Ebensburg CSO Elimination Evaluation Report

for the

Ebensburg Sanitary Sewer System

Ebensburg and Cambria Township,
Cambria County, Pennsylvania

Submitted to

Municipal Authority of the Borough of Ebensburg

Ebensburg, Cambria County, Pennsylvania

May 2013 ©

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Municipal Authority of the Borough of Ebensburg
Ebensburg CSO Elimination Evaluation Report

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Ebensburg CSO Elimination Evaluation Report
May 2013

Executive Summary:

This study developed conceptual alternatives for the elimination of the wet weather discharges from the two Combined Sewer Overflows (CSOs) of the Ebensburg sanitary sewer system. The study looked at installing new sanitary sewers in the sewer sheds contributory to the Griffith Field and Lakeview Road CSOs, provide detention storage at the CSO locations, and detention storage at the Ebensburg Wastewater Treatment Plant (WWTP). Detention storage sizing is based upon CSO flow data collected since 2007.

The conceptual plans were used to develop preliminary construction cost estimates and preliminary total project cost estimates. The study alternatives ranged between $8.8 million and $24.2 million. Construction of a new sewer system provides a permanent solution to remove stormwater from the sanitary sewer and elimination of the CSOs at the highest cost. Conversion of the existing sanitary sewer in the study area to storm sewers is another benefit of the new sewer system alternative. Detention tanks control excess wet weather flows until they are full but have the potential to overflow with significant events.

It is recommended that new sewers be constructed in the area that flows to the Lakeview Road CSO. The area of the Griffith Field CSO is significantly larger and it would be cost prohibitive to provide new sewers in that area. It is recommended to remove all roof drains and area drains from this area as well as the remainder of the sanitary sewer system and provide detention storage at the WWTP to handle the excess wet weather flows. The projected current volume of storage needed is 1.5 million gallons. Removal of stormwater from the sanitary sewer system will reduce or eliminate the detention required. This will allow the elimination of the two CSOs to comply with the Long Term Control Plan (LTCP). The projected cost of the recommended alternative (Alternative 6) is approximately $10.9 million. PENNWORKS and PENNVEST funding should be sought to fund this proposed project.

Background:

To comply with the Combined Sewer Overflow (CSO) Policy, Ebensburg developed a LTCP to address the two CSOs in the Ebensburg sewage collection system. The Pennsylvania Department of Environmental Protection (PADEP) approved LTCP called for the elimination of the two CSOs by December 31, 2016. Ebensburg, through the issuance of the NPDES permit for the Ebensburg Wastewater Treatment Plant, has extended the elimination date to September 1, 2017. Ebensburg continues to implement the LTCP that includes smoke testing and corrective actions to eliminate roof drain and area drain connections to the sanitary sewer. This study is an evaluation of alternatives to reduce or control the wet weather induced flows in the sanitary sewer to allow the elimination of the two CSOs.

Discussions with Paul Eiswerth of the PADEP indicates that the Department prefers the elimination of the CSOs by separating the sanitary and storm flows. This is a permanent fix but can come at a substantial cost to users. Where the cost of separation can be documented as being prohibitive, the PADEP can consider detention storage. The detention storage typically must be capable to storing the excess flows in the combined sewer system from a 2 year storm event (2.8" of precipitation in a 24-hour period for Cambria County). Discharges from the detention facilities are considered as sanitary sewer overflows and are a violation of the Clean Water Act. Enforcement action can be taken by the PADEP. Therefore, the detention alternative is not a complete fix as is the separation of the storm and sanitary sewers. Future environmental awareness and requirements will likely result in more stringent storage requirements as well as treatment requirements for events larger than the 2 year storm event.

This study evaluates the CSO flow data, performed preliminary sizing for detention storage, developed conceptual plan for each study alternative, estimated preliminary construction costs and preliminary total project costs, and identified potential funding options. This study will assist the Authority with selecting the approach for removing the CSOs as well as providing sufficient budget information to submit a PENNWORKS funding application by the June 28, 2013 deadline.

CSO Description

The following provides a brief description of the two existing CSOs. Their locations can be found on Exhibit 1 CSO Location Map

Griffith Field CSO is located east of Wilmore Road and south of Route 22 in the sloping field planted with evergreen trees. It serves the western portion of Ebensburg Borough and has an approximate area of 360 acres. The approximate limits of the area that contribute to the Griffith Field CSO can be seen on Exhibit 2 New Sanitary Sewer System. The CSO discharges to Higgins Run.

Lakeview Road CSO is located between Lakeview Road and Route 22 east of the intersection of Route 22 with Wilmore Road and S. Center Street. It serves an approximate 90 acre area of Ebensburg which includes a portion of the central business district. The limits of the area can be seen on Exhibit 2 New Sanitary Sewer System. The Lakeview Road CSO discharges to Higgins Run upstream of the Route 22 bridge.

Detention Storage Estimation

PADEP's guidance for storage sizing is to capture the excess flows from a 2 year 24 hour storm event (2.8" for Cambria County) that cannot be handled by the sewers or the treatment facilities. For larger systems it is expected that computer modeling be performed for this analysis. Such an analysis takes significant effort and time to develop and perform. Calibration of the sewer system model is based upon actual flow monitoring throughout the system adding to the cost of modeling. For smaller systems like Ebensburg, this analysis is typically not warranted due the time and expense. Since CSO data has been collected since 2007, the storage estimate for this evaluation will be based upon historical discharge volumes. The CSO flow data collected since 2007 was compiled and evaluated. A summary was prepared of significant precipitation events for the CSOs. Using the data, an estimated size of detention storage was selected. Included in Appendix A is the Significant Storm Discharged Volume Summary compiled and the basis of that selection. The following are the detention storages selected for this study based on that data.

Griffith Field CSO	1.5 Million Gallons
Lakeview Road CSO	1.8 Million Gallons

A review of the summary shows that these volumes would have contained all but one very significant snow melt and rain event that occurred in March of 2010. Such an event would exceed the 2 year storm event criteria. As mentioned above, the PADEP considers detention overflows as sanitary sewer overflows and a violation of the Clean Water Act. PADEP can impose fines for violations, however they may not assess fines when discharges are a result of a very large wet weather event.

The stored excess sewage and stormwater will then need to be discharged back to the sanitary sewer system and the WWTP for treatment as soon as plant flows allow the additional flow.

Should detention be selected as the preferred alternative, additional analysis may be required to finalize storage acceptable to the PADEP.

Study Alternatives

The following are the study alternatives and their related features:

Alternative 1: Replace Sewage Collection System – Griffith Field and Lakeview CSOs (Exhibit 2)

- New PVC SDR 35 sanitary sewer 8" through 18"

- New precast manholes
- New 6" laterals for each customer connection
- Require customers to connect only sewage facilities to new sewer system
- Convert old sanitary sewer to storm sewer
- Eliminate CSOs

Alternative 2: Provide Detention Storage at Griffith Field and Lakeview CSOs (Exhibits 3 & 4)

- 1.5 MG covered tank for Griffith Field CSO
- 1.8 MG covered tank for Lakeview CSO
- Upstream excess flow diversion structure for each CSO
- 18" force main from each diversion structure to each tank
- Each tank equipped with mixers, wash down system, carbon filter on vents and emergency overflows
- Control building for electric, controls, control systems and flow meters
- Fenced site with aggregate surfaced access roadway
- Eliminate CSOs
- Need to acquire land for the tanks

Alternative 3: Provide Detention Storage at Griffith Field and Replace Sewers for Lakeview CSO (Exhibits 3 & 2)

- 1.5 MG covered tank for Griffith Field CSO
- Upstream flow diversion structure for Griffith Field Tank
- 18" force main from diversion structure to Griffith Field Tank
- Tank equipped with mixer, wash down system, carbon filter on vent, and emergency overflow
- Control building for electric, controls, control systems, and flow meters
- Fenced site with aggregate surfaced access roadway
- New PVC SDR 35 sanitary sewer 8" through 18" for Lakeview Area
- New manholes for Lakeview Area
- New 6" laterals for each customer connection for Lakeview Area
- Require customers to connect only sewage facilities to new sewer system
- Convert old sanitary sewer to storm sewer
- Eliminate CSOs
- Need to acquire land for the tank

Alternative 4: Provide Detention Storage at Lakeview CSO and Replace Sewers for Griffith Field CSO (Exhibits 4 & 2)

- 1.8 MG covered tank for Lakeview CSO
- Upstream flow diversion structure for Lakeview Tank
- 18" force main from diversion structure to each Lakeview Tank
- Tank equipped with mixer, wash down system, carbon filter on vent and emergency overflow
- Control building for electric, controls, control systems and flow meters
- Fenced site with aggregate surfaced access roadway
- New PVC SDR 35 sanitary sewer 8" through 18" for Griffith Field Area
- New manholes for Griffith Field Area
- New 6" laterals for each customer connection for Griffith Field Area
- Require customers to connect only sewage facilities to new sewer system
- Convert old sanitary sewer to storm sewer in Griffith Field Area
- Eliminate CSOs

- Need to acquire land for the tank

Alternative 5: Provide Detention Storage at WWTP for both CSOs (Exhibit 5)

- 1.5 MG open tank for Griffith Field CSO
- 1.8 MG open tank for Lakeview CSO
- Diversion structure to direct excess flows to tanks from plant headworks
- 18" force main from diversion structure to tanks
- Each tank equipped with mixers, wash down system, and emergency overflow
- Electric, controls, control systems and flow meters located in existing plant control building
- Enlarge WWTP fenced area
- Pumping systems to return excess flow to treatment process
- Current interceptor sewer has sufficient capacity to convey flows to WWTP
- Eliminate CSOs

Alternative 6: Provide Detention Storage at WWTP for Griffith Field Area and Replace Sewers for Lakeview CSO (Exhibits 5 & 2)

- 1.5 MG open tank for Griffith Field Area at WWTP
- Diversion structure to direct excess flows to tank from plant headworks
- 18" force main from diversion structure to tank
- Tank equipped with mixer, water cannon, and emergency overflow
- Electric, controls, control systems and flow meters located in existing plant control building
- Pumping system to return excess flow to treatment process
- Enlarge WWTP fenced area
- Land acquisition required at plant for the tank
- New PVC SDR 35 sanitary sewer 8" through 18" for Lakeview Area
- New manholes for Lakeview Area
- New 6" laterals for each customer connection for Lakeview Area
- Require customers to connect only sewage facilities to new sewer system
- Convert old sanitary sewer to storm sewer
- Eliminate CSOs

Alternative 7: Provide Detention Storage for Lakeview Area at WWTP and Replace Sewers for Griffith Field CSO (Exhibits 5 & 1)

- 1.8 MG Open Tank for Lakeview CSO at WWTP
- Diversion structure to direct excess flows to tanks from plant headworks
- 18" force main from diversion structure to tank
- Tank equipped with mixer, water cannon, and emergency overflow
- Electric, controls, control systems and flow meters located in existing plant control building
- Enlarge WWTP fenced area
- New PVC SDR 35 sanitary sewer 8" through 18" for Griffith Field Area
- New manholes for Griffith Field Area
- New 6" laterals for each customer connection for Griffith Field Area
- Require customers to connect only sewage facilities to new sewer system
- Convert old Sanitary Sewer to storm sewer in Griffith Field Area
- Eliminate CSOs

Alternatives Preliminary Total Project Cost Summary

Alternative	Total Project Cost ($ million)
Alternative 1: Replace Sewage Collection System – Griffith Field and Lakeview CSOs	24.2
Alternative 2: Provide Detention Storage at Griffith Field and Lakeview CSOs	10.2
Alternative 3: Provide Detention Storage at Griffith Field and Replace Sewers for Lakeview CSO	11.3
Alternative 4: Provide Detention Storage at Lakeview CSO and Replace Sewers for Griffith Field CSO	23.1
Alternative 5: Provide Detention Storage at WWTP for both CSOs	8.8
Alternative 6: Provide Detention Storage at WWTP for Griffith Field Area and Replace Sewers for Lakeview CSO	10.9
Alternative 7: Provide Detention Storage for Lakeview Area at WWTP and Replace Sewers for Griffith Field CSO	22.1

Funding Options

The following are potential funding options for this project.

1. PENNVEST – The PA revolving fund program for sewer, water and stormwater projects can provide low interest loans typically for a 20 year amortization period. Current interest rates for Cambria County is 1.000 percent for years 1-5 and 1.743 for years 6-20. The following is the current schedule for applications and Board meetings. Design and permits need to be in place in order to file an application.

APPLICATION CUT-OFF DATES	BOARD MEETING DATES
August 21, 2013	October 23, 2013
November 13, 2013	January 21, 2014
February 19, 2014	April 22, 2014
May 14, 2014	TBD

2. PENNWORKS – PennWorks provides grants to municipalities and municipal authorities and loans to municipalities, municipal authorities, industrial development corporations and investor-owned water or wastewater enterprises for projects which construct, expand or improve water and wastewater infrastructure. Improvements must be directly related to an economic development project. A new round of grants and loans are currently available with an application cut-off of June 28, 2013. The program allows up to $5 million dollars of grants for an individual project and provides for loans at an annual interest rate of 2%. The program requires a match of at least 50%. The program supports the retainage of jobs or creation of jobs within the service area of the proposed facility improvements. Retainage of the industrial park users and job creations will be used as the basis of this grant request.

3. Bonds – due to current low interest rate, municipal bonds are an attractive option.

4. Conventional Loans - due to current low interest rate, bank loans are attractive options.

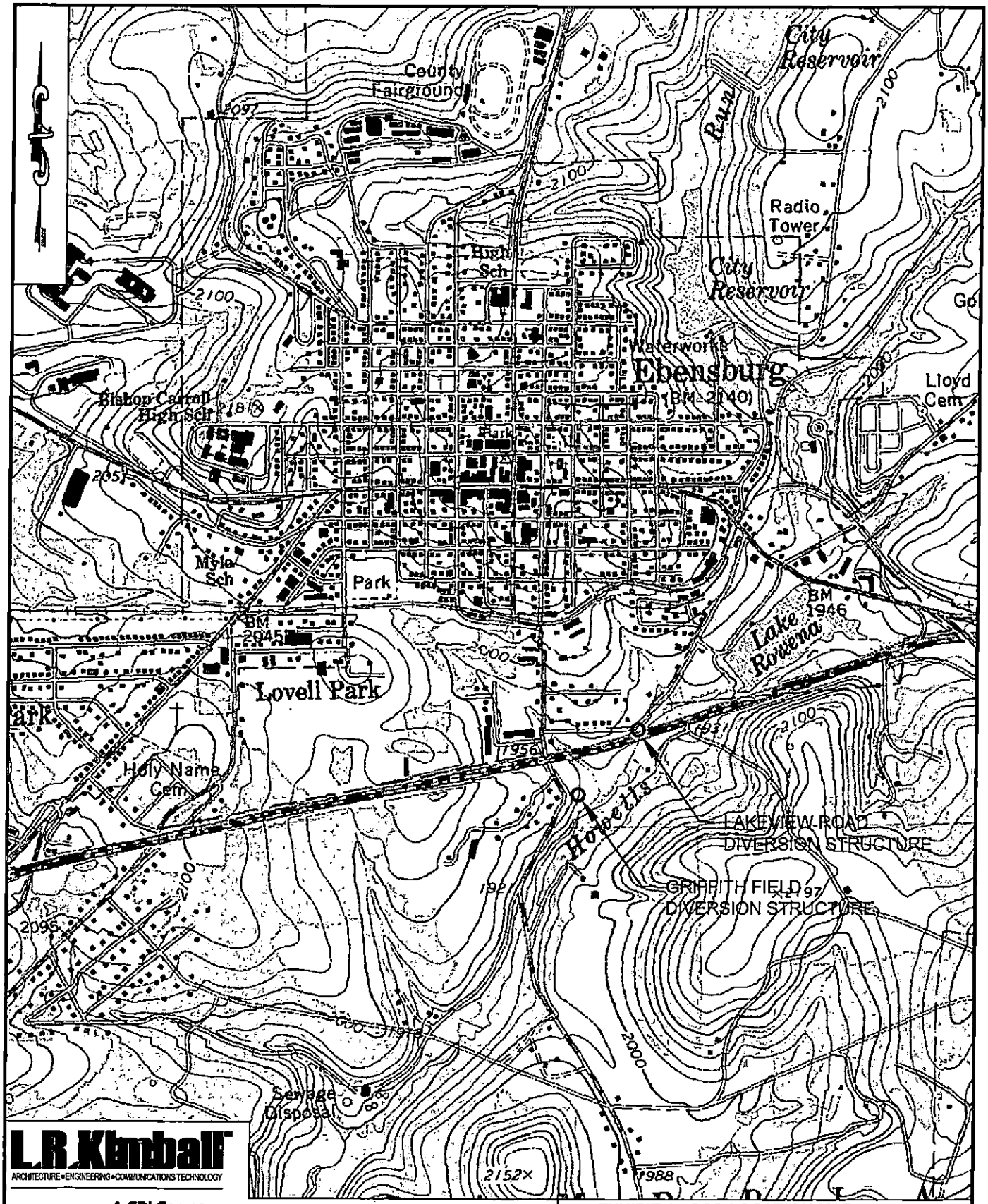
PENNVEST and PENNWORKS provides the best scenario for funding of the proposed project.

Recommendations

The following recommendations are made:

1. Due to the high cost of a new sanitary sewer system for the Griffith Field CSO area, actions should continue to eliminate all roof drain and area drain connections to the sanitary sewer system thereby reducing the volume of excess wet weather flows. Consideration can be given to replacing sewers in isolated problems areas to reduce wet weather flows. This approach could reduce or eliminate detention needs.
2. Also due to the high cost of a new sanitary sewer system for the Griffith Field CSO area, construction of detention at the Ebensburg WWTP to handle remaining peak wet weather flows is the recommended location. Storage as much as 1.5 MG is projected at the WWTP.
3. Construct new sanitary sewers in the Lakeview Road CSO area and convert the old sewers to storm sewers.
4. Continue to eliminate all roof drain and area drain connections to the entire sanitary sewer system thereby reducing the volume of excess wet weather flows and potential for overflows.
5. Eliminate the Griffith Field and Lakeview CSOs by the LTCP elimination date.
6. Seek PENNWORKS funding to assist with the cost of this project.
7. Discuss the selected alternative and approach with PADEP and PENNVEST.

Area 1 1.7 M
4 1 M
5 .5 M



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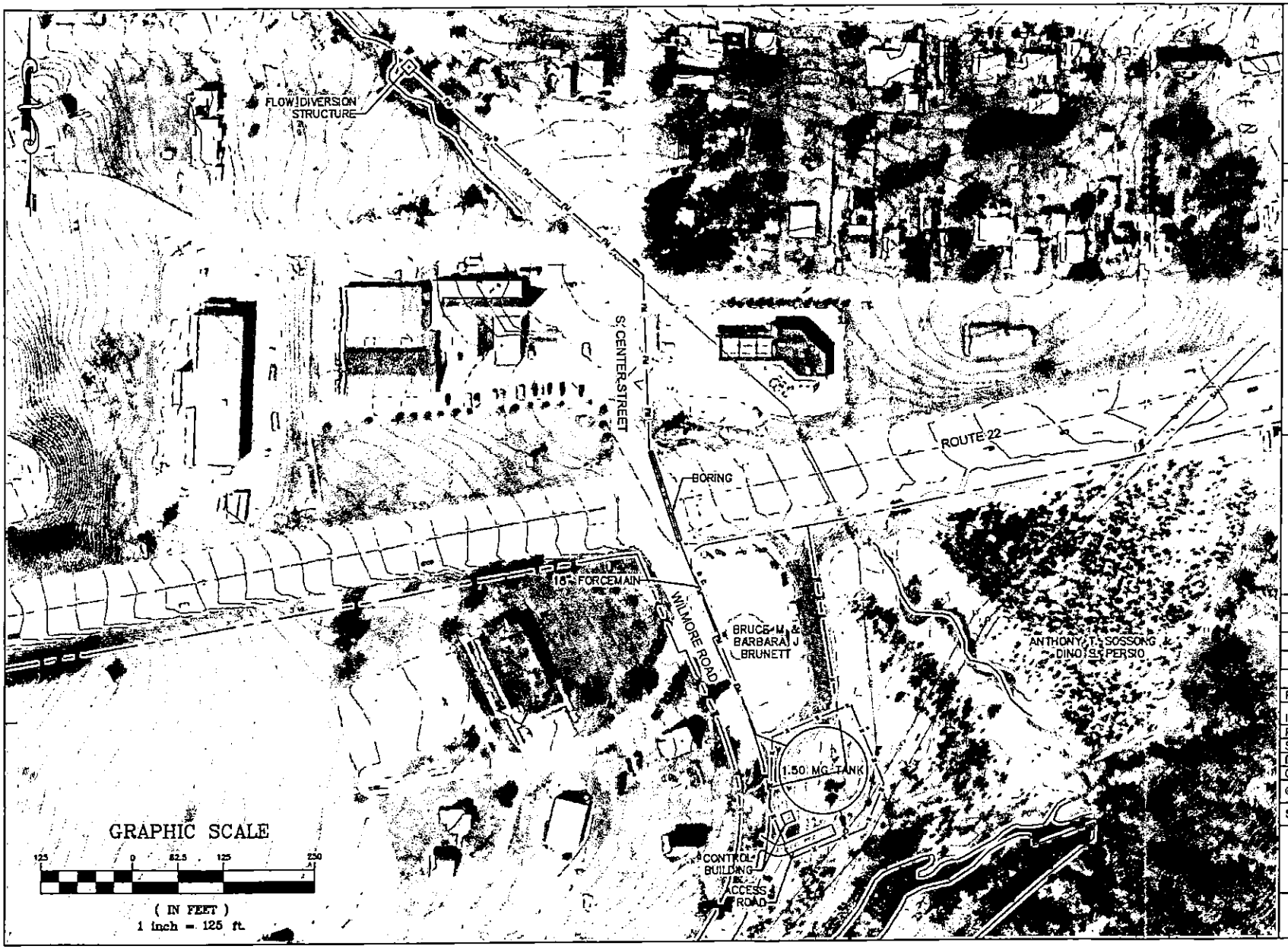
EBENSBURG BOROUGH
CSO ELIMINATION PROJECT

CAMBRIA COUNTY
EBENSBURG, PENNSYLVANIA

Title: EXHIBIT 1 - CSO LOCATION MAP

Client: MUNICIPAL AUTHORITY of the
BOROUGH OF EBENSBURG
300 WEST HIGH STREET
EBENSBURG, PA 15931

Scale	Date	Project Number	Drawn By	Checked By	Sheet Number
1" = 400'	5/17/13	13-2200-0092	JRH	CRM	1 OF 1



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EBENSBURG BOROUGH CSO ELIMINATION

BOROUGH OF EBENSBURG
CAMBRIA COUNTY, PA

MUNICIPAL AUTHORITY of the BOROUGH OF EBENSBURG
300 WEST HIGH STREET
EBENSBURG, PA 15931

REV.	DATE	DESCRIPTION

ISSUE:	5/17/13
PROJECT NO:	13-2200-0092
SCALE:	1"=125'
DRAWN BY:	JRH
CHECKED BY:	CRM

SHEET TITLE

1.50 MG TANK AT GRIFFITH FIELD CSO

EXHIBIT 3

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EBENSBURG BOROUGH CSO ELIMINATION

BOROUGH OF EBENSBURG
CAMBRIA COUNTY, PA

MUNICIPAL AUTHORITY of the BOROUGH OF EBENSBURG
300 WEST HIGH STREET
EBENSBURG, PA 15931

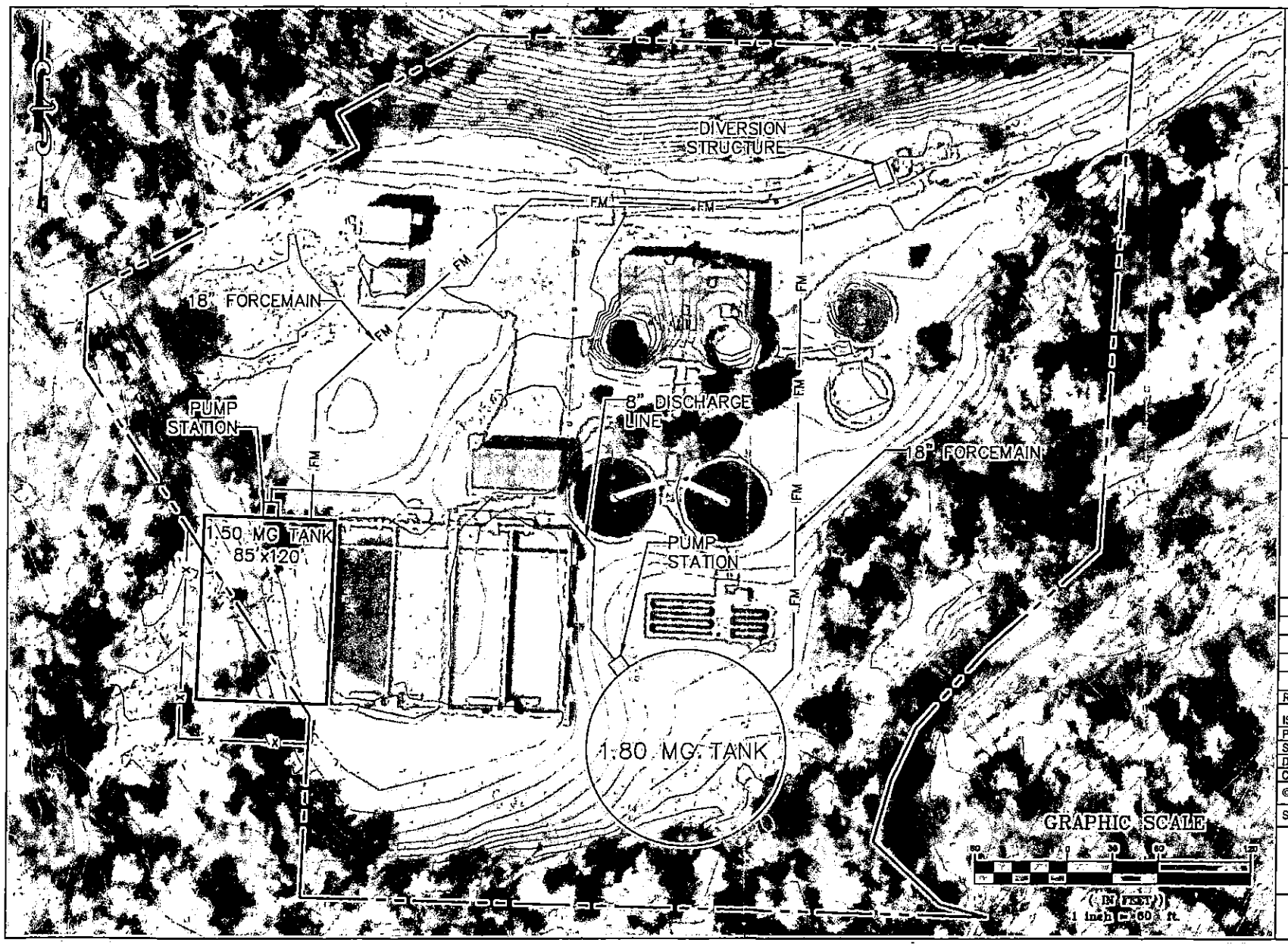
REV.	DATE	DESCRIPTION

ISSUE:	5/17/13
PROJECT NO:	13-2200-0092
SCALE:	1"=125'
DRAWN BY:	JRH
CHECKED BY:	CRM

SHEET TITLE

1.80 MG TANK AT LAKEVIEW ROAD CSO

EXHIBIT 4



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EBENSBURG BOROUGH CSO ELIMINATION

BOROUGH OF EBENSBURG
CAMBRIA COUNTY, PA

MUNICIPAL AUTHORITY of the BOROUGH OF EBENSBURG
300 WEST HIGH STREET
EBENSBURG, PA 15931

REV.	DATE	DESCRIPTION

ISSUE:	5/17/13
PROJECT NO:	13-2200-0092
SCALE:	1"=60'
DRAWN BY:	JRH
CHECKED BY:	CRM

SHEET TITLE

TANK OPTIONS AT WWTP

EXHIBIT 5

Appendix A

Ebensburg Wastewater Treatment Plant CSOs
Significant Event Summary

	Office Rain Gage Precip (in.)	Griffith Field Flows to Plant (gpd)	Griffith Field CSO Discharge (MGD)	Griffith Field Event Duration (Hrs.)	Lakeview RD Flows to Plant	Lakeview RD CSO Discharge (MGD)	Lakeview RD Event Duration (Hrs.)	WWTP Effluent Flows (MGD)	Griffith Field CSO Volume (MG)	Precip (in)	Lakeview RD CSO Volume (MG)	Precip (in)
2/7/2009	0.01	289,055	0.1053	9	250,451	0.0293	3	0.7658				
2/8/2009	1.9	501,912	0.7312	24	383,120	0.5038	24	1.8274				
2/9/2009	1.05	938,158	0.068	22	438,605	0.0779	22	2.9751	0.905	3.100	0.611	2.96
2/10/2009	0.15	837,134	0.1409	14	685,324	0.1053	14	2.0717				
2/11/2009	0.42	793,711	0.2835	24		0.2981	24	2.4345				
2/12/2009	0.46	859,570	0.3531	24	527,037	0.3554	24	2.5904				
2/13/2009	0	872,552	0.0012	4	460,442	0.0245	12	2.6312	0.779	1.030	0.783	1.03
2/14/2009	0	758,181			641,551			1.8799				
2/15/2009	0.05	576,516			520,628			1.5206				
1/23/2010	0.00	304,020.0			429,181.0			0.8421				
1/24/2010	0.69	357,460.0			415,127.0	0.1379	8.0	0.7585				
1/25/2010	0.80	501,271.0			519,239.0	1.0415	24.0	1.6898				
1/26/2010	0.01	365,092.0			296,322.0	0.2472	24.0	2.2416				
1/27/2010	0.01	590,269.0			623,138.0	0.0070	9.0	1.6084			1.434	1.51
1/28/2010	0.00	646,613.0			576,555.0			1.2650				
1/29/2010	0.00	489,044.0			474,344.0			0.9940				
1/30/2010	0.00	406,376.0			418,939.0			0.8612				
3/7/2010	0.00	320,378.0			370,192.0			0.6530				
3/8/2010	0.00	392,643.0	0.0006	1.0	406,305.0	0.0007	1.0	0.7313				
3/9/2010	0.00	500,555.0	0.0369	4.0	458,183.0	0.0211	7.0	0.9594				
3/10/2010	0.00	616,256.0	0.2082	11.0	520,005.0	0.1461	11.0	1.1290				
3/11/2010	0.00	712,234.0	0.7053	24.0	586,721.0	0.5326	24.0	1.5830				
3/12/2010	0.33	887,968.0	1.8562	24.0	636,928.0	1.2822	24.0	2.4540				
3/13/2010	0.81	985,310.0	2.0316	24.0	60,359.4	1.4267	24.0	3.1646				
3/14/2010	0.07	1,003,220.0	0.9356	24.0	60,359.4	0.8210	24.0	2.7693				
3/15/2010	0.05	925,054.0	0.2687	24.0	332,346.0	0.3404	24.0	1.7840				
3/16/2010	0.00	831,728.0	0.0116	6.0	555,548.0	0.0985	24.0	1.9671	6.027	1.260	4.673	1.26
3/17/2010	0.00	764,061.0	0.0002	0.5	594,251.0	0.0048	4.0	1.4836				
3/18/2010	0.00	661,709.0			555,613.0			1.3819				
3/19/2010	0.00	587,305.0			505,711.0			1.2418				
3/20/2010	0.00	516,217.0			474,342.0			1.1216				
3/21/2010	0.00	456,957.0			445,714.0			1.0130				
11/24/2010	0.00	237,870.0			150,457.0			0.5686				
11/25/2010	1.60	288,448.0	0.3678	15.0	143,571.0			0.5509				
11/26/2010	0.39	806,497.0	0.1584	12.0	462,608.0	0.0024	2.0	2.2215	0.526	1.990	0.002	1.99
11/27/2010	0.00	873,799.0			578,286.0			1.9415				
11/28/2010	0.00	604,424.0			433,388.0			1.2079				
11/29/2010	0.00	521,883.0			319,412.0			0.8699				
11/30/2010	1.49	472,619.0	0.4813		256,448.0	0.0118	6.0	0.8794				
12/1/2010	0.88	874,383.0	1.0286	24.0	304,457.0	0.1234	19.0	2.5526			0.135	2.37
12/2/2010	0.00	1,125,120.0	0.0281	12.0	89,191.6			2.6158	1.538	2.370		
12/3/2010	0.00	929,647.0			166,559.0			1.6231				
12/4/2010	0.00	619,044.0			408,411.0			1.1724				
2/16/2011	0.01	322,619.0						0.6796				
2/17/2011	0.00	450,361.0	0.1829	12.0		0.3110	12.0	0.9916				
2/18/2011	0.00	796,149.0	0.5053	22.0		0.8667	24.0	1.8488				
2/19/2011	0.00	1,077,470.0	0.0131	6.0		0.2967	21.0	2.4689	0.701	0.000	1.474	0.00
2/20/2011	0.00	863,365.0						1.4378				
2/21/2011	0.71	546,001.0				0.4754	22.0	1.2246				
2/22/2011	0.28	959,621.0	0.3087	15.0		0.0003	1.0	1.8555	0.309	0.990	0.476	0.99
2/23/2011	0.07	660,869.0						1.2511				
2/24/2011	0.16	518,669.0						1.0642				
2/25/2011	0.86	524,314.0	0.7992	23.0		0.9263	24.0	1.3249	0.799	1.020		
2/26/2011	0.01	1,026,570.0	0.0016	1.0		0.3435	24.0	2.5256				
2/27/2011	0.09	882,942.0	0.0022	3.0		0.0986	12.0	1.6053			1.368	0.96
2/28/2011	0.93	768,419.0	1.2794	24.0		1.2285	24.0	1.9333				
3/1/2011	0.00	1,101,560.0	0.0717	15.0	350,530.0	0.5058	24.0	2.1891	1.351	0.930	1.835	0.93
3/2/2011	0.00	973,652.0			644,996.0	0.0016	6.0	1.8058				
3/3/2011	0.02	669,276.0			525,859.0			1.2643				
3/4/2011	0.00	533,081.0			391,268.0			0.3886				
					Proposed Storage				1.50		1.80	

Appendix B

Ebensburg Borough CSO Elimination Sewer Project
Preliminary Total Project Cost Summary

May 15, 2013

	Key	Griffith Field CSO Total Project Cost	Key	Lakeview CSO Total Project Cost	
New Sanitary Sewers	A	$17,580,553	B	$6,596,414	
Tank at CSO Location	C	$4,642,447	D	$5,523,922	
Tank at WWTP	E	$4,305,924	F	$4,458,725	

Tankage

Ebensburg Borough CSO Elimination Sewer Project
Alternative Combination Preliminary Total Project Cost Summary

May 15, 2013

Alternative Combinations		Griffith Field CSO Total Project Cost		Lakeview CSO Total Project Cost	Alternative Total Project cost
Alternative 1 A+B		$17,580,553		$6,596,414	$24,176,966
Alternative 2 C+D		$4,642,447		$5,523,922	$10,166,369
Alternative 3 C+B		$4,642,447		$6,596,414	$11,238,861
Alternative 4 A+D		$17,580,553		$5,523,922	$23,104,474
Alternative 5 E+F		$4,305,924		$4,458,725	$8,764,650
Alternative 6 E+B		$4,305,924		$6,596,414	$10,902,338
Alternative 7 A+F		$17,580,553		$4,458,725	$22,039,278

Appendix C

Ebensburg Borough CSO Elimination Sewer Project
Preliminary Construction Cost Estimate
New Sanitary Sewer - Griffith Field CSO
May 14, 2013

Item No.	Item	Quantity	Unit	Unit Price	Total Price
1	Mobilization	1	LS	$ 70,000	$ 70,000
2	8" PVC SDR-35 Pipe (any depth)	46,000	LF	$ 90	$ 4,140,000
3	10" PVC SDR-35 Pipe (any depth)	1,200	LF	$ 100	$ 120,000
4	18" PVC SDR-35 Pipe (any depth)	1,650	LF	$ 135	$ 222,750
5	48" Dia. Manholes	200	EA	$ 3,200	$ 640,000
6	Laterals - 6" PVC SDR-35 Pipe	15,000	LF	$ 65	$ 975,000
7	Plain Concrete Curb	2,000	LF	$ 60	$ 120,000
8	8"x8"x6" PVC Wye	600	EA	$ 100	$ 60,000
9	6" Lateral Observation Port	600	EA	$ 200	$ 120,000
10	Observation Port Casting (Frame/Cover)	75	EA	$ 200	$ 15,000
11	Gravel Drive Restoration	250	SY	$ 30	$ 7,500
12	Concrete Sidewalk Restoration	225	SY	$ 100	$ 22,500
13	Bituminous Driveway Restoration	150	SY	$ 75	$ 11,250
14	Pavement Restoration	35,000	SY	$ 80	$ 2,800,000
15	Permanent Pipe Plug	15	EA	$ 750	$ 11,250
16	Test Pits	225	EA	$ 350	$ 78,750
17	Coarse Aggregate	54,000	CY	$ 42	$ 2,268,000
18	Erosion and Sedimentation Control	1	LS	$ 7,500	$ 7,500
19	PADOT Inspection Allowance	1	LS	$ 15,000	$ 15,000
20	Maintenance and Protection of Traffic	1	LS	$ 35,000	$ 35,000
	Subtotal				**$ 11,739,500**
	Contigency (15%)				$ 1,760,925
	Total Construction Cost				**$ 13,500,425**
	Land Aquisition				$ 30,000
	Surveying, Engineering, Legal and Permits				$ 4,050,128
	TOTAL PROJECT COST				**$ 17,580,553**

Ebensburg Borough CSO Elimination Sewer Project
Preliminary Construction Cost Estimate
New Sanitary Sewer - Lakeview Road CSO
May 14, 2013

Item No.	Item	Quantity	Unit	Unit Price	Total Price
1	Mobilization	1	LS	$ 30,000	$ 30,000
2	8" PVC SDR-35 Pipe (any depth)	18,750	LF	$ 90	$ 1,687,500
3	12" PVC SDR-35 Pipe (any depth)	1,350	LF	$ 110	$ 148,500
4	48" Dia. Manholes	85	EA	$ 3,200	$ 272,000
5	Laterals - 6" PVC SDR-35 Pipe	6,000	LF	$ 65	$ 390,000
6	Plain Concrete Curb	500	LF	$ 60	$ 30,000
7	8"x8"x6" PVC Wye	230	EA	$ 100	$ 23,000
8	6" Lateral Observation Port	230	EA	$ 200	$ 46,000
9	Observation Port Casting (Frame/Cover)	25	EA	$ 200	$ 5,000
10	Gravel Drive Restoration	50	SY	$ 30	$ 1,500
11	Concrete Sidewalk Restoration	75	SY	$ 100	$ 7,500
12	Bituminous Driveway Restoration	50	SY	$ 75	$ 3,750
13	Pavement Restoration	12,000	SY	$ 80	$ 960,000
14	Permanent Pipe Plug	5	EA	$ 750	$ 3,750
15	Test Pits	75	EA	$ 350	$ 26,250
16	Coarse Aggregate	17,500	CY	$ 42	$ 735,000
17	Erosion and Sedimentation Control	1	LS	$ 2,500	$ 2,500
18	PADOT Inspection Allowance	1	LS	$ 5,000	$ 5,000
19	Maintenance and Protection of Traffic	1	LS	$ 15,000	$ 15,000
	Subtotal				**$ 4,392,250**
	Contigency (15%)				$ 658,838
	Total Construction Cost				**$ 5,051,088**
	Land Aquisition				$ 30,000
	Surveying, Engineering, Legal and Permits				$ 1,515,326
	TOTAL PROJECT COST				**$ 6,596,414**

Ebensburg Borough CSO Elimination Sewer Project
Preliminary Construction Cost Estimate
1.5 MG Tank at Griffith Field CSO
May 15, 2013

1.5 MG Tank (115' Diameter)

Item No.	Item	Quantity	Unit	Unit Price	Total Price
1	Mobilization	1	LS	$ 100,000	$ 100,000
2	Fencing	650	LF	$ 45	$ 29,250
3	Fencing Double Gate	1	EA	$ 3,500	$ 3,500
4	Excavation	9,000	CY	$ 18	$ 162,000
5	Hauling	6,000	CY	$ 12	$ 72,000
6	Dewatering	4	WK	$ 3,000	$ 12,000
7	Site Access Road Grading and Aggregate	20	SY	$ 28	$ 560
8	Seeding, Soil Supplements and Mulch	200	SY	$ 3	$ 600
9	18" HDPE Force Main Pipe	1,100	LF	$ 150	$ 165,000
10	30" Roadway Boring	160	LF	$ 600	$ 96,000
11	48" Manhole	4	EA	$ 3,000	$ 12,000
12	Flow Diversion Structure (to tank)	1	LF	$ 80,000	$ 80,000
13	Flow Meters	2	EA	$ 15,000	$ 30,000
14	Control Building	1	LS	$ 35,000	$ 35,000
15	Electrical System	1	LS	$ 30,000	$ 30,000
16	Control System	1	LS	$ 50,000	$ 50,000
17	Site Lighting	1	LS	$ 8,000	$ 8,000
18	Concrete - 1.5 MG Tank - Covered	2,400	CY	$ 800	$ 1,920,000
19	Emergency Overflow	150	LF	$ 100	$ 15,000
20	Tank Mixers	1	LS	$ 50,000	$ 50,000
21	Tank Outlet Control Vault, Valve & Actuator	1	LS	$ 50,000	$ 50,000
22	Tank Water Flushing System	1	LS	$ 75,000	$ 75,000
23	Tank Vent Carbon Filter	1	LS	$ 25,000	$ 25,000
24	PVC Waterline - C900 - 6"	70	LF	$ 75	$ 5,250
25	Gate Valve - 6"	1	EA	$ 1,800	$ 1,800
26	Test Pits	5	EA	$ 500	$ 2,500
27	Coarse Aggregate	550	CY	$ 42	$ 23,100
28	Replace 8" Pipe with 18" Pipe at CSO	60	LF	$ 125	$ 7,500
29	Seal CSO outlet remove CSO weir and gate	1	LS	$ 2,500	$ 2,500
30	Erosion and Sedimentation Control	1	LS	$ 15,000	$ 15,000
	Subtotal				**$ 3,078,560**
	Contigency (15%)				$ 461,784
	Total Construction Cost				**$ 3,540,344**
	Land Aquisition				$ 40,000
	Surveying, Engineering, Legal and Permits				$ 1,062,103
	TOTAL PROJECT COST				**$ 4,642,447**

Ebensburg Borough CSO Elimination Sewer Project
Preliminary Construction Cost Estimate
1.8 MG Tank at Lakeview Road CSO
May 15, 2013

1.8 MG Tank (130' Diameter)

Item No.	Item	Quantity	Unit	Unit Price	Total Price
1	Mobilization	1	LS	$ 100,000	$ 100,000
2	Fencing	650	LF	$ 45	$ 29,250
3	Fencing Double Gate	1	EA	$ 3,500	$ 3,500
4	Excavation	12,000	CY	$ 18	$ 216,000
5	Hauling	8,500	CY	$ 12	$ 102,000
6	Dewatering	5	WK	$ 3,000	$ 15,000
7	Site Access Road Grading and Aggregate	600	SY	$ 28	$ 16,800
8	Seeding, Soil Supplements and Mulch	3,500	SY	$ 3	$ 10,500
9	18" HDPE Force Main Pipe	1,400	LF	$ 150	$ 210,000
10	30" Roadway Boring	140	LF	$ 600	$ 84,000
11	48" Manhole	2	EA	$ 3,000	$ 6,000
12	Flow Diversion Structure (to tank)	1	LF	$ 80,000	$ 80,000
13	Flow Meters	2	EA	$ 15,000	$ 30,000
14	Control Building	1	LS	$ 40,000	$ 40,000
15	Electrical System	1	LS	$ 30,000	$ 30,000
16	Control System	1	LS	$ 50,000	$ 50,000
17	Site Lighting	1	LS	$ 8,000	$ 8,000
18	Concrete - 1.8 MG Tank - Covered	2,900	CY	$ 800	$ 2,320,000
19	Emergency Overflow	350	LF	$ 100	$ 35,000
20	Tank Mixers	1	LS	$ 55,000	$ 55,000
21	Tank Outlet Control Vault and Valves	1	LS	$ 50,000	$ 50,000
22	Tank Water Flushing System	1	LS	$ 75,000	$ 75,000
23	Tank Vent Carbon Filter	1	LS	$ 25,000	$ 25,000
24	PVC Waterline - C900 - 6"	360	LF	$ 75	$ 27,000
25	Gate Valve -6"	1	EA	$ 1,800	$ 1,800
26	Test Pits	5	EA	$ 500	$ 2,500
27	Coarse Aggregate	600	CY	$ 42	$ 25,200
28	Replace 8" Pipe with 12" Pipe at CSO	25	LF	$ 125	$ 3,125
29	Seal CSO outlet remove CSO weir and gate	1	LS	$ 2,500	$ 2,500
30	Erosion and Sedimentation Control	1	LS	$ 15,000	$ 15,000
	Subtotal				**$ 3,668,175**
	Contigency (15%)				$ 550,226
	Total Construction Cost				**$ 4,218,401**
	Land Aquisition				$ 40,000
	Surveying, Engineering, Legal and Permits				$ 1,265,520
	TOTAL PROJECT COST				**$ 5,523,922**

Ebensburg Borough CSO Elimination Sewer Project
Preliminary Construction Cost Estimate
1.5 MG Rectangular Tank at WWTP

May 15, 2013

1.5 MG Tank (120' x 85')

Item No.	Item	Quantity	Unit	Unit Price	Total Price
1	Mobilization	1	LS	$ 100,000	$ 100,000
2	Fencing	250	LF	$ 45	$ 11,250
3	Excavation	9,000	CY	$ 18	$ 162,000
4	Hauling	6,000	CY	$ 12	$ 72,000
5	Dewatering	6	WK	$ 3,000	$ 18,000
6	Seeding, Soil Supplements and Mulch	5,000	SY	$ 3	$ 15,000
7	18" HDPE Force Main Pipe	520	LF	$ 150	$ 78,000
8	48" Manhole	2	EA	$ 3,000	$ 6,000
9	Flow Diversion to Tank	1	LF	$ 60,000	$ 60,000
10	Flow Meters	2	EA	$ 15,000	$ 30,000
11	Electrical System	1	LS	$ 45,000	$ 45,000
12	Control System	1	LS	$ 40,000	$ 40,000
13	Site Lighting	1	LS	$ 6,000	$ 6,000
14	Concrete - 1.5 MG Tank - Open top	2,100	CY	$ 900	$ 1,890,000
15	Emergency Overflow weir	1	LS	$ 5,000	$ 5,000
16	Tank Mixers	1	LS	$ 60,000	$ 60,000
17	Tank Pumping System and wetwell	1	LS	$ 100,000	$ 100,000
18	Pump Discharge Piping	130	LF	$ 90	$ 11,700
19	Tank Water Flushing System	1	LS	$ 75,000	$ 75,000
20	PVC Waterline - C900 - 4"	150	LF	$ 70	$ 10,500
21	Gate Valve - 4"	1	EA	$ 1,800	$ 1,800
22	Test Pits	5	EA	$ 500	$ 2,500
23	Coarse Aggregate	450	CY	$ 42	$ 18,900
24	Replace 8" Pipe with 18" Pipe at CSO	60	LF	$ 150	$ 9,000
25	Seal CSO outlet remove CSO weir and gate	1	LS	$ 2,500	$ 2,500
26	Pavement Restoration	1	LS	$ 15,000	$ 15,000
27	Erosion and Sedimentation Control	1	LS	$ 15,000	$ 15,000
	Subtotal				**$ 2,860,150**
	Contigency (15%)				$ 429,023
	Total Construction Cost				**$ 3,289,173**
	Land Aquisition				$ 30,000
	Surveying, Engineering, Legal and Permits				$ 986,752
	TOTAL PROJECT COST				**$ 4,305,924**

Ebensburg Borough CSO Elimination Sewer Project
Preliminary Construction Cost Estimate
1.8 MG Tank at WWTP
May 15, 2013

1.8 MG Tank (130' Diameter)

Item No.	Item	Quantity	Unit	Unit Price	Total Price
1	Mobilization	1	LS	$ 100,000	$ 100,000
2	Fencing	400	LF	$ 45	$ 18,000
3	Excavation	12,000	CY	$ 18	$ 216,000
4	Hauling	8,500	CY	$ 12	$ 102,000
5	Dewatering	6	WK	$ 3,000	$ 18,000
6	Seeding, Soil Supplements and Mulch	5,000	SY	$ 3	$ 15,000
7	18" HDPE Force Main Pipe	400	LF	$ 150	$ 60,000
8	48" Manhole	2	EA	$ 3,000	$ 6,000
9	Flow Diversion Structure to Tank	1	LF	$ 60,000	$ 60,000
10	Flow Meters	2	EA	$ 15,000	$ 30,000
11	Electrical System	1	LS	$ 45,000	$ 45,000
12	Control System	1	LS	$ 40,000	$ 40,000
13	Site Lighting	1	LS	$ 6,000	$ 6,000
14	Concrete - 1.8 MG Tank - Open top	2,400	CY	$ 800	$ 1,920,000
15	Emergency Overflow	60	LF	$ 100	$ 6,000
16	Tank Mixers	1	LS	$ 55,000	$ 55,000
17	Tank Pumping System and wetwell	1	LS	$ 100,000	$ 100,000
18	Pump Discharge Piping	220	LF	$ 90	$ 19,800
19	Tank Water Flushing System	1	LS	$ 75,000	$ 75,000
20	PVC Waterline - C900 - 4"	150	LF	$ 70	$ 10,500
21	Gate Valve - 4"	1	EA	$ 1,800	$ 1,800
22	Relocation of Existing Piping	1	LS	$ 20,000	$ 20,000
23	Test Pits	5	EA	$ 500	$ 2,500
24	Coarse Aggregate	600	CY	$ 42	$ 25,200
25	Replace 8" Pipe with 12" Pipe at CSO	25	LF	$ 125	$ 3,125
26	Seal CSO outlet remove CSO weir and gate	1	LS	$ 2,500	$ 2,500
27	Pavement Restoration	1	LS	$ 10,000	$ 10,000
28	Erosion and Sedimentation Control	1	LS	$ 15,000	$ 15,000
	Subtotal				**$ 2,982,425**
	Contigency (15%)				$ 447,364
	Total Construction Cost				**$ 3,429,789**
	Land Aquisition				$ -
	Surveying, Engineering, Legal and Permits				$ 1,028,937
	TOTAL PROJECT COST				**$ 4,458,725**