1,000	$1,000
3	TREATMENT CHARGES (unknown – assume $5.00/1,000 gal)	$60,000	$100,000
TOTAL		**$62,000**	**$102,000**

Summary

The previously identified sewer system alternatives have been analyzed for feasibility based on existing and future projected demands, regulatory considerations, estimated costs, and with regional service options based on user rate analysis. The following section will identify the recommended alternative based on the factors listed above.

The estimated costs for each collection and treatment alternative have been developed and are presented in the Tables below. These tables include the total project cost, estimated annual O,M&R costs, and present worth cost.

A 20-year present value analysis was used to compare alternatives against each other. Present value, also known as present worth or present discounted value, is the value on a given date (i.e. the present) for a future payment or series of future payments, discounted to reflect the time value of money. Present value calculations are widely used in engineering economics to provide a means to compare costs at different times on a meaningful "like to like" basis.

Criteria and factors used in the present value analysis include the following:

Design Life	20 years
Replacement Period	10 years
Discount Rate	6.5 percent
O,M&R Present Worth Factor	11.0185

The following pages show each possible collection and treatment option for the Glenwood base area and the base area with the alternate areas. The tables provide the present worth for each of the scenarios.

The first row in the first column in a table is the collection system alternative, and the treatment alternative is listed directly below. The project cost of each of these is listed in the project cost column. The O,M&R for each option is listed in the O,M&R column. The present worth for each of the options is calculated by multiplying the O,M&R cost by the present worth factor (11.0185) and adding the project cost. The bold number in the table represents the total project present worth cost for that collection and treatment combination.

Gravity Sewer System

	BASE			BASE + ALT. AREAS		
	Project Cost	O&M	Present Worth	Project Cost	O&M	Present Worth
Gravity	$3,382,381	$14,000	$3,536,640	$7,316,489	$32,000	$7,669,081
Extended Aeration	$1,493,184	$43,200	$1,969,183	$1,866,480	$60,000	$2,527,590
Total	$4,875,565	$57,200	**$5,505,823**	$9,182,969	$92,000	**$10,196,671**

	BASE			BASE + ALT. AREAS		
	Project Cost	O&M	Present Worth	Project Cost	O&M	Present Worth
Gravity	$3,382,381	$14,000	$3,536,640	$7,316,489	$32,000	$7,669,081
Lagoon	$1,656,864	$33,000	$2,020,475	$2,071,080	$35,500	$2,462,237
Total	$5,039,245	$47,000	**$5,557,115**	$9,387,569	$67,500	**$10,131,318**

	BASE			BASE + ALT. AREAS		
	Project Cost	O&M	Present Worth	Project Cost	O&M	Present Worth
Gravity	$3,382,381	$14,000	$3,536,640	$7,316,489	$32,000	$7,669,081
Pump to West Alexandria	$444,115	$62,000	$1,127,262	$444,118	$102,000	$1,568,005
Total	$3,826,496	$76,000	**$4,663,902**	$7,760,607	$134,000	**$9,237,086**

STEP Sewer System

	BASE			BASE + ALT. AREAS		
	Project Cost	O&M	Present Worth	Project Cost	O&M	Present Worth
STEP Sewer	$2,744,508	$23,500	$3,003,443	$4,779,503	$54,900	$5,384,419
Packed Bed Media	$2,016,115	$30,500	$2,352,179	$2,520,144	$33,000	$2,883,755
Total	$4,760,623	$54,000	**$5,355,622**	$7,299,647	$87,900	**$8,268,173**

Grinder Pump Sewer System

	BASE			BASE + ALT. AREAS		
	Project Cost	O&M	Present Worth	Project Cost	O&M	Present Worth
Grinder Sewer	$2,820,540	$31,000	$3,162,114	$4,907,147	$75,100	$5,734,636
Extended Aeration	$1,493,184	$43,200	$1,969,183	$1,866,480	$60,000	$2,527,590
Total	$4,313,724	$74,200	**$5,131,297**	$6,773,627	$135,100	**$8,262,226**

	BASE			BASE + ALT. AREAS		
	Project Cost	O&M	Present Worth	Project Cost	O&M	Present Worth
Grinder Sewer	$2,820,540	$31,000	$3,162,114	$4,907,147	$75,100	$5,734,636
Lagoon	$1,656,864	$33,000	$2,020,475	$2,071,080	$35,500	$2,462,237
Total	$4,477,404	$64,000	**$5,182,588**	$6,978,227	$110,600	**$8,196,873**

	BASE			BASE + ALT. AREAS		
	Project Cost	O&M	Present Worth	Project Cost	O&M	Present Worth
Grinder Sewer	$2,820,540	$31,000	$3,162,114	$4,907,147	$75,100	$5,734,636
Pump to West Alexandria	$444,118	$62,000	$1,127,265	$444,118	$102,000	$1,568,005
Total	$3,264,658	$93,000	**$4,289,379**	$5,351,265	$177,100	**$7,302,641**

Vacuum Sewer System

	BASE			BASE + ALT. AREAS		
	Project Cost	O&M	Present Worth	Project Cost	O&M	Present Worth
Vacuum Sewer	$3,031,879	$36,000	$3,428,545	$7,707,032	$102,000	$8,830,919
Extended Aeration	$1,493,184	$43,200	$1,969,183	$1,866,480	$60,000	$2,527,590
Total	$4,525,063	$79,200	**$5,397,728**	$9,573,512	$162,000	**$11,358,509**

	BASE			BASE + ALT. AREAS		
	Project Cost	O&M	Present Worth	Project Cost	O&M	Present Worth
Vacuum Sewer	$3,031,879	$36,000	$3,428,545	$7,707,032	$102,000	$8,830,919
Lagoon	$1,656,864	$33,000	$2,020,475	$2,071,080	$35,500	$2,462,237
Total	$4,688,743	$69,000	**$5,449,020**	$9,778,112	$137,500	**$11,293,156**

	BASE			BASE + ALT. AREAS		
	Project Cost	O&M	Present Worth	Project Cost	O&M	Present Worth
Vacuum Sewer	$3,031,879	$36,000	$3,428,545	$7,707,032	$102,000	$8,830,919
Pump to West Alexandria	$444,118	$62,000	$1,127,265	$444,118	$102,000	$1,568,005
Total	$3,475,997	$98,000	**$4,555,810**	$8,151,150	$204,000	**$10,398,924**

As mentioned earlier the best way to compare alternative wastewater systems is to look at the present worth. The Grinder Pump collection system and the treatment option of connecting to West Alexandria has the lowest present worth for the base and the alternate areas.

As an additional exercise beyond comparing Present Worth, the following table illustrates a theoretical cost per customer to construct each collection and treatment option comparing the base project and the base project plus alternate areas 1 through 4. This does NOT include Operation and Maintenance costs, it is provided simply as a tool to see what it does to the average cost as the project is increased.

Table 7-1: Average Cost per Customer

		BASE			BASE + Alt. AREAS		
Collection	**Treatment**	**Number of Customers**	**Project Cost**	**Cost/ Customer**	**Number of Customers**	**Project Cost**	**Cost/ Customer**
Gravity	Extended Aeration	192	$4,875,565	$25,394	321	$9,182,969	$28,607
	Lagoon	192	$5,039,245	$26,246	321	$9,387,569	$29,245
	Pump to West Alex	192	$3,826,496	$19,930	321	$7,760,607	$24,176
STEP	Packed Bed Media	192	$4,760,623	$24,795	321	$7,299,647	$22,740
Grinder	Extended Aeration	192	$4,313,724	$22,467	321	$6,773,627	$21,102
	Lagoon	192	$4,477,404	$23,320	321	$6,978,227	$21,739
	Pump to West Alex	192	$3,264,658	$17,003	321	$5,351,265	$16,671
Vacuum	Extended Aeration	192	$4,525,063	$23,568	321	$9,573,512	$29,824
	Lagoon	192	$4,688,743	$24,421	321	$9,778,112	$30,461
	Pump to West Alex	192	$3,475,997	$18,104	321	$8,151,150	$25,393

As you will see, the lowest cost/customer is the grinder collection with pumping to West Alexandria. This cost also remains fairly constant when adding the alternate areas to the base. For the gravity sewer, this cost increases when the alternate areas are added. This is due to the additional pumping stations required to serve the alternate areas. The remaining STEP and Grinder sewer systems decrease the cost per customer as the alternate areas are included.

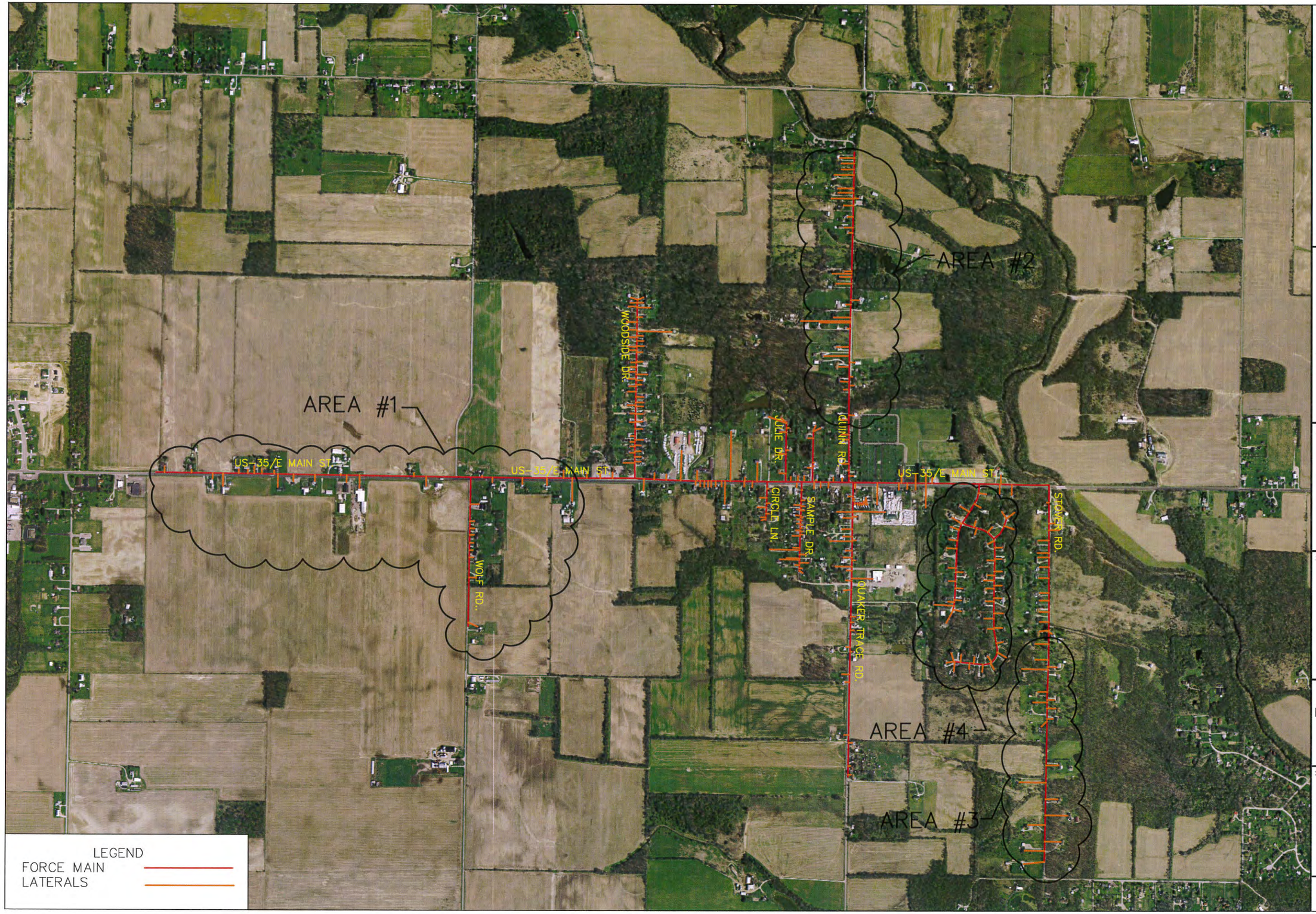
Conclusions

The previously identified wastewater collection and treatment system alternatives have been analyzed to determine the best collection system and treatment system scenario for the Glenwood Area. Each of these scenarios took the project cost, O,M&R, and the environmental conditions into consideration to provide the Glenwood Area a viable option for a future wastewater system.

Recommendations

Based on the cost analysis and environmental conditions, the best scenario for the Preble County Commissioners and the Glenwood area is to construct a Grinder Collection system and connect into the Village of West Alexandria for wastewater treatment assuming West Alexandria proceeds with design and implementation of a treatment plant expansion. Continued negotiations with West Alexandria are recommended to determine what, if any, connection fees, capacity fees, or fair share costs will need to be borne by Preble County and its customers.

Should negotiations with West Alexandria fail, the next best scenario for Preble County is to construct a Grinder Collection system with its own new Mechanical Treatment Plant – Extended Aeration system.



GRAPHIC SCALE

0 600 1200

(IN FEET)

1 inch = 1200 ft.

IBI GROUP
635 Brooksedge Boulevard
Westerville OH 43081 USA
tel 614 818 4900 fax 614 818 4901
ibigroup.com

REVISION:

SUBMISSION:

GLENWOOD AREA

MVRPC UNSEWERED COMMUNITIES STUDY

SECTION NO.

SHEET TITLE:

ALT. AREAS STEP/GRINDER SEWER SYSTEM LAYOUT

FIGURE 7-1

Chapter 8 – Funding

There are several Federal and State funding sources available to help assist in covering the cost of this project. Below are several sources which Preble County may consider with the project. These include both grants and low-interest loans.

Each year, qualified communities are bypassed in the apportioning of public funds, not for lack of need or eligibility, but simply because of failure to meet deadlines and provide necessary documentation. With the assistance of a qualified funding consultant, communities can be assisted in the time-consuming and laborious task of applying for grants and loans.

The residents of Glenwood are recognized as being an unincorporated area in Preble County. In order to qualify for funding the need for an income survey is highly recommended for the project service area. The project service area will be determined by identifying the boundaries of the project area. Income surveys of the project service area will be collected in accordance to the Office of Housing and Community Development Income Survey Requirements and submitted for Low to Moderate Income (LMI) and Median Household Income (MHI) approval.

Federal Funding

Community Development Block Grants (Grant Program)

Approximately $20.4 million is average annually split up among Ohio Counties. Counties typically fund 3 to 4 projects up to $30,000. Financing is available in the form of supplemental grants. To be eligible for this grant, the project benefit area must include at least 51% Low to Moderate Income (LMI) households. An income survey would need to be conducted to confirm the LMI for the area is above 51%. Applications are due to the County in the Spring of each year.

Rural Development (Grant/Loan Program)

Grants are available on an open cycle competitive bases with a funding amounts varying depending on the affordability threshold of the community. Applicants must be under Ohio EPA Findings & Orders and have a Median Household Income (MHI) in the range of $38,651-$49,694. The City of Eaton has a MHI of $ 41,000 and the Village of West Alexandria has a MHI of $37,000 (according to the 2014 American Community Survey). The area of Glenwood would need to have a MHI survey to verify if Glenwood would qualify for the Rural Development Grant/Loan. If the area qualifies it would be considered eligible for the grant funds combined with a low interest loan of 2.75% for up to 40 years.

State Funding

Ohio Public Works Commission (Grant/Loan Program)-OPWC

Financing is available in the form of grants and loans with varying interest rates. Grants may pay up to 50% of water or sewer project costs for new projects and up to 90% for repair or replacement projects. Loans may fund up to 100% of total project costs, each district will recommend an interest rate from 0% to 3% interest. The Loan Assistance is a grant that pays for the interest on a public or private loan during the construction period plus one year. Once project is complete a payment schedule is provided requiring payments every January and July, there is no prepayment penalty.

Ohio Water Development Authority (Loan)-OWDA

Financing is available in the form of a loan program to plan, design and construct projects. The loan interest rate is current market rate. Discount rates are offered to previous borrowers and disadvantaged communities. The Glenwood Area would need to have an MHI study to verify if the Glenwood would be considered a disadvantagED community. To date, all eligible applicants have been funded.

Residential Public Infrastructure (Grant)-COBG

Grants are available on a competitive basis up to $500,000, at a $1 to $1 (other funds) ratio for projects benefiting at least 51% LMI households. Applications are due 2nd Quarter of each year. Preble County would need to have an income survey conducted to confirm the LMI in the area of Glenwood.

Unsewered Area Assistance Program (Grant)-OWDA

Grants are available for construction of a publicly owned sewer system for un-sewered areas that have failing on-lot sanitary systems. The project area must have a Median household Income below the state MHI ($48,071), per the American Community Survey.

Water Pollution Control Loan Fund (Loan)-OEPA

Financing is available through a revolving fund designed to operate in perpetuity to provide low interest rate loan and other forms of assistance for water resource protection and improvement projects. Interest rates are determined by project areas Median household Income.

At the Public Meeting held on May 12, 2015, it was apparent that many residents in the additional service areas 1- 4 were not pleased about being included into the study area (see appendix for public involvement notes). As such, we have provided the following funding table for comparison between constructing the base area only and the base plus all four additional service areas. This table compares construction costs with funding options based on the Grinder Sewer with connection into the West Alexandria treatment system. **No costs are included for any potential West Alexandria capacity fees or connection fees.**

Table 8-1: Funding Summary

			BASE PROJECT (192 CUSTOMERS)		BASE + ADDTL. AREAS (321 CUSTOMERS)	
			OPWC/EPA Loan	**RD Grant/Loan**	**OPWC/EPA Loan**	**RD Grant/Loan**
CUSTOMERS/EDUs			192	192	321	321
PROJECT COST- Collection System			$2,820,540	$2,820,540	$4,907,147	$4,907,147
PROJECT COST- Treatment System			$444,118	$444,118	$444,118	$444,118
TOTAL PROJECT COST			$3,264,658	$3,264,658	$5,351,265	$5,351,265
ANNUAL O,M&R			$93,000	$93,000	$102,000	$102,000
FINANCING						
CDBG Formula Grant			$30,000	$30,000	$30,000	$30,000
Residential Public Infrastructure Grant			$480,000	$480,000	$480,000	$480,000
OPWC Grant			$400,000	$400,000	$400,000	$400,000
Unsewered Area Assistance Program			$250,000	$250,000	$250,000	$250,000
Local Funds - Capacity Fee $2,000/Customer			$0	$0	$0	$0
Rural Development Grant (up to 35% of Project Cost)			$0	$1,142,630	$0	$1,872,943
OPWC Loan	30	0.00%	$800,000	$400,000	$800,000	$800,000
OWDA Loan	30	2.00%	$0	$0	$0	$0
OEPA WPCLF Loan	30	0.00%	$1,304,658	$0	$3,391,265	$0
Rural Development Loan	40	2.75%	$0	$562,028	$0	$1,518,322
Total Financing			$3,264,658	$3,264,658	$5,351,265	$5,351,265
ANNUAL DEBT						
Annual OPWC Payment			$26,667	$13,333	$26,667	$26,667
Annual OWDA Payment			$0	$0	$0	$0
Annual OEPA WPCLF Payment			$43,489	$0	$113,042	$0
Annual Rural Development Payment			$0	$23,342	$0	$63,058
ANNUAL DEBT PAYMENT			$70,155	$36,675	$139,709	$89,725
DEBT PAYMENT PER MONTH PER EDU			$30.45	$15.92	$36.27	$23.29
O,M&R PAYMENT PER MONTH PER EDU			$40.36	$40.36	$26.48	$26.48
TOTAL PAYMENT PER MONTH PER EDU			**$70.81**	**$56.28**	**$62.75**	**$49.77**

The primary difference between the two funding scenarios for each is the inclusion of a Rural Development Grant and Loan. Securing Rural Development funding is time consuming and delays project construction. It requires a significant commitment from the County in order to secure, but can significantly lower the average monthly cost per customer.

In most communities, sewer rates are based on metered water consumption to each customer. Glenwood has very few connected to a public water system and those customers that are connected to a water system belong to the City of Eaton which will not be involved with the sewer project. The vast majority are private wells. Water meters can be installed on each private well or a flat rate billing system can be established. Each of the scenarios above reflect a flat rate that each customer would need to be charged in order to operate and maintain the system based upon the total number of customers.

Chapter 9 – Arrangement for Implementation

Institutional Responsibilities

Preble County has the necessary statutory authority for implementing this system and has the necessary legal, financial, institutional, and managerial resources available to ensure construction and O,M&R of the proposed collection system. The proposed collection system involves the Preble County Commissioners, MVRPC, Twin and Lainer Townships, and potentially the Village of West Alexandria. Various Ordinances and Resolutions of Agreement will have to be passed by the governmental bodies to implement the Glenwood Area and surrounding areas collection and treatment system.

Implementation Steps

Preble County would be the primary stakeholder in this project. Twin and Lanier Township would also be involved with this project in that the sewer system will be constructed within their jurisdiction. They will have varying degrees of direct managerial and supervisory responsibilities for the proposed Glenwood Area collection facility. The Owner will be assisted by the Engineer in the preparation of detailed plans, construction, and O,M&R of the proposed facility.

The Area plans to finance the project through grants, loans, and user charges. The user charges will be programmed to provide adequate monies to meet bond retirement obligations and operate and maintain the proposed facility, without placing undue burden on local citizens.

The following steps should be completed in order to implement facilities plan recommendations:

1. Completion of the final “facilities plan” and submission for approval by local, regional, and state agencies.
2. Preparation of detailed plans and specifications for the proposed improvements.
3. Submission of the detailed plans and specifications for the proposed system, along with preparation of a financing agreement for State approval.
4. Preparation of all funding applications such as Ohio EPA, OPWC, CDBG, etc.
5. Execution of financial agreements, concurrent with grant/loan approval.
6. Advertisement for bids, bid evaluation, and award of contracts.
7. Construction of proposed system.
8. Preparation of operation and maintenance manual.
9. Employment of additional operation, maintenance, and administrative personnel.
10. Initiation of operation of the improved facilities.

The following implementation schedule is feasible and represents the shortest time to project implementation:

Planning:	
Submit completed feasibility plan	June, 2015
Design:	
Authorization to start engineering design	October, 2015
Submit for OWDA planning loan	November, 2015
Completion of detailed plans	December, 2016
Obtain district and Ohio EPA approval	March, 2017
Finalize funding applications	April, 2018
Construction:	
Advertisement for bids	June, 2018
Receive bids	August, 2018
Award contracts	September, 2018
Complete construction	August, 2019
Final inspection	October, 2019

Operation, Maintenance, and Monitoring

The Glenwood Area wastewater treatment plant will need to be staffed with adequately trained and certified operation and maintenance personnel including a Class I or Class II wastewater treatment plant operator. An operation and maintenance manual for the improved facilities will be prepared by the engineer and used for the preparation of daily operation and maintenance schedules. This manual will also describe the operation and maintenance requirements of newly constructed sewers and pump stations.

Chapter 10 – Summary of Environmental Considerations

Future Environment without Project

The future environment of the unsewered areas with a "no action" policy would allow for the continuation of present conditions to go unabated. This would allow improperly treated wastewater from individual residences to drain into the surrounding natural waterways causing local water pollution problems. Taking no action to solve existing wastewater management problems within the study area would result in the continued malfunctioning of individual soil absorption systems and the surface ponding and discharge of improperly treated septic tank effluent. High fecal coliform levels in roadside ditches preclude compliance with Ohio's Water Quality Standards and present potential health risks to area residents. Because this alternative does not meet the "effectiveness" criteria established by Ohio's Water Quality Standards, it was eliminated from further environmental evaluation.

Environmental Evaluation of Alternatives and Selected Plan

The environmental impacts of each alternative include primary and secondary impacts. The primary impacts are those directly related to the construction and operation of the facility. The secondary impacts are induced changes in the patterns of land use, population growth or the resultant effects upon the environment caused by these changes. Both adverse and beneficial impacts must be considered. Items included in this evaluation are the following:

- Air, land, and water quality
- Public Health
- Environmental aesthetics
- Historical and cultural area
- Noise and odors

Air, Land, and Water Quality

Each of the alternatives involving construction will have an initial detrimental or negative impact on air quality near the construction site.

An increase in total suspended particulates in the form of dust, carbon monoxide, and photochemical oxidents is anticipated during the construction period. The increase is a result of diesel and gasoline powered internal combustion engines. The alternatives involving large construction sites will impose a negative initial impact on air quality. The "no action" alternative will have the least negative impact on air quality except for occasional odors.

The overall secondary or induced impact will be beneficial as odors will be reduced. A gravity collection system or vacuum collection system will have the least impact associated with odors where STEP systems or grinder systems may have odor impacts.
Each of the alternatives involving construction will have an initial negative primary impact on the land at the construction site. During and immediately after construction, the land will appear scarred and lacking suitable cover. Erosion will probably occur, creating unsightly washes,

puddles and small gullies. The alternatives involving larger construction sites will experience greater negative impact. The secondary impacts will have essentially no impact, beneficial or adverse, on land or development.

Each of the alternatives involving construction will have an initial adverse impact on water quality near the construction site. Erosion will result in an increase in suspended solids and turbidity in area streams. The secondary impact on water quality will be beneficial for all alternatives with the exception of the “no action” alternative. It will result in a considerably lower organic, nutrient and ammonia loadings to the receiving streams.

Public Health

All of the alternatives, with respect to the “no action” alternative, will result in a beneficial primary and secondary effect on public health.

Environmental Aesthetics

The impact of the various alternatives on environmental aesthetics are closely related to the impacts on land and water quality. The immediate primary impact during construction is adverse. The smallest construction site represents the least adverse effect on environmental aesthetics. The ‘no action” alternative will result in no construction impacts.

Historical and Cultural

Each of the alternatives including the “no action” alternative will have no impact on any of the historical/archaeological or cultural elements within the planning area.

Noise and Odors

Each of the alternatives, except for the “no action” alternative will result in noise and odors inherent to construction activities. These adverse impacts will vary depending upon the extent of the construction activity and the proximity to existing residences. The secondary impacts will be virtually non-existent.

Selected Plan Environmental Impacts

The recommended plan for the study area is the construction of a grinder pump sewer collection system and to pump the wastewater to the Village of West Alexandria for treatment.Grinder pump systems have the advantage of the pipes being able to follow the topography of the land and staying relatively closer to the surface than a gravity sewer. This will keep the depth of excavation down during installation. The construction activities will include removal of vegetative cover, noise, dust and occasional odors. A slight degree of water quality degradation may take place after rainstorms as a result of erosion and siltation. The secondary impacts of the proposed action will be beneficial.

Mitigation Measures

Adverse impacts expected from the proposed action will primarily occur during the construction phase. The beneficial long-term impacts must outweigh the short-term adverse impacts for the project to be viable. To insure that the project does not harm the environment, mitigative measures must be taken to lessen the adverse effects of the proposed plan.

Erosion/Dust Control

The soil surface will be exposed only for the minimum amount of time to facilitate construction. Sewers, force mains and appurtenances will be aligned along existing right-of-way and easements to minimize the destruction of vegetative cover. Reseeding and mulching will follow construction as soon as possible. Topsoil removed during construction will be stockpiled for reuse at the site. Terracing, erosion control structures and contouring will be incorporated in the design. Dust control measures will include periodic sprinkling of exposed earth surfaces.

Archaeological/Historical Preservation

The proposed action will not have any impact on known historical or archaeological sites within the planning area. Therefore, no mitigative measures will be required. The Ohio Historic Preservation Office will be notified immediately upon discovery of unknown artifacts uncovered during construction.

Vegetation

As previously mentioned, the construction sites have been selected to minimize disturbance of vegetative cover. Exposed areas will be seeded upon settling and final grading. Fertilizing and watering will be included in routine site maintenance.

Noise Control Practices

Construction equipment will be required to have exhaust mufflers as required by safety standards. Construction activities in close proximity to residential areas will be limited to daytime working hours.

Odor Control Practices

With proper O,M&R, including routine cleaning and sewer maintenance, no objectionable odors should be produced.