

SANITARY SEWER MASTER PLAN

PREPARED FOR:

VILLAGE OF GALENA, OHIO

PREPARED BY:

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TABLE OF CONTENTS

	<u>On/Following Page</u>
Introduction	1 - 1
Plate 1 - Location Map.....	1 - 1
Plate 2 - Existing Galena Sewer System.....	1 - 1
Plate 3 - Planning Area.....	1 - 1
Plate 4 - Sewer Areas.....	1 - 1
Sewer Use Projections	2 - 3
Table 1 - Estimated Water/Sewer Flow	2 - 2
Table 2 - Planning Sub Areas	3 - 3
Proposed Sanitary Sewers	4 - 4
Plate 5 - Proposed Sewers.....	4 - 4
Sewer Average Costs	5 - 5
Table 3 - Average Cost Range for Force Mains and Sanitary Sewers.....	5 - 5
Areas A & L	6 - 6
Table 4 - Areas A&L Conventional Gravity Sewers, Pump Station and Force Main	
Area B	7 - 7
Table 5 - Area B Conventional Gravity Sewers	7 - 7
Area C	8 - 8
Table 6 - Area C Conventional Gravity Sewers.....	8 - 8
Area D	9 - 9
Table 7 - Area D Conventional Gravity Sewers, Pump Station and Force Main.....	9 - 9
Area E	10 - 10
Table 8 - Area E Conventional Gravity Sewers, Pump Station and Force Main.....	10 - 10

Area F	11 - 12
Table 9 - Area F Conventional Gravity Sewers, Pump Station and Force Main.....	11 - 12
Area G	13 - 13
Table 10 - Area G Conventional Gravity Sewers.....	13 - 13
Area H	14 - 14
Table 11 - Area H Conventional Gravity Sewers, Pump Station and Force Main.....	14 - 14
Area I	15 - 15
Table 12 - Area I Conventional Gravity Sewers.....	15- 15
Table 13 - Areas I, G, H, and J Force Main and Pump Station to Galena WWTP.....	16 - 16
Area J	17 - 17
Table 14 - Area J Conventional Gravity Sewers.....	17 - 17
Area K	18 - 18
Table 15 - Area K Conventional Gravity Sewers, Pump Station and Force Main.....	18 - 18
Area M	19 - 20
Table 16 - Area M Conventional Gravity Sewers, Pump Station and Force Main.....	19 - 20
Area N	21 - 21
Table 17 - Area N Conventional Gravity Sewers, Pump Station and Force Main.....	21- 21
Facility Planning Area	22 - 22
Summary	23 - 23
Table 18 - Summary Sub Area Costs	23 - 23
Financing	24 - 28
Appendix	29

Proposed Sewers

INTRODUCTION

The Village of Galena is located north of Hoover Reservoir in Delaware County. The Village of Galena presently consists of 132 homes. However, the Village is subject to rapid potential growth. Currently the Village sanitary services are provided by a 75,000 gallon per day package plant owned and operated by Village of Galena. The Village of Galena owns and operates the sanitary sewer collection system. General location and site maps are shown on Plates 1 and 2. The Galena Planning Area is shown in Plate 3.

This study will evaluate current proposed development, potential growth areas, potential development within Galena, near-term growth adjacent to the Village, and potential long-term growth. The sanitary sewer system required to service the areawide Galena Planning Area will be evaluated and sewer system alternatives will be provided.

The Village of Galena is currently experiencing constant development pressures for public services including, but not limited to, an expanded wastewater treatment system. Delaware County is unable to respond to this growth pressure in a timely manner to meet the growing needs of the Village of Galena.

The Village of Galena is seeking reasonable solutions to the community's need for public services. The Village of Galena has directed Poggemeyer Design Group, Inc. to review and analyze the existing wastewater treatment facility, analyze the Village and regional land use plans and sanitary service plans for population growth. This study was authorized by the Village of Galena Council.

Study Area

Sanitary sewers were evaluated for the area which was defined in the Galena Areawide Water Quality Management Plan, Plate 3. The study area was further divided into subareas, Plate 4.

Scope of Work

The scope of work of this project is to plan sewer service to the Galena planning area.

SEWER USER PROJECTIONS

The Galena Planning area was divided into subareas. The areas are listed in Table 1 with the corresponding acreage and potential sewage flow.

The current planning area has some residential development although most of the area is undeveloped. The per acre factor of 600 gallons/acre developed in this report will be adequate to cover the usage expected in the developed areas.

For the entire planning area, low density single-family homes were utilized as the likely scenario for residential development. However, some commercial development is also a possibility for this area.

Projecting the actual type and amount of development is difficult. Sewer use can be predicted by per acre factors. For planning purposes, only residential development was considered.

TABLE 1 ESTIMATED WATER/SEWER FLOW AVERAGE DAILY FLOW		
Development Type	Assumed Flow/Acre Gallons per Day	Average Flow/Acre Gallons per Day
Residential	600	600
Industrial	2,000-3,000	2,500
Commercial	1,000-2,000	1,500

The projected average daily and peak flows were calculated for each area to be sewered. Plate 4 details the areas studied in the planning area. Generally these sewers are the trunk sewers or "spine" of the sewer system. As development occurs, gravity sanitary sewers from each subdivision would top the spine sewer.

TABLE 2
GALENA PLANNING SUB AREAS

Area	Acres	Estimated Flow (gpd)		Potential Taps
		Average	Peak	
A	85	51,000	169,830	170
B	69	41,400	137,862	138
C	110	66,000	219,780	227
D	214	128,400	427,572	428
E	157	94,200	313,686	324
F	1,180	708,000	2,357,640	2,441
G	469	281,400	937,062	970
H	69	42,600	141,858	142
I	146	87,600	291,708	292
J	98	58,800	195,804	196
K	244	146,400	487,512	488
L	127	5,080	16,916	12
M	915	549,000	1,828,170	1,830
N	653	391,800	1,304,694	1,306

PROPOSED SANITARY SEWERS

Sewers are designed for peak flow conditions. See Plate 5.

Delaware County is the fastest growing county in the State of Ohio. We believe that some of the smaller areas closer to the wastewater treatment plant may develop first. However, there is no guarantee that a larger area would not develop first.

Areas A, B, C, D, and L would be tributary to the existing sanitary sewer system. These flows with the existing flows would bring the **existing** Village sewers to design capacity. Consideration could be given during the sewer design for Area D to bring this flow directly to the wastewater treatment plant.

All other areas would be collected by gravity sewers and pumped by force main to the wastewater treatment plant. Itemized costs have been provided for each area.

Areas H, I, J, and G may develop last as these areas are the most costly to sewer due to the surface topography.

SEWER AVERAGE COSTS

The proposed waterlines and sanitary sewers are schematic in nature. Adjustments will have to be made to accommodate the development. Below are rule-of-thumb average costs for water and sewer lines for use in predicting costs of facilities not shown in the report. The average costs are based on normal construction efforts and they include other project costs, such as design, legal, permits, etc.

TABLE 3 AVERAGE COST RANGE FOR FORCE MAINS AND SANITARY SEWERS			
Gravity Sanitary Sewers		Force Main Sewers	
Size	Average Cost/Ft.	Size	Average Cost/Ft.
8"	\$50 - \$90	8"	\$40 - \$50
10"	\$90 - \$110	10"	\$55 - \$60
12"	\$100 - \$120	12"	\$55 - \$65
15"	\$110 - \$140		

These are rough estimates for preliminary planning only. Actual itemized estimates have been completed for any proposed improvements. Costs can be expected to rise each year with the inflation rate.

AREAS A & L

Area A = 85 acres at 2 homes/acre = 51,000 gpd Average 169,830 gpd peak

Area L = 127 acres at 2 homes/acre = 5,080 gpd Average 16,916 gpd peak

Total Estimated Average Daily Design Flow = 56,800 gpd

Total Estimated Peak Daily Flow = 186,746 gpd

Areas A & L are proposed to be served by a pump station and force main to the existing Village of Galena Sanitary Sewer System. Approximately 2,066 lineal feet of 6" force main will be required and 3,800 lineal feet of 8" sanitary sewer. The estimated number of taps for this area is 182.

TABLE 4 AREAS A&L CONVENTIONAL GRAVITY SEWERS, PUMP STATION, AND FORCE MAIN ENGINEER'S OPINION OF PROBABLE ESTIMATE OF COST					
Item No.	Item	Quantity	Unit	Unit Price	Total Price
1	8" Sanitary Sewer	3,800	L.F.	\$50	\$190,000
2	4" Force Main	2,066	L.F.	\$26	\$53,716
3	Manholes	7	Each	\$5,000	\$35,000
4	Lift Station with Telemetry	1	Each	\$150,000	\$150,000
5	Site Restoration with Street Repair	1	L.S.	\$80,000	\$80,000
6	Connection to Existing Manhole	1	Each	\$3,500	\$3,500
	SUBTOTAL				\$512,216
	Contingency (10%)				\$51,222
	TOTAL CONSTRUCTION COST				\$563,438
	Project Costs: Legal, Design Engineering, Financing, Construction Observation, Testing, Interest During Construction, and Review Fees				\$128,054
	TOTAL ESTIMATED COST				\$691,492

AREA B

Area B = 69 acres at 2 homes/acre

Total Estimated Average Daily Design Flow = 44,400 gpd

Total Estimated Peak Daily Flow = 137,862 gpd

Area B will be served by 3,000 lineal feet of gravity sanitary sewer. The estimated number of taps for this area is approximately 138.

TABLE 5 AREA B CONVENTIONAL GRAVITY SEWERS ENGINEER'S OPINION OF PROBABLE ESTIMATE OF COST					
Item No.	Item	Quantity	Unit	Unit Price	Total Price
1	8" Sanitary Sewer	3,000	L.F.	\$50	\$150,000
2	Manholes	9	Each	\$5,000	\$45,000
3	Site Restoration with Street Repair	1	L.S.	\$60,000	\$60,000
4	Connection to Existing Manhole	1	Each	\$3,500	\$3,500
	SUBTOTAL				\$258,500
	Contingency (10%)				\$25,850
	TOTAL CONSTRUCTION COST				\$284,350
	Project Costs: Legal, Design Engineering, Financing, Construction Observation, Testing, Interest During Construction, and Review Fees				\$64,625
	TOTAL ESTIMATED COST				\$348,975

AREA C

Area C = 110 acres at 2 homes/acre

Total Estimated Average Daily Design Flow = 66,000 gpd

Total Estimated Peak Daily Flow = 219,780 gpd

Area C will be served by 2,550 lineal feet of 8" gravity sanitary sewer. The estimated taps for this area is 227.

TABLE 6 AREA C CONVENTIONAL GRAVITY SEWERS ENGINEER'S OPINION OF PROBABLE ESTIMATE OF COST					
Item No.	Item	Quantity	Unit	Unit Price	Total Price
1	8" Sanitary Sewer	2,550	L.F.	\$50	\$127,500
2	Manholes	8	Each	\$5,000	\$40,000
3	Site Restoration with Street Repair	1	L.S.	\$60,000	\$60,000
4	Connection to Existing Manhole	1	Each	\$3,500	\$3,500
	SUBTOTAL				\$231,000
	Contingency (10%)				\$23,100
	TOTAL CONSTRUCTION COST				\$254,100
	Project Costs: Legal, Design Engineering, Financing, Construction Observation, Testing, Interest During Construction, and Review Fees				\$57,750
	TOTAL ESTIMATED COST				\$311,850

AREA D

Area D = 214 acres at 2 homes/acre

Total Estimated Average Daily Design Flow = 128,400 gpd

Total Estimated Peak Daily Flow = 427,572 gpd

Area D will be served by 4,200 lineal feet of 8" gravity sewer and a pump station and 5,640 feet of force main. The estimated number of taps for this area is 428.

TABLE 7 AREA D CONVENTIONAL GRAVITY SEWERS, PUMP STATION, AND FORCE MAIN ENGINEER'S OPINION OF PROBABLE ESTIMATE OF COST					
Item No.	Item	Quantity	Unit	Unit Price	Total Price
1	8" Sanitary Sewer	4,200	L.F.	\$50	\$210,000
2	6" Force Main	5,640	L.F.	\$26	\$146,640
3	Pump Station with Telemetry	1	Each	\$160,000	\$160,000
4	Manholes	12	Each	\$5,000	\$60,000
5	Site Restoration with Street Repair	1	L.S.	\$80,000	\$80,000
6	Connection to Existing Manhole	1	Each	\$3,500	\$3,500
	SUBTOTAL				\$660,140
	Contingency (10%)				\$66,014
	TOTAL CONSTRUCTION COST				\$726,154
	Project Costs: Legal, Design Engineering, Financing, Construction Observation, Testing, Interest During Construction, and Review Fees				\$165,035
	TOTAL ESTIMATED COST				\$891,189

AREA E

Area E = 157 acres at 2 homes/acre

Total Estimated Average Daily Design Flow = 94,200 gpd

Total Estimated Peak Daily Flow = 313,686 gpd

Area E will be served by 3,705 lineal feet of 8" gravity sanitary sewer, a pump station, and 2,310 lineal feet of force main. The estimated number of taps for this area is 324.

TABLE 8 AREA E CONVENTIONAL GRAVITY SEWERS, PUMP STATION, AND FORCE MAIN ENGINEER'S OPINION OF PROBABLE ESTIMATE OF COST					
Item No.	Item	Quantity	Unit	Unit Price	Total Price
1	8" Sanitary Sewer	3,705	L.F.	\$50	\$185,250
2	6" Force Main	2,310	L.F.	\$26	\$60,060
3	Manholes	11	Each	\$5,000	\$55,000
4	Lift Station with Telemetry	1	Each	\$150,000	\$150,000
5	Site Restoration with Street Repair	1	L.S.	\$80,000	\$80,000
SUBTOTAL					\$530,310
Contingency (10%)					\$53,031
TOTAL CONSTRUCTION COST					\$583,341
Project Costs: Legal, Design Engineering, Financing, Construction Observation, Testing, Interest During Construction, and Review Fees					\$132,578
TOTAL ESTIMATED COST					\$715,919

AREA F

Area F = 1,180 acres at 2 homes/acre

Total Estimated Average Daily Design Flow = 708,000 gpd

Total Estimated Peak Daily Flow = 2,357,640 gpd

Area F will be served by 4,000 lineal feet of 24" gravity sanitary sewers, 1,000 lineal feet of 10" gravity sanitary sewer, pump station, and 13,206 lineal feet of force main. The estimated number of taps to serve this area is 2,441.

TABLE 9 AREA F CONVENTIONAL GRAVITY SEWERS, PUMP STATION, AND FORCE MAIN ENGINEER'S OPINION OF PROBABLE ESTIMATE OF COST					
Item No.	Item	Quantity	Unit	Unit Price	Total Price
1	10" Sanitary Sewer	1,000	L.F.	\$90	\$90,000
2	24" Sanitary Sewer	4,000	L.F.	\$125	\$500,000
3	12" Force Main	13,206	L.F.	\$60	\$792,360
4	Pump Station Telemetry	1	Each	\$250,000	\$250,000
5	Air Release Valve in Manhole	4	Each	\$16,000	\$64,000
6	Pig Launching Manhole	4	Each	\$8,000	\$32,000
7	24" Steel Casing Pipe Jack and Bore	400	L.F.	\$530	\$212,000
8	Sanitary Sewer Manholes	14	Each	\$5,000	\$70,000
9	Site Restoration with Street Repair	1	L.S.	\$320,000	\$320,000
SUBTOTAL					\$2,330,360

TABLE 9
 AREA F
 CONVENTIONAL GRAVITY SEWERS, PUMP STATION, AND FORCE MAIN
 ENGINEER'S OPINION OF PROBABLE ESTIMATE OF COST

Item No.	Item	Quantity	Unit	Unit Price	Total Price
	Contingency (10%)				\$233,036
	TOTAL CONSTRUCTION COST				\$2,563,396
	Project Costs: Legal, Design Engineering, Financing, Construction Observation, Testing, Interest During Construction, and Review Fees				\$466,072
	TOTAL ESTIMATED COST				\$3,029,468

AREA G

Area G = 469 acres at 2 homes/acre (Tributary to Area I Pump Station)

Total Estimated Average Daily Design Flow = 281,400 gpd

Total Estimated Peak Daily Flow = 937,062 gpd

Area G will be served by 3,700 lineal feet of 8" gravity sanitary sewer and 7,600 lineal feet of 12" gravity sewer. This area will require a pump station and force main in Area I. The total estimated number of taps for this area is 970.

TABLE 10 AREA G CONVENTIONAL GRAVITY SEWERS ENGINEER'S OPINION OF PROBABLE ESTIMATE OF COST					
Item No.	Item	Quantity	Unit	Unit Price	Total Price
1	8" Sanitary Sewer	3,700	L.F.	\$50	\$185,000
2	12" Sanitary Sewer	7,600	L.F.	\$110	\$836,000
3	Manholes	31	Each	\$5,000	\$155,000
4	Site Restoration with Street Repair	1	L.S.	\$271,000	\$271,000
	SUBTOTAL				\$1,447,000
	Contingency (10%)				\$144,700
	TOTAL CONSTRUCTION COST				\$1,591,700
	Project Costs: Legal, Design Engineering, Financing, Construction Observation, Testing, Interest During Construction, and Review Fees				\$289,400
	TOTAL ESTIMATED COST				\$1,881,100

AREA H

Area H = 69 acres at 2 homes/acre (Tributary to Area I Pump Station)

Total Estimated Average Daily Design Flow = 42,600 gpd

Total Estimated Peak Daily Flow = 141,858 gpd

Area H would be served by 1,600 lineal feet of 8" gravity sanitary sewer, pump station, and 2,020 lineal feet of force main. The estimated number of taps for this area is 142.

TABLE 11 AREA H CONVENTIONAL GRAVITY SEWERS, PUMP STATION, AND FORCE MAIN ENGINEER'S OPINION OF PROBABLE ESTIMATE OF COST					
Item No.	Item	Quantity	Unit	Unit Price	Total Price
1	8" Sanitary Sewer	1,600	L.F.	\$50	\$80,000
2	3" Force Main	2,020	L.F.	\$23	\$46,460
3	Pump Station with Telemetry	1	Each	\$110,000	\$110,000
4	Site Restoration with Street Repair	1	L.S.	\$60,000	\$60,000
5	Connection to Existing Manhole	1	Each	\$3,500	\$3,500
SUBTOTAL					\$299,960
Contingency (10%)					\$29,996
TOTAL CONSTRUCTION COST					\$329,956
Project Costs: Legal, Design Engineering, Financing, Construction Observation, Testing, Interest During Construction, and Review Fees					\$74,990
TOTAL ESTIMATED COST					\$404,946

AREA I

Area I = 146 acres at 2 homes/acre (Tributary to Pump Station to WWTP)

Total Estimated Average Daily Design Flow = 87,600 gpd

Total Estimated Peak Daily Flow = 291,708 gpd

Area I would be served by 4,400 lineal feet of 8" sanitary sewer. The pump station would be sized for Areas I, G, H, and J. The average daily design flow for the pump station would be 469,200 gallons per day, with 18,668 lineal feet of force main. The estimated number of taps for this area is 292.

TABLE 12 AREA I CONVENTIONAL GRAVITY SEWERS ENGINEER'S OPINION OF PROBABLE ESTIMATE OF COST					
Item No.	Item	Quantity	Unit	Unit Price	Total Price
1	8" Sanitary Sewer	4,400	L.F.	\$50	\$220,000
2	Manholes	12	Each	\$5,000	\$60,000
3	Site Restoration with Street Repair	1	L.S.	\$70,000	\$70,000
4	Connection to Pump Station	1	Each	\$3,500	\$3,500
	SUBTOTAL				\$353,500
	Contingency (10%)				\$35,350
	TOTAL CONSTRUCTION COST				\$388,850
	Project Costs: Legal, Design Engineering, Financing, Construction Observation, Testing, Interest During Construction, and Review Fees				\$88,375
	TOTAL ESTIMATED COST				\$477,225

TABLE 13
 AREAS I, G, H, AND J
 FORCE MAIN AND PUMP STATION TO GALENA WWTP
 ENGINEER'S OPINION OF PROBABLE ESTIMATE OF COST

Item No.	Item	Quantity	Unit	Unit Price	Total Price
1	12" Force Main	18,668	L.F.	\$60	\$1,120,080
2	Pump Station Telemetry	1	Each	\$250,000	\$250,000
3	Air Release Valve in Manhole	6	Each	\$16,000	\$96,000
4	Pig Launching Manhole	6	Each	\$8,000	\$48,000
5	24" Steel Casing Pipe Jack and Bore	400	L.F.	\$530	\$212,000
6	Site Restoration with Street Repair	1	L.S.	\$373,360	\$373,360
	SUBTOTAL				\$2,099,440
	Contingency (10%)				\$209,944
	TOTAL CONSTRUCTION COST				\$2,309,384
	Project Costs: Legal, Design Engineering, Financing, Construction Observation, Testing, Interest During Construction, and Review Fees				\$419,888
	TOTAL ESTIMATED COST				\$2,729,272

AREA J

Area J = 98 acres at 2 homes/acre (Tributary to Area I Pump Station)

Total Estimated Average Daily Design Flow = 56,800 gpd

Total Estimated Peak Daily Flow = 195,804 gpd

Area J would be served by 2,800 lineal feet of gravity sanitary sewer. This area would require the construction of sewers in Area G and pump station and force main in Area I, tributary to the Village WWTP. The estimated taps for this area are 196.

TABLE 14 AREA J CONVENTIONAL GRAVITY SEWERS ENGINEER'S OPINION OF PROBABLE ESTIMATE OF COST					
Item No.	Item	Quantity	Unit	Unit Price	Total Price
1	8" Sanitary Sewer	2,800	L.F.	\$50	\$140,000
2	Manholes	8	Each	\$5,000	\$40,000
3	Site Restoration with Street Repair	1	L.S.	\$60,000	\$60,000
4	Connection to Existing Manhole	1	Each	\$3,500	\$3,500
SUBTOTAL					\$243,500
Contingency (10%)					\$24,350
TOTAL CONSTRUCTION COST					\$267,850
Project Costs: Legal, Design Engineering, Financing, Construction Observation, Testing, Interest During Construction, and Review Fees					\$60,875
TOTAL ESTIMATED COST					\$328,725

AREA K

Area K = 244 acres at 2 homes/acre

Total Estimated Average Daily Design Flow = 146,400 gpd

Total Estimated Peak Daily Flow = 487,512 gpd

Area K would be served by 3,900 lineal feet of 8" gravity sanitary sewer and a pump station and 4,280 lineal feet of force main would be required. The estimated number of taps is 488.

TABLE 15 AREA K CONVENTIONAL GRAVITY SEWERS, PUMP STATION, AND FORCE MAIN ENGINEER'S OPINION OF PROBABLE ESTIMATE OF COST					
Item No.	Item	Quantity	Unit	Unit Price	Total Price
1	8" Sanitary Sewer	3,900	L.F.	\$50	\$195,000
2	4" Force Main	4,280	L.F.	\$26	\$111,280
3	Manholes	11	Each	\$5,000	\$55,000
4	Site Restoration with Street Repair	1	L.S.	\$120,000	\$120,000
5	Lift Station with Telemetry	1	Each	\$150,000	\$150,000
SUBTOTAL					\$631,280
Contingency (10%)					\$63,128
TOTAL CONSTRUCTION COST					\$694,408
Project Costs: Legal, Design Engineering, Financing, Construction Observation, Testing, Interest During Construction, and Review Fees					\$157,820
TOTAL ESTIMATED COST					\$852,228

AREA M

Area M = 915 acres at 2 homes/acre

Total Estimated Average Daily Design Flow = 549,000 gpd

Total Estimated Peak Daily Flow = 1,828,170 gpd

Area M would be served by 14,778 lineal feet of 8" sewer, 2,970 lineal feet of 10" sewer, 3,140 lineal feet of 12" sewer, 2,560 lineal feet of 12" sanitary sewer, 2,218 lineal feet of 15" sanitary sewer, a pump station, and 6,845 lineal feet of force main. Total estimated number of taps is 1,830.

TABLE 16 AREA M CONVENTIONAL GRAVITY SEWERS, PUMP STATION, AND FORCE MAIN ENGINEER'S OPINION OF PROBABLE ESTIMATE OF COST					
Item No.	Item	Quantity	Unit	Unit Price	Total Price
1	8" Sanitary Sewer	14,778	L.F.	\$50	\$738,900
2	10" Sanitary Sewer	2,970	L.F.	\$100	\$297,000
3	12" Sanitary Sewer	3,140	L.F.	\$110	\$345,400
4	15" Sanitary Sewer	2,218	L.F.	\$130	\$288,340
5	12" Force Main	6,845	L.F.	\$60	\$410,700
6	Manholes	66	Each	\$5,000	\$330,000
7	Air Release Valves	2	Each	\$16,000	\$32,000
8	24" Steel Casing Pipe Jack and Bore	200	L.F.	\$530	\$106,000
9	Pig Launching Manhole	2	Each	\$8,000	\$16,000
10	Pump Station with Telemetry	1	Each	\$250,000	\$250,000
11	Site Restoration with Street Repair	1	L.S.	\$600,000	\$600,000

TABLE 16
 AREA M
 CONVENTIONAL GRAVITY SEWERS, PUMP STATION, AND FORCE MAIN
 ENGINEER'S OPINION OF PROBABLE ESTIMATE OF COST

Item No.	Item	Quantity	Unit	Unit Price	Total Price
	SUBTOTAL				\$3,414,340
	Contingency (10%)				\$341,434
	TOTAL CONSTRUCTION COST				\$3,755,774
	Project Costs: Legal, Design Engineering, Financing, Construction Observation, Testing, Interest During Construction, and Review Fees				\$682,868
	TOTAL ESTIMATED COST				\$4,438,642

AREA N

Area N = 653 acres at 2 homes/acre

Total Estimated Average Daily Design Flow = 391,800 gpd

Total Estimated Peak Daily Flow = 1,304,694 gpd

Area N would be served by 5,400 lineal feet of 8" sanitary sewer and 400 lineal feet of 15" sanitary sewer, pump station, and 8,282 lineal feet of force main. Total estimated number of taps is 1,306.

TABLE 17 AREA N CONVENTIONAL GRAVITY SEWERS, PUMP STATION, AND FORCE MAIN ENGINEER'S OPINION OF PROBABLE ESTIMATE OF COST					
Item No.	Item	Quantity	Unit	Unit Price	Total Price
1	8" Sanitary Sewer	9,500	L.F.	\$50	\$475,000
2	10" Force Main	8,282	L.F.	\$55	\$455,510
3	Manholes	15	Each	\$5,000	\$75,000
4	Pump Station with Telemetry	1	Each	\$250,000	\$250,000
5	Air Release valves	2	Each	\$15,000	\$30,000
6	24" Steel Casing Pipe Jack and Bore	200	L.F.	\$530	\$106,000
7	Pig Launching Manhole	2	Each	\$8,000	\$16,000
8	Site Restoration with Street Repair	1	L.S.	\$240,000	\$240,000
	SUBTOTAL				\$1,647,510
	Contingency (10%)				\$164,751
	TOTAL CONSTRUCTION COST				\$1,812,261
	Project Costs: Legal, Design Engineering, Financing, Construction Observation, Testing, Interest During Construction, and Review Fees				\$329,502
	TOTAL ESTIMATED COST				\$2,141,763

FACILITY PLANNING AREA

The Village of Galena has prepared an "Areawide Water Quality Management Plan" which includes the facilities planning area. The Clean Water Act states "To the extent practicable, waste treatment management shall be on an area wide basis and provide control or treatment of all point and non-point sources of pollution, including in place or accumulated pollution sources". This goal remains relevant despite the declining federal role.

The Galena "Areawide Water Quality Management Plan's" purpose is to assist efforts to achieve the "fishable and swimmable" water quality standards of the Clean Water Act. This plan takes a comprehensive regional approach to water quality protection.

Any new sanitary sewer extension must comply with this plan and the "Areawide Water Quality Management Plan" prepared by the Village of Galena.

SUMMARY

As stated previously, it is difficult to predict which area will develop first. We believe Areas A, B, C, D, E, K, and L may be the first to develop. Areas H, I, J, and G may be the last areas to be served by sewers. The following table lists costs and maximum available taps.

TABLE 18 SUMMARY SUB AREA COSTS				
Area	Estimated Project Cost	Maximum Taps	Cost/Tap	
A & L	\$691,492	182	\$3,799	
B	\$348,975	138	\$2,529	
C	\$311,850	227	\$1,374	
D	\$891,189	428	\$2,082	
E	\$715,919	324	\$2,210	
F	\$3,029,468	2,441	\$1,241	
G	\$1,881,100	970	\$1,939	\$1,706
H	\$404,946	142	\$2,852	\$1,706
I	\$477,225	292	\$1,634	\$1,706
J	\$328,725	196	\$1,677	\$1,706
K	\$852,228	488	\$1,746	
M	\$4,438,642	1,830	\$2,425	
N	\$2,141,763	1,306	\$1,640	
Force main cost for Areas G, H, I, and J to be pumped to WWTP				

The first phase expansion of the WWTP of .5 mgd would provide capacity for areas A, L, B, C, D, and E with 117 taps remaining. A second expansion of an additional .5 mgd would provide capacity to Area M. As other areas were proposed to be developed, the wastewater treatment plant would have to be expanded accordingly. Depending on which areas developed first, there is some flexibility to sewer flows to the wastewater treatment plant.

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, who 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 ½% 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 an acreage 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.

If the entire cost of all proposed phases of the wastewater treatment plant and sewer shown in this plan were assessed to the acreage of the proposed annexation, the total cost per acre would be approximately \$8,000.00.

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.

Government Grants and Loans

A demographic analysis has been prepared for the Village of Galena to show the potential programs for which Village may be eligible. Most of these programs are available to small Villages and rural areas only. The most likely source of funding is through an economic development program. A copy of this analysis is included in the appendix.

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 "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

APPENDIX