

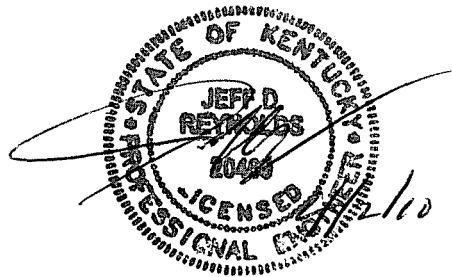
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PRELIMINARY ENGINEERING REPORT
FOR
GARRISON, QUINCY, KY-O-HEIGHTS WATER DISTRICT
GARRISON, KENTUCKY
WASTEWATER SYSTEM IMPROVEMENTS



MARCH 2007

HMB Professional Engineers, Inc.
3 HMB Circle
Frankfort, KY 40601
(502) 695-9800
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EXHIBITS

1. Project Location Map
2. Layout of Wastewater System Improvements (North)
3. Layout of Wastewater System Improvements (South)

APPENDICIES

Appendix A Letter from Lewis County Health Department

I. INTRODUCTION

A. Purpose

The purpose of this Preliminary Engineering Report is to evaluate, and assess the existing wastewater conditions, the performance of the existing wastewater conditions, and the performance of the existing wastewater Treatment Facilities in the Garrison Area.

Existing Wastewater Conditions

The only existing wastewater treatment facility in the project area is the package treatment plant serving the Garrison Consolidated School. Most of the homes have septic tanks. Based on Lewis County Health Department estimates and water district customer records there are approximately 300 septic tanks that are failing, 36 septic tanks that are functioning, and 33 straight pipes in the project area. These straight pipes result in multi-point discharge of raw wastewater into the area waterways.

The customer density and terrain of the area do not allow for proper installation of septic systems as a treatment alternative. Most of the lots are too small and do not provide the area necessary to meet state and federal regulations for proper installation and operation.

B. Project Area

See attached Exhibit 1 project location map. Exhibit 2 and 3 show the proposed layout of the wastewater system improvements.

II. EXISTING FACILITIES

A. Existing Facilities

The 6,000 gpd wastewater treatment plant at the Garrison Consolidated School is the only sewage treatment facility in the project area. It received a Marginal rating in its last DOW inspection report and has had problems with odors and solids washing out the clarifier. Wet sludge from the Garrison school plant is hauled to the Portsmouth, OH, wastewater treatment plant for disposal.

There is no existing wastewater collection system in the project area

B. Existing On-Site Disposal Systems

All households in the project area have one of the three sewage disposal systems.

1. Septic tank
2. Straight pipe discharge
3. Outdoor privy (outhouse)

Based on the Lewis County Health Department and Water District records, there are approximately 300 failing septic tanks, 36 functioning septic tanks, and 33 straight pipes in the planning area (See Appendix A).

Field surveys have identified potential health risks and problems as a result of using these failing systems.

The project area is currently suffering from the direct discharge of raw wastewater into local drainage ditches and waterways. This is a result of improperly installed septic systems, and in many cases no septic systems. Without this project, the water quality in the area will continue to deteriorate as a result of the continued discharge of raw wastewater into area drainage ditches and waterways. Any population growth within the project area will exacerbate this problem.

III. PROPOSED PROJECT

The Garrison, Quincy, KY-O-Heights Water District proposes to construct a low pressure sanitary sewer collection system for the Garrison Area. This will eliminate the failing septic systems and the straight line pipes. This project will consist of the following items:

- A new wastewater collection system to initially serve approximately 355 new customers. The collection system shall be comprised of approximately 43,500 L.F. of 2-inch, 3-inch and 4-inch low pressure mains, 355 grinder pump stations and two sewage lift stations.
- A 114,000 GPD extended aeration package wastewater treatment plant. The plant shall have enough capacity to handle current, and projected 2020 flows.

IV. COST SUMMARY

Table 1 summarizes the estimated construction cost for the project. Table 2 shows the estimated project cost.

TABLE 1

**Estimated Construction Cost
Wastewater System Improvements**

<u>Item</u>	<u>Quantity</u>	<u>Unit Price</u>	<u>Total</u>
114 GPD Package WWTP	1	\$1,500,000	\$1,500,000
4" Force Main	6,350	\$15	\$95,250
3" Force Main	9,380	\$10	\$93,800
2" Force Main	27,760	\$8	\$222,080
4" Gate Valve	4	\$450	\$1,800
3" Gate Valve	6	\$400	\$2,400
2" Gate Valve	13	\$350	\$4,550
End of Line Flushing Connection	25	\$1,200	\$30,000
1 1/4" Service Line	35,500	\$5	\$177,500
Lateral Assembly	355	\$350	\$124,250
Air/Vacuum Valve	14	\$1,500	\$21,000
Residential Grinder P.S.	352	\$4,000	\$1,408,000
Duplex Grinder P.S.	3	\$8,000	\$24,000
Main Pump Station	2	\$50,000	\$100,000
Road Bore	500	\$100	\$50,000
Rail Road Bore	50	\$150	\$7,500
Bituminous Replacement	5,000	\$25	\$125,000
Crushed Stone	10,000	\$5	\$50,000
Concrete Replacement	350	\$50	\$17,500
4" Directional Bore Creek Crossing	250	\$100	\$25,000
Total			\$4,079,630
		USE	\$4,080,000

TABLE 2

**Estimated Project Cost
Wastewater System Improvements**

Construction Cost	\$4,080,000
Engineering Fees	
Wastewater Facilities Plan (Gravity)	\$30,000
Prelim. Engineering (Gravity)	\$15,000
Design (Gravity)	\$148,100
General Alignment Survey (Gravity)	\$21,189
Wastewater Facilities Plan Revision (Low Pressure)	\$10,000
Prelim. Engineering (Low Pressure)	\$15,000
Design (Low Pressure/WWTP)	\$281,000
Inspection	\$175,000
RD Environmental Assessment	\$2,000
Geotech. Investigation	\$6,100
Public Service Commission	\$2,000
	<hr/>
	\$705,389
Administrative and Legal	\$35,000
Land and Rights	\$60,000
Interest During	
Construction	\$10,000
Arch. Survey	\$5,000
Botanical Survey	\$4,000
Contingencies	\$400,611
Total Estimated Project Cost	\$5,300,000

V. FUNDING

The Water District has already obtain a KIA Tobacco Grant for this project and will apply for a CDBG Grant, an Appalachian Regional Commission (ARC) Grant and a combination grant and loan from USDA Rural Development (RD). The proposed funding for this project is being made available by the following:

Rural Development Loan	\$1,327,500
Rural Development Grant	\$1,000,000
ARC Grant	\$500,000
KIA Tobacco Grant	\$1,450,000
CDBG Grant	\$1,000,000
Local ⁽¹⁾	<u>\$22,500</u>
TOTAL PROJECT FUNDING	\$5,3005,000

- (1) Assume all but 90 customers will receive free connection with the CDBG Grant. Therefore, 90 new customers will be required to pay the \$250 connection fee.

VI. REVENUE REQUIREMENTS

Debit Service based on RD Loan of \$1,327,000 @ 4.5% for 38 years	\$73,700
RD Coverage (10% of Payment)	\$7,400
RD Reserve (10% of Payment)	\$7,400
Annual O&M of WWTP (1)	\$75,900
Annual O&M of Collection System (2)	\$36,500
Total Annual Revenue Requirements	\$200,900
	USE <u>\$200,000</u>
Initial Number of Customers	355
Ave. Water Usage per Day per Customer	150 gallons
Cost per 1,000 gallons	<u>\$10.43</u>
Ave. Monthly Bill based on 4,500 gallon per month	<u>\$46.94</u>

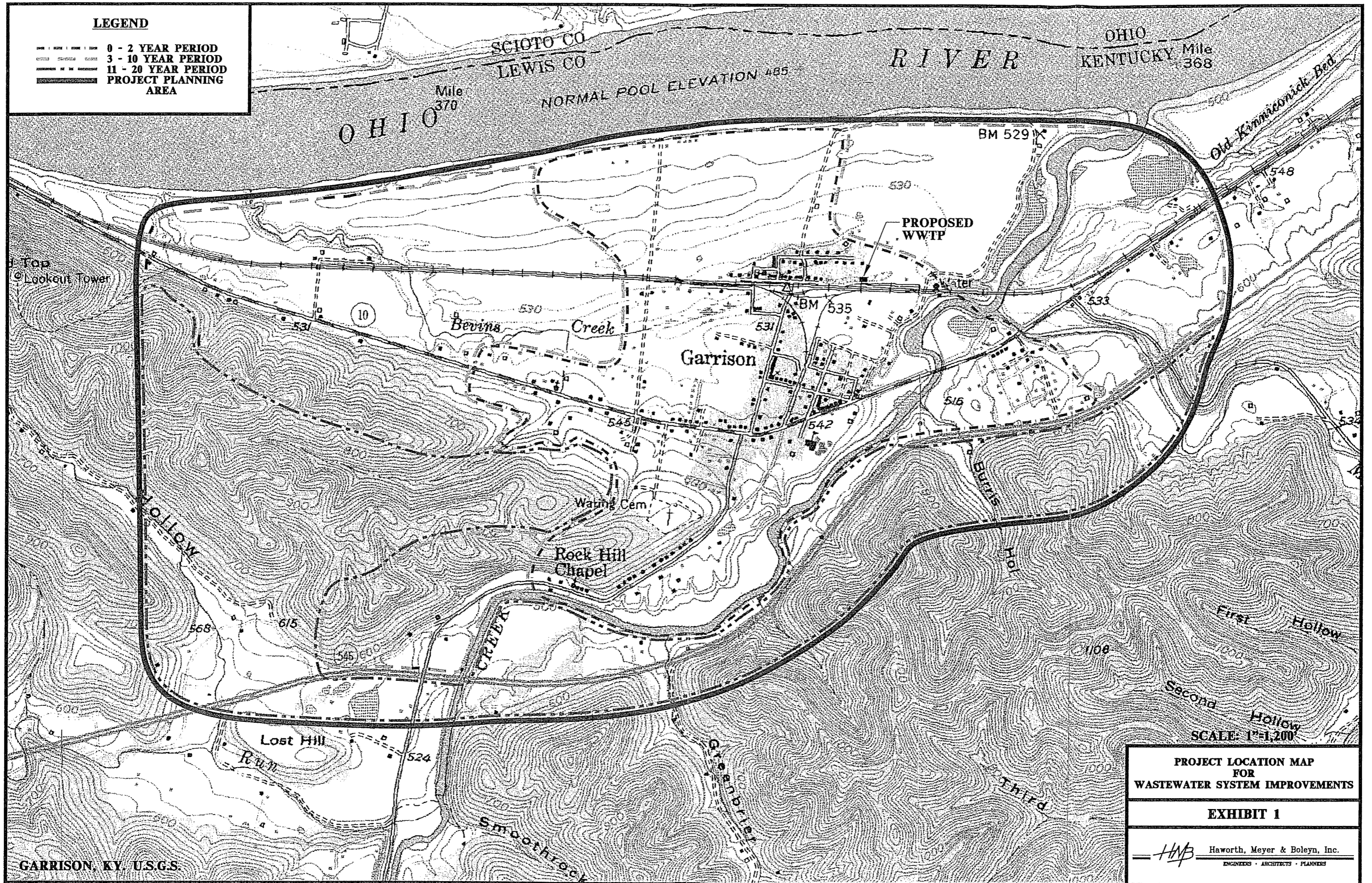
- (1) Annual O&M based on 201 Facilities Plan dated January 2002. This O&M was increased by ten percent (10%) due to inflation.
- (2) Annual O&M based on 201 Facilities Plan Revision dated November 2006.

VII. RECOMMENDATION

It is recommended that the project be funded by Rural Development Loan/Grant and a Letter of Conditions issued as soon as possible.

LEGEND

- 0 - 2 YEAR PERIOD
- - - 3 - 10 YEAR PERIOD
- 11 - 20 YEAR PERIOD
- ▬ PROJECT PLANNING AREA



OHIO
Mile 370

SCIOTO CO
LEWIS CO

NORMAL POOL ELEVATION 485

RIVER

OHIO
KENTUCKY
Mile 368

Old Kinniconick Bed

BM 529

PROPOSED
WWTP

BM 535

Garrison

Bevins Creek

Waring Cem.

Rock Hill
Chapel

BURRIS
HOLLOW

First Hollow

Second Hollow

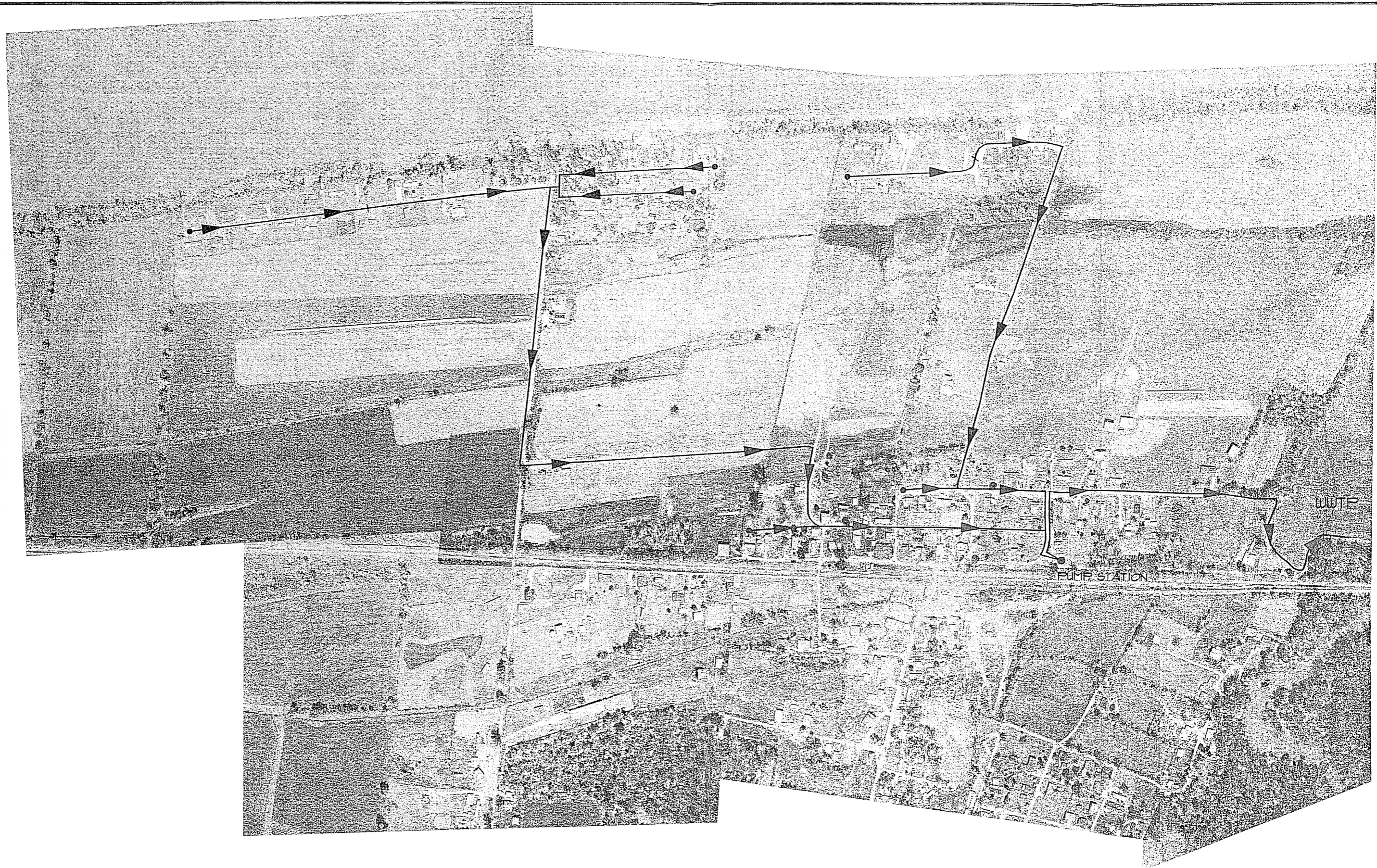
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PROJECT LOCATION MAP
FOR
WASTEWATER SYSTEM IMPROVEMENTS

EXHIBIT 1

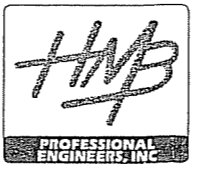
HMB Haworth, Meyer & Boleyn, Inc.
ENGINEERS • ARCHITECTS • PLANNERS

GARRISON, KY. U.S.G.S.



NO.	DATE	REVISIONS	CHK'D	APPR'D	DATE

PROJECT: 402101	DATE: NOV 2006	
SCALE: NTS		
DESIGNED BY	NAME	DATE
JDR	JDR	
DRAWN BY	HP	
CHECKED BY	JDR	
RECORD DWGS.		

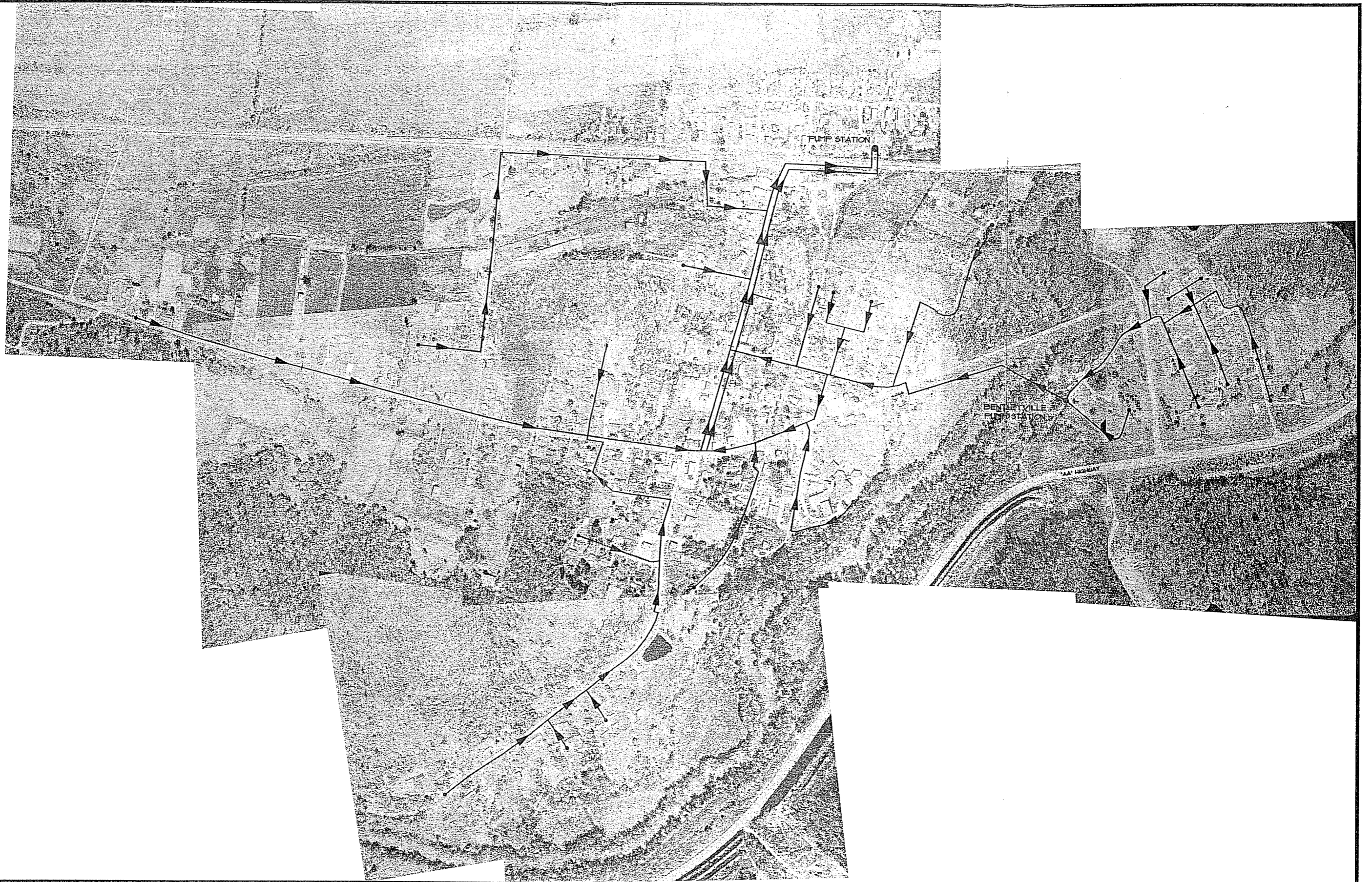


3 HMB CIRCLE
FRANKFORT, KENTUCKY
(502) 635-9800
(502) 635-9810 FAX

LAYOUT OF WASTEWATER SYSTEM IMPROVEMENTS
NORTH

EXHIBIT 2

SHEET
CF



NO.	DATE	REVISIONS	CHK'D	APPR'D	DATE

PROJECT: 402121	DATE: NOV. 2006	
SCALE: NTS		
DESIGNED BY	NAME	DATE
JDR	JDR	
DRAWN BY	MP	
CHECKED BY	JDR	
RECORD DWGS.		



3 HMB CIRCLE
FRANKFORT, KENTUCKY
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LAYOUT OF WASTEWATER SYSTEM IMPROVEMENTS
SOUTH
EXHIBIT 3

SHEET
OF

APPENDIX A

LETTER FROM
LEWIS COUNTY HEALTH DEPARTMENT

Lewis County Health Department

905 Fairlane Drive
P. O. Box 219
Vanceburg, Kentucky 41179
Phone (606) 796-2632
Fax (606) 796-9285

#12

Elwood Howell
USDA Rural Development
Morehead, Kentucky 40351

Dear Mr. Howell:

It has come to my attention that a municipal sewer is being considered for a part of Lewis County. The area in question is the community of Garrison, which would include; Murphy's Lane, Garrison Lane and across the railroad tracks, a mile of 1306 south and east to Bentleyville.

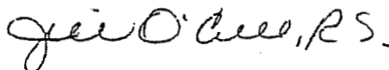
Presently all of these residents are served by private septic system. There are approximately 400 families and over 25 businesses located here.

Because many of these families live below the poverty level the majority of the septic systems are inadequate or outdated. Small lots and poor soil conditions hamper any improvements and strain a properly functioning system.

Bringing a waste-water treatment plant to Garrison would improve the quality of life and help with much needed economic growth.

I cannot emphasize enough the importance for the health of this community to have properly treated sewage. I highly recommend that your agency give the highest consideration to providing funding for this project.

Sincerely:



Jill O'Cull, RS
Public Health Environmentalist
Lewis County Health Dept.