Application of Pennsylvania-American Water Company for the Acquisition of the Wastewater Treatment Plant and Collection System Owned and Operated by Elizabeth Borough Municipal Authority ("EBMA")

Docket No. A-2025-3052983

66 Pa. C.S. § 1329
Application Filing Checklist – Water/Wastewater

22. Other requirements. Demonstrate compliance with the following:

b. For **wastewater** system acquisitions, provide a copy of the DEP-approved Act 537 Official Sewage Facilities Plans for the affected municipalities.

RESPONSE: b. A county-wide Comprehensive Sewerage Needs Plan was prepared by Allegheny County, Pennsylvania in December 1970 to meet the requirements of the Pennsylvania Sewage Facilities Act of 1966 (Act 537) and serve as the original sewage planning study for these municipalities. A copy of this plan is attached as **Appendix A-22-b.1**. Information related to sewage planning for Elizabeth Borough and the other affected municipalities (Elizabeth Township, Forward Township and Lincoln Borough) is provided on pages 49-54 of the Plan.

Recent updates to the Act 537 Official Sewage Facilities Plans for the affected municipalities include a Special Study prepared by Elizabeth Borough and approved by PADEP on August 23, 2016 (**Appendix A-22-b.2**) and a Special Study prepared by Elizabeth Township and approved by PADEP on June 25, 2019 (**Appendix A-22-b.3**).

COMPREHENSIVE SEWERAGE NEEDS PLAN
ALLEGHENY COUNTY, PENNSYLVANIA DECEMBER 1970

BOARD OF COUNTY COMMISSIONERS

LEONARD C. STAISEY, CHAIRMAN
THOMAS J. FOERSTER
WILLIAM R. HUNT, M.D.

ALLEGHENY COUNTY PLANNING COMMISSION

CARL E. GLOCK, CHAIRMAN
JOSEPH S. EGER
EARL F. HORD
JAMES W. KNOX
JOHN H. MILLER
HIRAM MILTON
EMIL E. NARICK

LEROY L. LITTLE, EXECUTIVE DIRECTOR
HAROLD W. HUCKESTEIN, DEPUTY DIRECTOR

LETTER OF TRANSMITTAL

ENVIRONMENTAL ENGINEERING DIVISION

DONALD BERMAN
VICE PRESIDENT

NICHOLAS STRATAKIS
CHIEF ENGINEER

WILLIAM A. SPRAGUE
PROJECT ENGINEER

Green Engineering Company
consulting engineers
504 Beaver Street, Sewickley, Pennsylvania 15143 Telephone: Area Code 412—761-2770

December 1970

Board of County Commissioners
The Honorable Leonard C. Staisey, Chairman
County of Allegheny
Room 101 Courthouse
Pittsburgh, Pennsylvania 15219

Gentlemen:

We take pleasure and pride in presenting this Comprehensive Sewerage Needs Plan to you and to the people of Allegheny County. This report fulfills the requirements of our Agreement with the County dated July 3, 1969, and satisfies the conditions established by the terms of the Pennsylvania Sewage Facilities Act (Act 537).

This report contains an inventory of existing conditions and delineates the many areas of the County which lack sewerage systems or treatment facilities. It highlights six major drainage areas which currently are the subject of considerable concern. The report not only contains our recommendations for solving the problems of today, but presents a planned program for meeting the challenge of tomorrow which will be brought about by an ever growing population and a continually expanding economy.

We appreciate the opportunity of serving as your Consultants and wish to assure you of our continuing cooperation in the implementation of the program.

Sincerely yours,

GREEN ENGINEERING COMPANY

Samuel J. Green

Samuel J. Green, P. E.
President

SJG:cm

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
SAMUEL J. GREEN
ENGINEER
No. 1905-E

ACKNOWLEDGEMENTS

We wish to express our gratitude to the Pennsylvania Department of Health, the Pennsylvania Department of Transportation, the Southwestern Pennsylvania Regional Planning Commission, the Allegheny County Health Department, the United States Soil and Water Conservation Service, and all local municipalities, authorities and their consultants for the cooperation afforded to us during the progress of our work.

This report has been prepared in accordance with the requirements of the "Pennsylvania Sewage Facilities Act." Funds have been supplied on a matching basis by The Pennsylvania Department of Health and The Allegheny County Board of Commissioners.

LETTER OF CONCURRENCE — ALLEGHENY COUNTY PLANNING COMMISSION

COUNTY COMMISSIONERS
LEONARD C. STAISEY
CHAIRMAN
THOMAS J. FOERSTER
WILLIAM R. HUNT, M. D.



DEPARTMENT OF PLANNING
LEROY L. LITTLE
EXECUTIVE DIRECTOR
HAROLD W. HUCKESTEIN
DEPUTY DIRECTOR

County of Allegheny

1500 ALLEGHENY BUILDING, 429 FORBES AVENUE, (412) 355-5960
PITTSBURGH, PA. 15219
23

February 10, 1971

The Board of County Commissioners
Hon. Leonard C. Staisey, Chairman
Room 101 Court House
Pittsburgh, Pa. 15219

Re: Letter of Concurrence

Gentlemen:

We are pleased to forward the -

COMPREHENSIVE SEWERAGE NEEDS PLAN 1970 - 2000

which was prepared by Green Engineering Company, Sewickley, Pennsylvania, in conjunction with the Department of Planning.

At the Regular Meeting of the Allegheny County Planning Commission, held January 19, 1971, the report and recommendations were formally reviewed and adopted.

The report, which is a key element in the 10-part County Comprehensive Development Plan does three things:

1. Identifies the scope and magnitude of one of the major environmental concerns.

2. Qualifies the participating municipalities under Act 537 - the Pennsylvania Sewage Facilities Act - for State approval of plans, and

3. Recommends the role by which Allegheny County may implement another phase of its Policy for Urban Development.

You will note that six priority basins have been delineated which are prime targets for development because of the availability of land, highway construction, private investment projects and/or the construction of public facilities; the anticipated rate of development for these areas will require that adequate sewerage facilities be provided within the next two to five years.

It is recommended that the Board of Commissioners:

1. Adopt the report as a policy and working document for County-wide sanitary sewerage needs.

2. Issue a "letter of concurrence" to the Department of Environmental Resources, Commonwealth of Pennsylvania.

3. Refer the report to the 129 municipalities for their review and adoption as required by Act 537 - the Pennsylvania Sewage Facilities Act.

4. Advise the Commonwealth and Federal governments of the adoption of the report and refer it to the Metropolitan Clearing House as required by the Federal Office of Budget and Management A-95 circular.

It is further recommended that the Board:

5. Create a County service authority, department or other instrumentality which should implement, in conformance to the Plan, the engineering needs, the economic feasibility and the management structure for the development of facilities in the six priority basins.

6. Proceed with engineering feasibility studies for the remaining drainage basins as recommended in the plan.

Sincerely yours,

LeRoy L. Little
Executive Director

LLL/md

LETTER OF CONCURRENCE — BOARD OF COUNTY COMMISSIONERS

County Commissioners
LEONARD C. STAISEY
CHAIRMAN
THOMAS J. FOERSTER
WILLIAM R. HUNT, M. D.

County of Allegheny

PITTSBURGH, PA. 15219

OFFICE OF THE COUNTY COMMISSIONERS
THOMAS B. CARPENTER
CHIEF CLERK

February 26, 1971

Mr. Maurice Goddard, Acting Secretary
Department of Environmental Resources
Commonwealth of Pennsylvania
Capitol Building
Harrisburg, Pa.

Dear Mr. Secretary:

The Board of County Commissioners, at its meeting held February 18, 1971, approved the recommendation of the Allegheny County Planning Commission, that the

COMPREHENSIVE SEWERAGE NEEDS PLAN 1970 - 2000

be adopted.

This is to serve as the "Letter of Concurrence" by the governing body as required by Act 537, the Pennsylvania Sewage Facilities Act.

Respectfully,

Leonard C. Staisey, Chairman

Thomas J. Foerster, Member

William R. Hunt, M.D. Member

ATTEST:

Thomas B. Carpenter, Chief Clerk

TABLE OF CONTENTS

LETTER OF TRANSMITTAL

ACKNOWLEDGEMENTS

LETTER OF CONCURRENCE — ALLEGHENY COUNTY PLANNING COMMISSION

LETTER OF CONCURRENCE — BOARD OF COUNTY COMMISSIONERS

INTRODUCTION

SECTION	PAGE NO.
I. HISTORICAL BACKGROUND	1-2
II. URBANIZATION	3-10
III. POPULATION	11-16
IV. GEOLOGY	17-20
V. WATER & SEWER PROBLEM AREAS	21-22
VI. EXISTING & PROPOSED WATER SUPPLY SYSTEMS	23-28
VII. EXISTING & PROPOSED SEWERAGE SYSTEMS	29-70
VIII. PRIORITY AREAS	71-82
IX. CONCLUSIONS & RECOMMENDATIONS	83-92

APPENDIX

TABLE A — EXISTING SEWAGE TREATMENT PLANTS	93-102
TABLE B — EXISTING INTERCEPTOR SEWERS	103-108
TABLE C — CURRENT SEWAGE RATE SCHEDULE	109-120

INTRODUCTION

The provision of adequate sewerage facilities is a necessity for the orderly development of any area. Several years before the present national awareness of water pollution, Allegheny County embarked on a program which was designed to identify the needs of the County in this field. With the enactment of the Pennsylvania Sewage Facilities Act (Act 537), the County Commissioners were able to proceed on a sound fiscal and inter-municipal basis to develop a Comprehensive Sewerage Needs Plan.

On January 24, 1966, the Governor of the Commonwealth of Pennsylvania signed into law the Pennsylvania Sewage Facilities Act, commonly known as Act 537. This legislation became effective on July 1, 1967, and requires the undertaking of comprehensive sewerage planning by all municipalities within the Commonwealth. The Act further states that joint planning efforts may be undertaken by municipalities and that the final plan may be submitted by one of the municipalities with the concurrence of all others. In essence, the plan is to indicate those areas where sewerage systems are currently in existence, those areas where it is anticipated that community sewerage systems should be constructed within ten years, and those areas where community sewerage systems are not contemplated for at least ten years.

Guidelines for the preparation of the official plan, as set forth by Act 537, have been complied with and include, but are not necessarily limited to, the following provisions:

† Provide for the orderly extension of community interceptor sewers in a manner consistent with the needs and plans of the whole area, provided that this section shall not be construed to limit the development of such community facilities at an accelerated rate different than that set forth in the official plan;

† Provide for adequate sewage treatment facilities which will prevent the discharge of untreated or inadequately treated sewage or other waste into any waters or otherwise provide for the safe and sanitary treatment of sewage or other waste;

† Take into consideration all aspects of planning, zoning, population estimates, engineering and economics so as to delineate with all practicable precision those portions of the area which community systems may reasonably be expected to serve within ten years, after ten years, and any areas in which the provision of such services is not reasonably foreseeable;

† Take into consideration any existing State plan affecting the development, use and protection of water resources;

† Establish procedures for delineating and acquiring on a time schedule consistent with that established in clause (3) of this subsection necessary rights of way or easements for community systems;

† Set forth a time schedule and proposed method of financing the construction and operation of the planned community systems, together with the estimated cost thereof;

† Be reviewed by appropriate official planning agencies within a municipality, including a planning agency with area-wide jurisdiction if one exists, for consistency with programs of planning for the area, and all such reviews shall be transmitted to the department with the proposed plans; and

† Include provision for periodic revision of the plan.

During the early part of 1968, the Commissioners of Allegheny County requested from each of the 129 municipalities, an authorization to prepare a Comprehensive Sewerage Needs Study for the entire County. As a result of this request, the County received authorization from 90 municipalities (Table I) to proceed with the preparation of the County-wide study in their behalf. Although 39 municipalities have prepared individual sewerage plans, this report includes the analysis of sewerage needs in the entire County and takes into account those planning efforts prepared on a local basis.

Although the Allegheny County Sanitary Authority (Alcosan) currently provides sewage transportation and treatment services to over fifty per cent of the municipalities in the County, this service is limited primarily to the urbanized core area. There still remain large areas of the County which lack adequate sewerage facilities but which will require that these facilities be developed so that orderly growth may be promoted at an economical cost. It is the intent of this Comprehensive Sewerage Needs Plan to define areas of the County where regional sewerage systems would best serve the needs of those areas and to delineate the major elements of such systems.

Financial limitations dictate the necessity for establishing priority areas for the construction of sewerage facilities serving an entire watershed. This Plan will enable the County Commissioners to determine financial commitments for sewerage facilities in those priority areas which have been established on the basis of: degree of development, major public or private investments, total developable areas and benefits returnable to the County in the form of additional revenues due to increased assessments.

It is further intended that this Plan will serve as a working report which the Board of County Commissioners may use as a basis for determining those areas where County participation and guidance is required beyond the planning stage.

TABLE I – STATUS OF PLAN PREPARATION
PENNSYLVANIA SEWAGE FACILITIES ACT

Municipality	Authorized County to prepare Sewage Plan	Preparing Individual Sewage Plan
SECOND CLASS CITY		
Pittsburgh		X
THIRD CLASS CITY		
Clairton		X
Duquesne	X	
McKeesport	X	
BOROUGHS		
Aspinwall	X	
Avalon	X	
Baldwin	X	
Bell Acres	X	
Bellevue	X	
Ben Avon	X	
Ben Avon Heights	X	
Bethel Park	X	
Blawnox	X	
Brackenridge	X	
Braddock	X	
Braddock Hills	X	
Bradford Woods	X	
Brentwood		X
Bridgeville		X
Carnegie	X	
Castle Shannon	X	
Chalfant	X	
Cheswick	X	
Churchill	X	
Coraopolis	X	
Crafton	X	
Dormont		X
Dravosburg	X	
East McKeesport	X	
East Pittsburgh	X	
Edgewood	X	
Edgeworth		X
Elizabeth	X	
Emsworth	X	
Etna	X	

TABLE I – STATUS OF PLAN PREPARATION
PENNSYLVANIA SEWAGE FACILITIES ACT (Continued)

Municipality	Authorized County to prepare Sewage Plan	Preparing Individual Sewage Plan
Boroughs (Continued)		
Forest Hills	X	
Fox Chapel		X
Franklin Park	X	
Glassport	X	
Glenfield	X	
Greentree		X
Haysville	X	
Heidelberg	X	
Homestead	X	
Ingram	X	
Jefferson		X
Leetsdale	X	
Liberty	X	
Lincoln	X	
McDonald		X
McKees Rocks	X	
Millvale	X	
Monroeville		X
Mount Oliver		X
Munhall	X	
North Braddock	X	
Oakdale	X	
Oakmont	X	
Osborne	X	
Pitcairn	X	
Pleasant Hills	X	
Plum	X	
Port Vue	X	
Rankin	X	
Rosslyn Farms	X	
Sewickley	X	
Sewickley Heights		X
Sewickley Hills	X	
Sharpsburg	X	
Springdale		X
Swissvale	X	
Tarentum	X	
Thornburg	X	
Trafford		X
Turtle Creek	X	
Verona	X	

TABLE I – STATUS OF PLAN PREPARATION
PENNSYLVANIA SEWAGE FACILITIES ACT (Continued)

Municipality	Authorized County to prepare Sewage Plan	Preparing Individual Sewage Plan
Boroughs (Continued)		
Versailles	X	
Wall	X	
West Elizabeth		X
West Homestead	X	
West Mifflin		X
West View	X	
Whitaker	X	
Whitehall		X
White Oak	X	
Wilkinsburg		X
Wilmerding	X	
TOWNSHIPS OF THE FIRST CLASS		
Aleppo	X	
Baldwin	X	
Collier	X	
Crescent		X
East Deer	X	
Elizabeth		X
Harrison	X	
Kennedy		X
Leet	X	
McCandless		X
Mt. Lebanon		X
Neville	X	
North Versailles		X
O'Hara	X	
Penn Hills		X
Reserve		X
Robinson		X
Ross	X	
Scott		X
Shaler	X	
South Fayette	X	
South Versailles	X	
Springdale		X
Stowe	X	
Upper St. Clair	X	
Wilkins		X

TABLE I – STATUS OF PLAN PREPARATION
PENNSYLVANIA SEWAGE FACILITIES ACT (Continued)

Municipality	Authorized County to prepare Sewage Plan	Preparing Individual Sewage Plan
TOWNSHIPS OF THE SECOND CLASS		
Fawn		X
Findlay		X
Forward	X	
Frazer	X	
Hampton	X	
Harmar		X
Indiana	X	
Kilbuck	X	
Marshall		X
Moon		X
North Fayette		X
Ohio	X	
Pine	X	
Richland		X
South Park		X
West Deer	X	

I. HISTORICAL BACKGROUND

HISTORICAL BACKGROUND

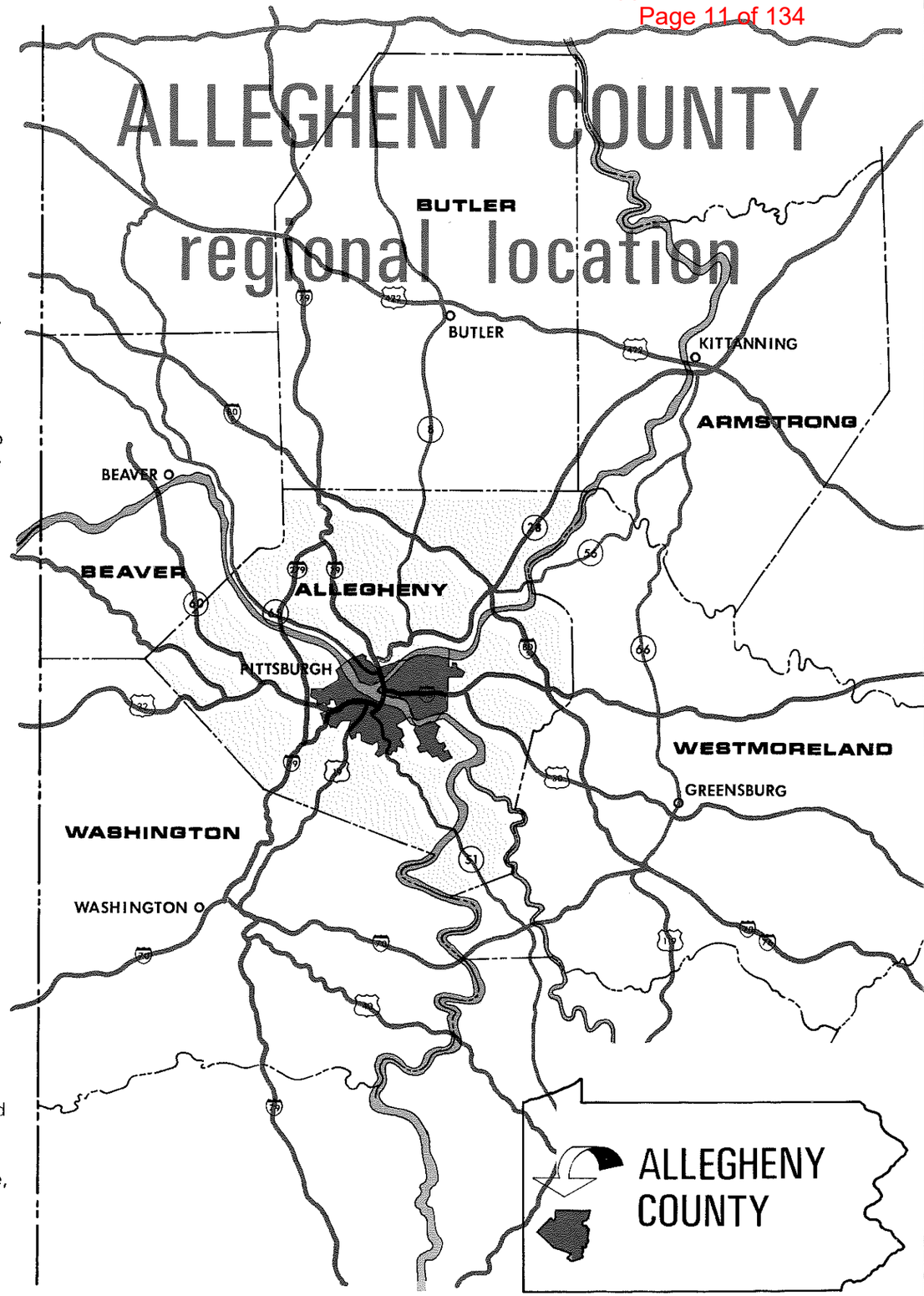
Allegheny County is located in southwestern Pennsylvania and is bounded on the north by Butler County, on the east by Westmoreland County, on the south by Washington County, and on the west by Beaver County. Allegheny County, serving as the hub for planning efforts in the southwestern Pennsylvania region, includes a total land area of 730 square miles and is comprised of 129 political subdivisions including one second-class city (City of Pittsburgh), three third-class cities, 83 boroughs, 26 first-class townships, and 16 second-class townships.

The County is divided into three large land areas by the Allegheny, Monongahela and Ohio Rivers. The Allegheny River enters the County in the northeast corner and flows in a southwesterly direction. The Monongahela River enters the County in the southeast corner and flows in a northwesterly direction. The confluence of these two rivers, which forms the Ohio River, occurs at approximately the centerpoint of the County's land area. The Ohio River then flows in a general northwesterly direction until it passes across the County boundary.

The City of Pittsburgh, with a land area of approximately 55 square miles, forms the core and serves as the major urban area within Allegheny County. Many factors have influenced growth of the region, with early settlement being established along the rivers in order to take advantage of these natural transportation routes. Because of the relatively steep slopes and rugged terrain in the area, early development was limited primarily to valley floors of the major waterways and their tributaries.

During the early 20th century, overland transportation systems began to develop in the form of trolley systems and commuter railroads. These transportation arteries aided in the development of additional centers of population, although these centers were still located primarily along the banks of the major water courses. With the advent of the automobile and the construction of roads throughout the area, the rugged topography became less of an obstacle in the development of heretofore inaccessible areas. The City of Pittsburgh throughout this total development period has remained the natural core for industrial and commercial growth.

With the establishment of population centers and the development of transportation arteries other than the rivers, the need for the conveyance of storm and sanitary flows by methods other than natural contours became a necessity. Construction of sewers in Allegheny County began in the 1800's during the growth of the early settlements along the rivers. These sewers were constructed following the natural topography and emptied directly into the adjacent waterways. With the growth of populated areas and the establishment of industrial complexes in the region, additional sewers were constructed following the pattern of land development. It is evident that this type of sewerage facility proliferation, combined with the fact that no thought was given to the need for different methods for handling storm and sanitary waste, has created a problem of considerable magnitude which must be solved in the immediate future.



Development of sewerage systems in the outlying areas of Allegheny County was, for a period, characterized by the same type of growth as that which took place in the center of the City. Much of the rural area surrounding these developments utilized on-lot disposal systems which became inadequate as continuing growth occurred.

As the need arose, small systems were developed to serve individual communities with little or no efforts made to cooperate with the adjacent areas. Many of the treatment plants which exist in Allegheny County are of the primary or intermediate degree type while there are some secondary treatment plants in existence. Due to present Sanitary Water Board criteria, all treatment plants will be required to provide at least the equivalent of secondary treatment.

The single most significant development with regard to the provision of comprehensive sewerage facilities serving the citizens of Allegheny County was the formation of the Allegheny County Sanitary Authority (Alcosan) in 1946. It was originally anticipated that this Authority would provide service to all areas of the County. When final agreements were drawn, however, only 73 of the 129 municipalities in the County agreed to accept the service provided by Alcosan.

In recent years some comprehensive sewerage systems have been constructed to serve individual municipalities, and in certain instances such systems were inter-municipal in nature. To date, however, most of these facilities have been designed to serve areas coinciding with municipal boundaries rather than natural drainage basin areas.

The County's present need is for sewerage systems capable of serving large areas delineated by natural drainage basin boundaries.

II. URBANIZATION

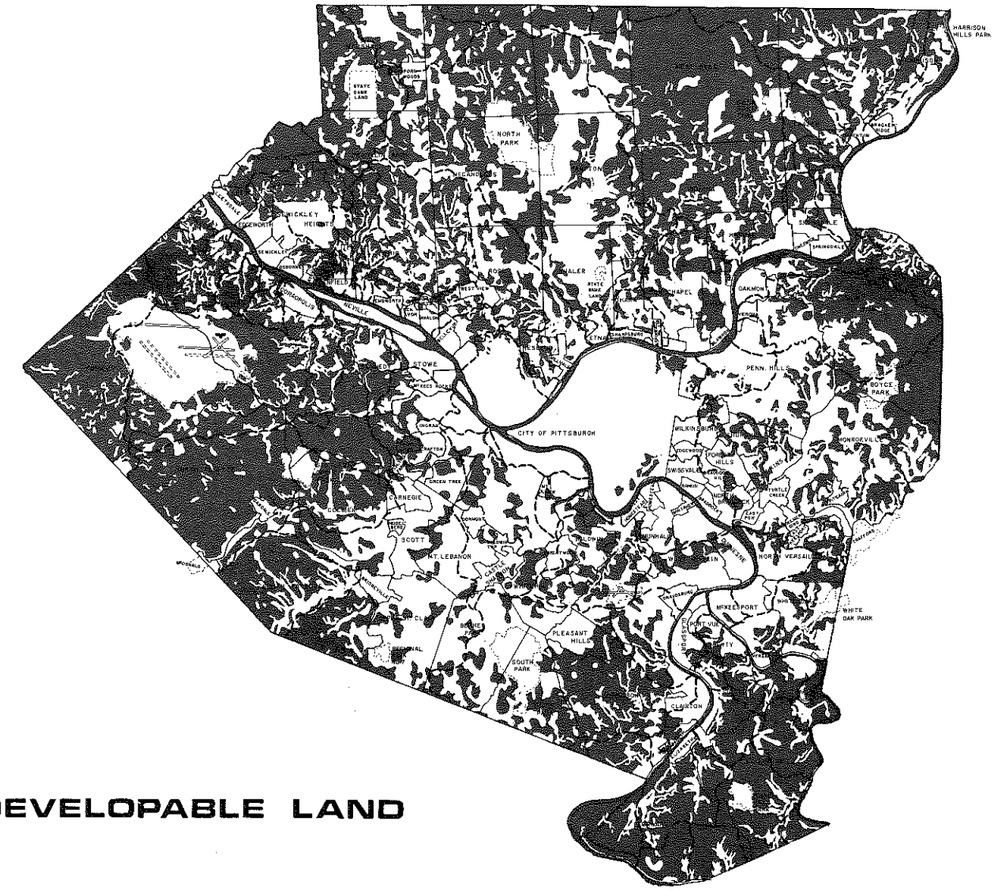
URBANIZATION

Historically, land development has occurred along available transportation routes with the growth in Allegheny County being a testament of this fact. The natural locations of the rivers led to the development of river communities, while at a somewhat later date the establishment of railroad and trolley systems led to expansion of these original river based areas. The residents of Allegheny County live today in a mobile, transportation oriented society. Since the end of World War II, this mobility has increased with the construction of highways which do not necessarily follow the rivers and has led to the somewhat unplanned growth of our present suburban communities. The advent of limited access highways and the establishment of a mass transit system will only add to the dynamic growth of the suburbs by permitting more distant commuting without a corresponding increase in travel time. (Plate 1)

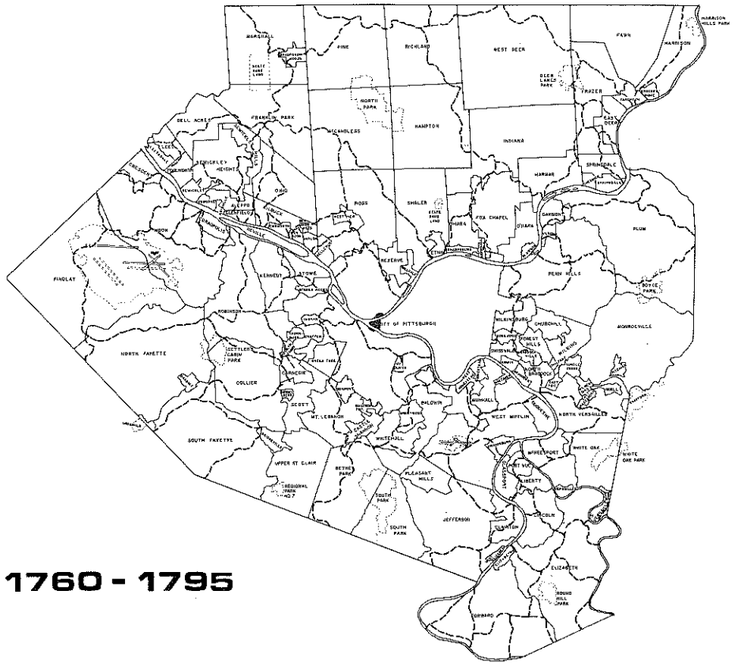
To date, approximately one-third of the land area in Allegheny County can be considered as being developed. Of the remainder, somewhat under ten per cent will probably remain undeveloped because of the extreme slopes encountered in these areas. (Plate 3) This leaves slightly over half of the County land area for potential development with future expansion taking place primarily in the northeast, northwest, southeast and southwest sectors of the County. (Table II)

A major factor in the urbanization of any area is the availability of public sewerage and water facilities. As these facilities are installed and expanded, they in turn open additional land areas for development. The necessity for the provision of sewerage systems in Allegheny County stems largely from the fact that most of the terrain and soils are unsuitable for on-lot disposal (septic tanks). Where such a condition exists, even an adequate volume of subsurface water for an on-lot water supply cannot be safely utilized. As the population density increases, these natural deficiencies become more apparent.

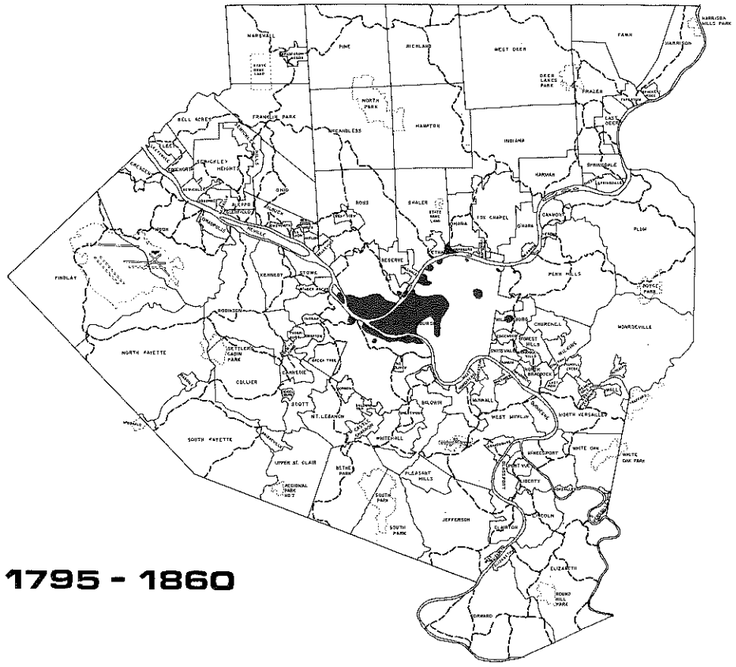
The 1970 Census has indicated a population swing from the urbanized core of the City to the suburbs. It is anticipated that these suburban communities will continue to expand simply on their own momentum, since the growth which has occurred has also brought the need for industrial, commercial, educational and recreational facilities. As these facilities are constructed, a growth in population in the vicinity of these facilities occurs, thus creating a cyclic effect on community growth and thereby increasing the assessed valuation. (Table III)



DEVELOPABLE LAND



1760 - 1795



1795 - 1860

URBANIZATION 1760 - 1965

Industrial and Commercial Growth

Many local municipalities find they can no longer be the bedroom communities of the core. While they are, by definition, suburban, both industrial and commercial expansion is needed in order to develop a balanced tax base.

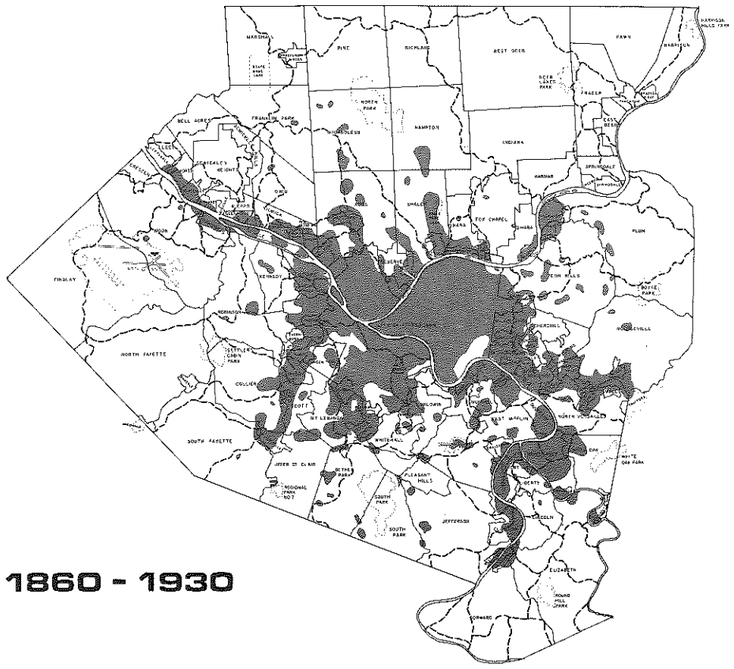
These municipalities have found that the provision of adequate sewerage facilities is a prime prerequisite for attracting this type of growth. Table IV presents the existing and potential employment population, by drainage basins, in Allegheny County and was developed from information supplied by the Southwestern Pennsylvania Regional Planning Commission.

Community Facilities

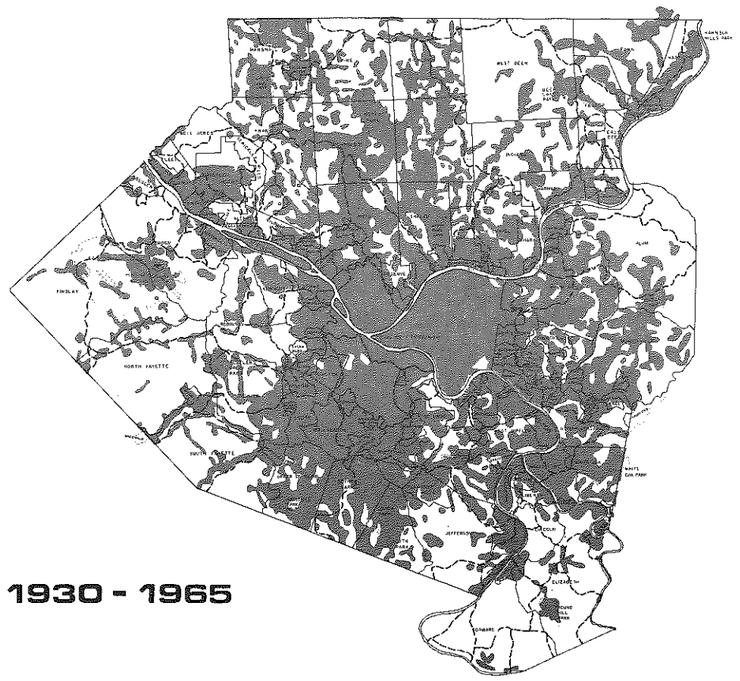
As a municipality grows, the residents of that community demand services such as those offered in hospitals, schools and libraries. To remain dynamic, a community must plan for the establishment of these types of facilities.

There are currently over 120 medical facilities including hospitals and clinics in Allegheny County, approximately 40 per cent of which are located outside of the core area of Pittsburgh.

The County is well endowed with schools and colleges. There are 57 public school districts in Allegheny County, each with its own ten-year program. Allegheny County Community College facilities are located in the east, south-



1860 - 1930



1930 - 1965

ALLEGHENY COUNTY, PENNSYLVANIA

east and core areas of the County with two additional sites proposed, one in the North Hills and the second in the westerly area of the County in the vicinity of the Greater Pittsburgh Airport. Some of the other private and public colleges which operate within the area are Carnegie-Mellon University, University of Pittsburgh, Duquesne University, Point Park College, Carlow College, Chatham College and Robert Morris College.

Locations for proposed schools, shopping centers and industrial parks are shown on Plate No. 1.

Recreational Facilities

As the population of Allegheny County grows, so does the demand for recreational facilities. Within the County there are over 14,000 acres of public recreational land. Of this total area, the County park system consists of 13,000 acres. This acreage is divided among the seven regional parks as well as the North and South Parks facilities. It has been estimated that an additional 5,500 acres of recreational area will be required by 1985 to accommodate an anticipated population of 2,000,000.

Agriculture

As Allegheny County continues to grow, the value of every acre of developable land will continue to increase. Today less than two per cent of the land in the County is used for agricultural purposes and it is becoming evident that even this small amount of acreage will decrease in the future.

TABLE II – LAND AREA

Municipality	Total Land in Acres	Developed Land Acres	Developed Land %	Vacant Land Acres	Vacant Land %	Land Over 25% Slope Acres	Land Over 25% Slope %	Developable Land Acres	Developable Land %
Second Class City									
Pittsburgh	35,443	26,547	75	8,896	25	1,559	4	7,336	21
Third Class Cities									
Clairton	1,900	1,621	85	279	15	41	2	237	13
Duquesne	1,203	1,023	85	179	15	18	1	161	14
McKeesport	3,296	2,686	81	609	19	154	4	454	15
Boroughs									
Aspinwall	249	198	80	50	20	9	3	41	17
Avalon	384	299	78	84	22	9	2	75	20
Baldwin	3,481	1,758	51	1,723	49	208	6	1,514	43
Bell Acres	3,443	320	9	3,123	91	134	3	2,988	88
Bellevue	627	498	79	129	21	35	5	94	16
Ben Avon	256	204	80	51	20	–	–	51	20
Ben Avon Heights	115	89	78	25	22	–	–	25	22
Bethel Park	7,628	4,951	65	2,677	35	15	0	2,662	35
Blawnox	249	231	93	18	7	–	–	18	7
Brackenridge	332	309	93	23	7	7	2	15	5
Braddock	358	336	94	22	6	–	–	22	6
Braddock Hills	716	495	69	221	31	–	–	221	31
Bradford Woods	595	197	33	397	67	–	–	397	67
Brentwood	915	702	76	213	24	18	2	194	22
Bridgeville	710	457	64	252	36	29	4	223	32
Carnegie	832	737	89	94	11	–	–	94	11
Castle Shannon	966	755	78	210	22	3	0	206	22
Chalfant	102	98	96	4	4	–	–	4	4
Cheswick	332	288	87	43	13	5	1	38	12
Churchill	1,446	961	66	484	34	75	5	409	29
Coraopolis	870	652	75	217	25	36	4	181	21
Crafton	729	554	76	175	24	5	0	170	24
Dormont	486	473	97	13	3	–	–	13	3
Dravosburg	633	377	59	256	41	91	14	164	27
East McKeesport	268	202	76	66	24	22	8	44	16
East Pittsburgh	256	206	80	49	20	–	–	49	19
Edgewood	332	306	92	26	8	–	–	26	8
Edgeworth	953	498	52	454	48	54	5	400	43
Elizabeth	332	269	81	63	19	–	–	63	19
Emsworth	384	240	62	144	38	6	1	137	37
Etna	512	387	76	124	24	21	4	103	20
Forest Hills	972	792	81	180	19	1	0	179	19
Fox Chapel	5,376	1,983	37	3,392	63	457	8	2,935	55
Franklin Park	8,672	1,101	13	7,570	87	459	5	7,111	82
Glassport	1,043	673	65	369	35	41	4	327	31
Glenfield	550	133	24	417	76	175	32	241	44
Greentree	1,292	770	60	522	40	11	0	510	40
Haysville	128	47	37	80	63	48	38	31	25
Heidelberg	166	139	84	27	16	9	5	18	11
Homestead	384	366	95	17	5	–	–	17	5
Ingram	294	283	96	10	4	–	–	10	4

TABLE II – LAND AREA (Continued)

Municipality	Total Land	Developed Land		Vacant Land		Land Over 25% Slope		Developable Land	
	in Acres	Acres	%	Acres	%	Acres	%	Acres	%
Boroughs (Continued)									
Jefferson	10,816	3,969	37	6,846	63	1,341	12	5,505	51
Leetsdale	652	452	69	200	31	11	1	189	30
Liberty	934	542	58	391	42	87	9	303	33
Lincoln	3,212	957	30	2,255	70	597	18	1,657	52
McDonald	147	89	61	57	39	–	–	57	39
McKees Rocks	665	651	98	14	2	–	–	14	2
Millvale	435	257	59	177	41	65	15	112	26
Monroeville	12,505	4,101	33	8,403	67	2,151	17	6,252	50
Mt. Oliver	204	183	90	21	10	–	–	21	10
Munhall	1,510	1,169	77	341	23	30	2	311	21
North Braddock	1,049	781	74	267	26	50	4	217	22
Oakdale	371	64	17	306	83	11	3	294	80
Oakmont	1,004	819	82	184	18	24	2	160	16
Osborne	294	115	39	179	61	85	28	94	33
Pitcairn	294	210	72	83	28	29	10	54	18
Pleasant Hills	1,600	1,104	69	496	31	1	–	494	31
Plum	18,483	4,177	23	14,306	77	1,663	9	12,642	68
Port Vue	729	491	67	238	33	57	7	180	26
Rankin	281	241	86	39	14	–	–	39	14
Rosslyn Farms	300	162	54	138	46	22	7	116	39
Sewickley	627	435	69	191	31	8	1	183	30
Sewickley Heights	4,755	351	7	4,403	93	518	10	3,885	83
Sewickley Hills	1,542	114	7	1,428	93	168	10	1,260	83
Sharpsburg	320	273	86	46	14	4	1	41	13
Springdale	633	539	85	93	15	–	–	93	15
Swissvale	742	630	85	112	15	10	1	101	14
Tarentum	697	396	57	301	43	86	12	214	31
Thornburg	268	146	54	122	46	14	5	108	41
Trafford	121	7	6	114	94	51	42	62	52
Turtle Creek	620	461	74	158	26	73	11	85	15
Verona	339	294	87	45	13	33	9	11	4
Versailles	313	239	76	74	24	7	2	66	22
Wall	307	106	35	200	65	46	15	153	50
West Elizabeth	160	107	67	52	33	7	4	44	29
West Homestead	524	325	62	198	38	64	12	134	26
West Mifflin	9,184	4,619	50	4,564	50	606	6	3,958	44
West View	652	519	80	133	20	7	1	125	19
Whitaker	166	132	80	34	20	0	0	33	20
Whitehall	2,041	1,502	74	539	26	8	0	530	26
White Oak	4,192	1,978	47	2,213	53	255	6	1,957	47
Wilkinsburg	1,337	1,167	87	169	13	4	0	165	13
Wilmerding	307	232	76	75	24	19	6	55	18
First Class Township									
Aleppo	1,043	113	11	929	89	285	27	643	62
Baldwin	652	527	81	125	19	8	1	117	18
Collier	8,179	2,952	36	5,226	64	286	3	4,940	61
Crescent	1,376	506	37	869	63	350	25	518	38
East Deer	1,376	471	34	905	66	377	27	528	39

TABLE II – LAND AREA (Continued)

Municipality	Total Land	Developed Land		Vacant Land		Land Over 25% Slope		Developable Land	
	in Acres	Acres	%	Acres	%	Acres	%	Acres	%
First Class Township (Continued)									
Elizabeth	14,131	3,575	25	10,556	75	1,639	11	8,916	64
Harrison	4,620	1,885	41	2,735	59	397	8	2,338	51
Kennedy	3,385	1,161	34	2,224	66	575	17	1,648	49
Leet	047	182	19	764	81	136	14	628	57
McCandless	10,624	4,982	47	5,641	53	626	5	5,014	48
Mt. Lebanon	3,763	3,003	80	760	10	–	–	760	10
Neville	1,036	965	93	71	7	–	–	71	7
North Versailles	5,344	2,330	44	3,014	56	550	10	2,463	46
O'Hara	4,486	1,974	44	2,512	56	412	9	2,099	47
Penn Hills	12,211	6,813	56	5,397	44	1,245	10	4,151	34
Reserve	1,267	401	32	865	68	245	20	619	48
Robinson	9,964	2,620	26	7,344	74	936	9	6,407	65
Ross	9,280	3,897	42	5,382	58	742	8	464	50
Scott	2,400	1,512	63	888	37	7	6	382	31
Shaler	6,873	3,216	47	3,656	53	467	6	3,189	47
South Fayette	13,408	1,796	13	11,612	87	1,555	11	10,057	76
South Versailles	544	219	40	324	60	94	17	230	43
Springdale	1,484	533	36	951	64	155	10	795	54
Stowe	1,376	910	66	465	34	82	6	382	28
Upper St. Clair	6,368	2,763	43	3,604	57	248	3	3,355	54
Wilkins	1,760	985	56	774	44	348	19	425	25
Second Class Township									
Fawn	8,480	941	11	7,539	89	865	10	6,674	79
Findlay	20,748	4,979	24	15,769	76	684	3	15,084	73
Forward	12,320	2,156	18	10,164	82	1,798	14	8,365	68
Frazer	6,540	922	14	5,618	86	477	7	5,141	69
Hampton	10,272	2,835	28	7,437	72	708	6	6,728	66
Harmar	3,750	1,125	30	2,625	70	543	14	2,081	56
Indiana	10,880	1,425	13	9,455	87	1,262	11	8,193	76
Kilbuck	1,504	219	15	1,284	85	404	26	879	59
Marshall	9,465	653	7	8,812	93	66	0	8,746	93
Moon	15,200	4,271	28	10,928	72	2,508	16	8,420	56
North Fayette	15,833	3,325	21	12,508	79	253	1	12,255	78
Ohio	4,774	539	11	4,234	89	845	17	3,389	72
Pine	10,956	1,325	12	9,631	88	471	4	9,159	84
Richland	9,395	2,273	24	7,121	76	37	0	7,084	76
South Park	5,708	3,037	53	2,671	47	131	2	2,540	45
West Deer	18,336	2,227	18	15,109	82	403	2	14,706	80

TABLE III
ASSESSED VALUATION – 1970

Municipality	Assessed Valuation
SECOND CLASS CITY	
Pittsburgh	$1,308,285,041
THIRD CLASS CITIES	
Clairton	$58,028,528
Duquesne	35,587,382
McKeesport	97,525,612
BOROUGHS	
Aspinwall	$ 8,677,319
Avalon	11,771,180
Baldwin	66,277,595
Bell Acres	3,844,660
Bellevue	21,199,360
Ben Avon	5,022,440
Ben Avon Heights	1,847,730
Bethel Park	110,627,772
Blawnox	5,425,228
Brackenridge	7,132,881
Braddock	13,648,925
Braddock Hills	4,832,385
Bradford Woods	2,382,265
Brentwood	37,166,450
Bridgeville	15,413,470
Carnegie	18,694,635
Castle Shannon	26,607,400
Chalfant	1,990,115
Cheswick	6,208,255
Churchill	26,476,430
Coraopolis	18,610,193
Crafton	17,746,110
Dormont	26,247,954
Dravosburg	5,431,707
East McKeesport	4,969,575
East Pittsburgh	14,584,263
Edgewood	14,208,492
Edgeworth	9,023,500
Elizabeth	3,110,840
Emsworth	6,194,820
Etna	9,944,321
Forest Hills	21,461,315
Fox Chapel	28,239,230

TABLE III
ASSESSED VALUATION – 1970 (Continued)

Municipality	Assessed Valuation
Boroughs (Continued)	
Franklin Park	$12,989,735
Glassport	15,796,980
Glenfield	529,705
Greentree	31,712,837
Haysville	251,790
Heidelberg	3,792,353
Homestead	29,268,049
Ingram	9,186,520
Jefferson	22,187,045
Leetsdale	10,286,935
Liberty	7,233,995
Lincoln	3,199,300
McDonald	552,050
McKees Rocks	21,523,425
Millvale	7,853,050
Monroeville	104,803,302
Mt. Oliver	9,470,034
Munhall	50,561,531
North Braddock	26,171,042
Oakdale	3,092,390
Oakmont	19,800,150
Osborne	1,918,250
Pitcairn	5,063,247
Pleasant Hills	36,864,569
Plum	43,926,515
Port Vue	10,687,035
Rankin	10,497,314
Rosslyn Farms	4,239,589
Sewickley	14,758,960
Sewickley Heights	6,002,710
Sewickley Hills	513,400
Sharpsburg	8,777,729
Springdale	11,302,322
Swissvale	29,627,890
Tarentum	10,289,777
Thornburg	3,683,663
Trafford	284,754
Turtle Creek	17,254,688
Verona	6,503,589
Versailles	5,925,840
Wall	849,280
West Elizabeth	1,310,765
West Homestead	21,348,429

TABLE III
ASSESSED VALUATION – 1970 (Continued)

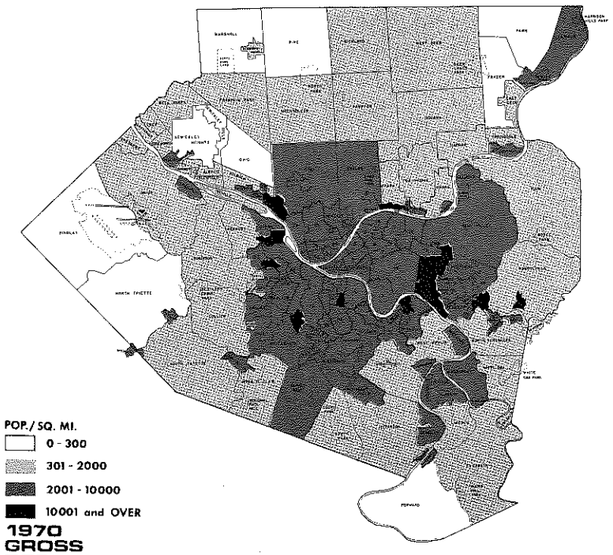
Municipality	Assessed Valuation
Boroughs (Continued)	
West Mifflin	$96,388,373
West View	13,637,034
Whitaker	3,116,960
Whitehall	53,492,730
White Oak	24,882,640
Wilkinsburg	56,180,602
Wilmerding	8,807,977
FIRST CLASS TOWNSHIP	
Aleppo	$1,009,005
Baldwin	7,547,465
Collier	16,339,160
Crescent	5,378,620
East Deer	8,056,360
Elizabeth	30,340,509
Harrison	49,196,182
Kennedy	17,580,990
Leet	2,901,030
McCandless	61,911,745
Mt. Lebanon	158,400,493
Neville	24,953,365
North Versailles	37,998,931
O'Hara	32,548,255
Penn Hills	127,860,450
Reserve	6,766,390
Robinson	31,461,114
Ross	95,219,375
Scott	56,657,699
Shaler	75,590,032
South Fayette	13,824,301
South Versailles	680,455
Springdale	2,965,445
Stowe	22,752,272
Upper St. Clair	71,664,211
Wilkins	28,480,300
SECOND CLASS TOWNSHIP	
Fawn	$4,119,326
Findlay	11,363,600
Forward	7,154,635
Frazer	2,180,157

TABLE III
ASSESSED VALUATION – 1970 (Continued)

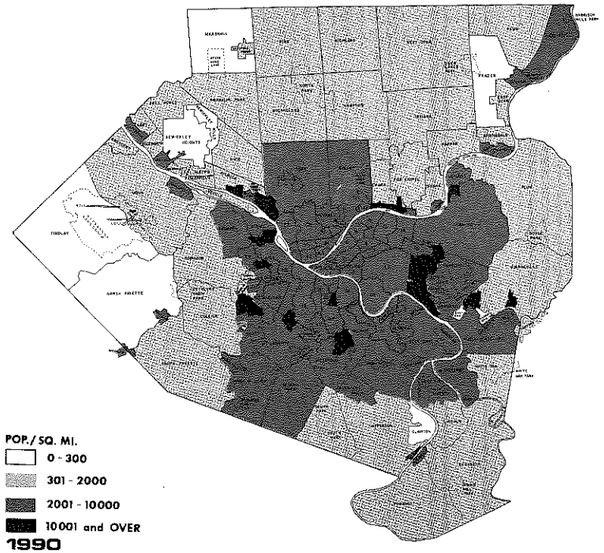
Municipality	Assessed Valuation
Second Class Townships (Continued)	
Hampton	$29,477,270
Harmar	18,644,315
Indiana	12,018,435
Kilbuck	2,640,683
Marshall	6,517,790
Moon	57,465,726
North Fayette	11,246,129
Ohio	4,101,913
Pine	11,801,585
Richland	19,061,567
South Park	18,450,950
West Deer	13,432,620

Municipality	Assessed Valuation
Total - Allegheny County	$4,190,605,082

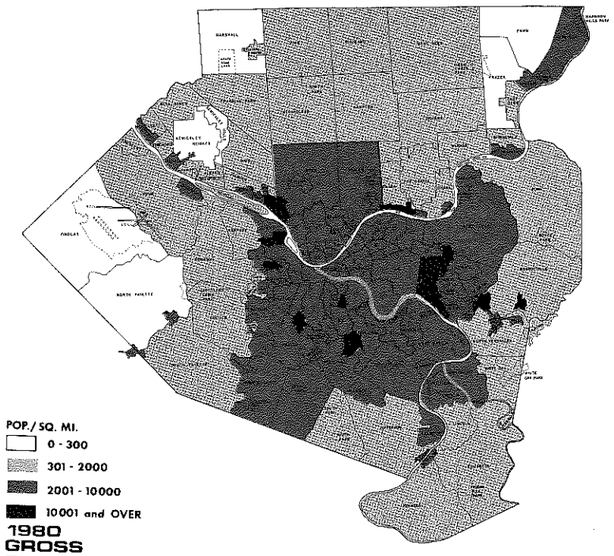
III. POPULATION



1970
GROSS
RESIDENTIAL
DENSITY



1990
GROSS
RESIDENTIAL
DENSITY



1980
GROSS
RESIDENTIAL
DENSITY

POPULATION

Prior population trends in Allegheny County have been correlated somewhat with factors such as the level of employment in industries, the availability of educational facilities and accessibility to transportation routes. With these factors becoming somewhat equalized, it is now apparent that future increases in population in the County will occur primarily in presently undeveloped areas of the outlying boroughs and townships. The rate at which this growth occurs in a given area is a primary factor in determining the need for and the feasibility of developing a sewerage system for that area.

The basic systems approach used in this report revolves around the concept of drainage basin service areas. Therefore, while a projection of population by municipality is needed in those developed areas to determine the need for expanding existing systems, a projection of population by drainage basins is also required in relatively undeveloped areas in order to determine: (1) the least cost system or systems for that basin; and (2) the approximate cost to the residents of that multi-municipal area.

Table V contains population projections by municipality for 10, 20 and 50 year periods and was developed by utilizing a model based on the continuation of past trends in population change.

Table VI contains populations by drainage basins for the years 1967 and 2000, and was developed from information supplied by the Southwestern Pennsylvania Regional Planning Commission. (Plate 2)

TABLE IV
EMPLOYMENT POPULATION BY DRAINAGE BASINS

Drainage Basin	1967	2000
Becketts Run	30	0
Becks Run	3,100	6,350
Big Sewickley Creek	2,580	4,860
Breakneck Creek	130	310
Brush Creek	750	1,730
Bull Creek	550	490
Bunola Run	0	0
Campbells Run	1,200	4,230
Chartiers Creek	24,270	51,870
Coal Run	190	2,790
Crawford Run	300	170
Crooked Run	14,820	22,110
Days Run	100	320
Deer Creek	2,180	3,750
Douglass Run	150	360
Fallen Timber Run	1,370	5,260
Flaugherty Run	390	1,880
Girtys Run	10,740	19,700
Glade Run	20	0
Guyasuta Run	3,330	3,010
Homestead-West Run	17,030	28,410
Indian Creek	820	950
Jacks Run	5,360	7,850
Kelly Run	0	0
Kilbuck Run	130	200
Little Sewickley Creek	1,410	3,160
Lobbs Run	60	480
Long Run	7,220	11,750
Lowries Run	3,560	3,920
McCabe Run	2,410	7,760
Millers Run	290	860
Monongahela River	18,960	31,410
Montour Run	6,170	13,850
Moon Run	420	1,220

TABLE IV (Continued)
EMPLOYMENT POPULATION BY DRAINAGE BASINS

Drainage Basin	1967	2000
Narrows Run	450	1,070
Neville	4,670	13,950
Ohio River	3,320	4,360
Peters Creek	11,530	22,570
Pine Creek	10,540	15,740
Pine Run	3,590	6,460
Pittsburgh	310,960	488,380
Plum Creek	7,870	7,560
Pollock Run	70	230
Potatoe Garden Run	0	0
Pucketa Creek	280	850
Quigley Creek	2,480	4,070
Raccoon Creek	0	0
Raredon Run	0	0
Riddle Run	350	520
Robinson Run	1,100	2,300
Sandy Creek	1,310	4,510
Saw Mill Run	28,300	59,940
Shouse Run	30	20
Spruce Run	1,660	3,750
Squaw Run	4,060	11,790
Streets Run	5,540	10,220
Sunfish Run	510	140
Tawney Run	5,130	9,690
Thompson Run	7,810	12,610
Thoms Run	800	2,830
Thorn Run	160	690
Toms Run	180	350
Turtle Creek	52,200	94,120
Upper Allegheny River	5,470	5,340
Wildcat Run	160	420
Wylie Run	1,370	3,120
Youghiogheny River	2,070	2,730

TABLE V
MUNICIPAL POPULATION PROJECTIONS

Municipality	1960	1970	1980	1990	2020
SECOND CLASS CITY					
Pittsburgh	604,332	537,855	522,795	508,156	495,542
THIRD CLASS CITIES					
Clairton	18,389	17,285	16,766	16,514	18,569
Duquesne	15,019	13,216	12,000	11,448	10,939
McKeesport	45,489	42,759	39,552	38,049	36,618
BOROUGHS					
Aspinwall	3,727	3,577	4,220	4,220	4,262
Avalon	6,859	7,133	7,518	7,923	8,807
Baldwin	24,489	27,135	27,867	28,229	28,483
Bell Acres	1,283	1,821	2,074	2,362	3,073
Bellevue	11,412	11,754	12,388	13,056	14,514
Ben Avon	2,553	2,578	3,042	3,589	5,031
Ben Avon Heights	431	555	654	771	1,265
Bethel Park	23,650	32,873	38,790	45,772	53,439
Blawnox	2,085	2,064	2,435	2,873	4,028
Brackenridge	5,697	4,728	4,739	4,750	4,771
Braddock	12,337	8,541	8,577	8,613	8,686
Braddock Hills	2,414	2,655	3,132	3,695	5,134
Bradford Woods	866	961	1,335	1,520	1,978
Brentwood	13,706	13,733	14,474	15,255	16,958
Bridgeville	7,112	6,614	7,804	9,208	12,907
Carnegie	11,887	11,768	12,403	13,072	14,530
Castle Shannon	11,836	12,306	12,970	13,670	15,197
Chalfant	1,414	1,470	1,502	1,535	1,819
Cheswick	2,734	2,569	2,926	3,327	4,329
Churchill	3,428	4,662	5,501	6,491	9,099
Coraopolis	9,643	9,450	11,188	13,246	18,702
Crafton	8,418	9,007	9,493	10,005	11,122
Dormont	13,098	12,967	13,667	14,398	16,006
Dravosburg	3,458	2,800	3,304	3,898	5,464
East McKeesport	3,470	3,678	3,696	3,711	3,742
East Pittsburgh	4,122	3,627	3,642	3,657	3,688
Edgewood	5,124	5,226	6,166	7,275	10,199
Edgeworth	2,030	2,192	2,496	2,842	3,699
Elizabeth	2,597	2,493	2,941	3,349	4,358
Emsworth	3,341	3,574	5,503	6,493	8,434
Etna	5,519	4,028	4,753	5,009	5,568
Forest Hills	8,796	9,411	11,104	13,102	18,368
Fox Chapel	3,302	4,655	6,563	9,253	19,099

TABLE V (Continued)
MUNICIPAL POPULATION PROJECTIONS

Municipality	1960	1970	1980	1990	2020
Boroughs (Continued)					
Franklin Park	3,935	5,272	6,242	7,390	10,433
Glassport	8,418	8,432	8,811	9,207	10,049
Glenfield	741	414	488	575	805
Greentree	5,226	6,427	6,247	6,072	5,737
Haysville	143	131	186	212	288
Heidelberg	2,118	2,114	2,228	2,348	2,610
Homestead	7,502	6,076	5,905	5,739	5,423
Ingram	4,730	5,061	5,061	5,061	4,714
Jefferson	8,280	10,681	12,646	14,972	21,138
Leetsdale	2,153	1,980	2,255	2,568	3,342
Liberty	3,624	3,591	4,251	5,033	7,106
Lincoln	1,686	1,871	2,215	2,622	3,702
McDonald	714	628	715	814	1,059
McKees Rocks	13,185	11,866	12,506	13,181	14,652
Millvale	6,624	6,160	5,987	5,819	5,499
Monroeville	22,446	28,730	32,723	34,980	37,078
Mt. Oliver	5,980	5,681	5,521	5,366	5,070
Munhall	17,312	16,619	19,616	23,146	32,449
North Braddock	13,204	12,147	12,098	12,049	12,000
Oakdale	1,695	1,700	2,012	2,382	3,351
Oakmont	7,504	8,029	9,506	11,255	15,829
Osborne	609	651	770	911	1,281
Pitcairn	5,383	5,113	4,857	4,604	4,373
Pleasant Hills	8,573	10,373	12,240	14,443	20,248
Plum	10,241	21,915	24,961	28,430	37,003
Port Vue	6,635	5,772	5,870	5,969	6,168
Rankin	5,164	4,492	4,492	4,492	4,537
Rosslyn Farms	555	660	695	732	812
Sewickley	6,157	5,479	6,240	6,670	7,069
Sewickley Heights	931	958	959	960	964
Sewickley Hills	326	253	253	254	256
Sharpsburg	6,096	5,487	5,783	6,095	6,775
Springdale	5,602	6,000	6,156	6,316	6,649
Swissvale	15,089	14,812	15,611	16,453	18,289
Tarentum	8,232	7,692	7,668	7,644	7,589
Thornburg	391	410	432	455	505
Trafford	140	162	167	173	191
Turtle Creek	10,607	10,814	10,922	11,031	11,364
Verona	4,032	3,923	4,644	5,498	7,760
Versailles	2,297	2,240	2,195	2,151	2,022
Wall	1,493	1,378	1,631	1,931	2,725
West Elizabeth	921	838	954	1,086	1,412

TABLE V (Continued)
MUNICIPAL POPULATION PROJECTIONS

Municipality	1960	1970	1980	1990	2020
West Homestead	4,155	3,739	3,940	4,152	4,615
West Mifflin	27,289	26,807	29,594	32,671	39,916
West View	8,079	8,240	8,684	9,152	10,173
Whitaker	2,130	2,094	2,123	2,152	2,300
Whitehall	16,075	16,602	17,498	18,442	20,499
White Oak	9,047	12,032	12,296	12,566	13,125
Wilkinsburg	30,066	26,157	27,124	28,127	30,226
Wilmerding	4,349	4,109	3,993	3,881	3,696
FIRST CLASS TOWNSHIP					
Aleppo	755	792	937	1,109	1,564
Baldwin	3,004	3,515	3,704	3,904	4,570
Collier	8,021	6,657	7,855	9,268	13,180
Crescent	2,603	2,600	2,930	3,302	4,212
East Deer	2,865	2,578	2,567	2,556	2,533
Elizabeth	14,159	15,151	17,256	19,654	25,580
Harrison	15,710	16,966	17,407	17,859	18,802
Kennedy	5,806	8,662	10,221	12,060	16,905
Leet	1,239	1,289	1,452	1,639	2,086
McCandless	14,582	22,456	25,577	29,322	38,164
Mt. Lebanon	35,361	39,217	46,276	54,605	76,551
Neville	2,400	2,015	2,377	2,804	3,929
North Versailles	13,583	13,718	16,242	19,230	27,149
O'Hara	8,681	9,252	10,917	12,882	18,059
Penn Hills	51,512	62,462	71,144	76,052	80,612
Reserve	4,230	4,684	4,805	4,929	5,188
Robinson	7,935	9,698	11,443	13,502	18,927
Ross	25,952	32,221	35,765	39,699	48,885
Scott	19,094	18,107	19,084	20,114	22,359
Shaler	24,939	34,444	40,643	47,958	67,234
South Fayette	10,728	9,369	11,092	13,132	18,539
South Versailles	517	570	649	739	961
Springdale	1,957	2,092	2,382	2,713	3,530
Stowe	11,730	11,260	11,868	12,508	13,903
Upper St. Clair	8,287	19,225	22,685	26,768	37,526
Wilkins	8,272	8,728	8,956	9,654	10,292

TABLE V (Continued)
MUNICIPAL POPULATION PROJECTIONS

Municipality	1960	1970	1980	1990	2020
SECOND CLASS TOWNSHIP					
Fawn	3,008	3,159	3,680	4,287	6,777
Findlay	4,537	5,353	6,851	8,769	14,586
Forward	4,692	5,114	5,824	6,633	8,632
Frazer	1,707	1,793	2,088	2,432	3,316
Hampton	10,641	12,452	14,743	17,455	24,643
Harmar	3,657	4,025	4,765	5,641	7,962
Indiana	5,751	6,239	7,549	9,134	13,494
Kilbuck	1,930	1,389	1,639	1,934	2,710
Marshall	2,528	2,896	3,307	3,776	4,945
Moon	10,642	18,410	21,797	25,807	36,435
North Fayette	4,583	5,181	6,134	7,262	10,252
Ohio	1,784	2,072	2,444	2,883	4,040
Pine	3,613	4,223	5,912	8,276	16,683
Richland	6,453	7,744	9,168	10,854	17,412
South Park	7,384	9,822	11,187	12,741	16,582
West Deer	9,038	10,131	11,995	14,202	20,050

TABLE VI
POPULATION PROJECTIONS BY DRAINAGE BASIN

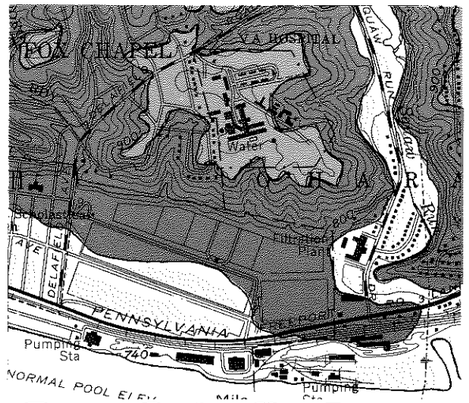
Drainage Basin	1967	2000
Becketts Run	790	940
Becks Run	31,750	26,930
Big Sewickley Creek	4,610	9,050
Breakneck Creek	410	1,090
Brush Creek	2,030	6,400
Bull Creek	11,610	20,840
Bunola Run	130	270
Campbells Run	3,680	4,400
Chartiers Creek	265,980	188,930
Coal Run	2,950	4,850
Crawford Run	1,110	2,490
Crooked Run	18,480	19,020
Days Run	2,000	3,910
Deer Creek	20,980	43,860
Douglass Run	3,960	5,690
Fallen Timber Run	7,370	24,870
Flaugherty Run	3,320	7,290
Girtys Run	47,990	77,290
Glade Run	360	680
Guyasuta Run	11,780	14,360
Homestead-West Run	36,260	37,900
Indian Creek	3,320	3,930
Jacks Run	20,270	21,110
Kelly Run	430	1,490
Kilbuck Run	1,350	3,780
Little Sewickley Creek	5,810	9,680
Lobbs Run	1,360	2,620
Long Run	38,050	67,030
Lowries Run	11,570	29,120
McCabe Run	6,560	9,150
Millers Run	1,710	11,520
Monongahela River	28,680	31,160
Montour Run	13,120	27,220
Moon Run	5,050	29,910

TABLE VI (Continued)
POPULATION PROJECTIONS BY DRAINAGE BASIN

Drainage Basin	1967	2000
Narrows Run	3,190	3,580
Neville	1,980	2,650
Ohio River	10,370	15,050
Peters Creek	73,550	92,510
Pine Creek	54,280	108,680
Pine Run	9,220	10,620
Pittsburgh	455,900	387,290
Plum Creek	20,960	27,500
Pollock Run	430	450
Potatoe Garden Run	1,260	3,180
Pucketa Creek	2,210	9,390
Quigley Creek	5,240	5,870
Raccoon Creek	1,170	5,490
Raredon Run	810	1,790
Riddle Run	1,580	2,890
Robinson Run	8,870	13,850
Sandy Creek	11,770	12,440
Saw Mill Run	154,280	155,720
Shouse Run	1,770	2,840
Spruce Run	9,380	6,560
Squaw Run	11,340	15,720
Streets Run	40,000	99,210
Sunfish Run	420	620
Tawney Run	13,540	19,450
Thompson Run	33,100	67,460
Thoms Run	2,350	3,790
Thorn Run	2,930	5,220
Toms Run	790	980
Turtle Creek	135,940	147,320
Upper Allegheny River	20,710	24,980
Wildcat Run	3,630	9,480
Wylie Run	3,360	6,250
Youghiogheny River	13,510	17,480

IV. GEOLOGY

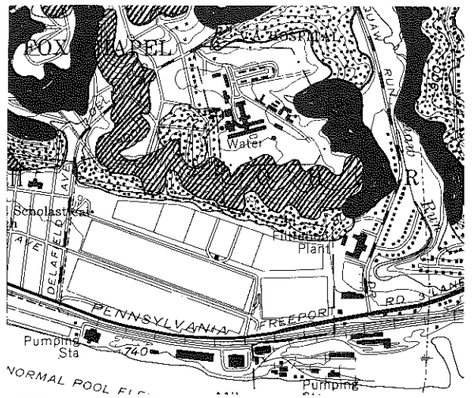
SOIL LIMITATIONS EQUATION



GEOLOGY

- RECENT ALLUVIAL
- TERRACE DEPOSITS
- MONONGAHELA
- CONEMAUGH

+



SLOPE

- 0% - 8%
- 8% - 16%
- 16% - 25%
- 25% AND OVER

=

Plate A



SOIL CLASSIFICATION

SOILS LIMITATIONS FOR ON-LOT SEWERAGE SYSTEM

- SLIGHT
- MODERATE
- SEVERE

GEOLOGY

Physiography

Present topographic and drainage patterns of Allegheny County are the result of the transformation of the land surface by a succession of ordinary geologic processes.

During the period when the area now occupied by the County was covered by an expansive inland sea, several thousands of feet of sedimentary deposit accumulated on the sea bottom. Subsequently, recurrent uplifting raised the sea bottom out of the water. Within the emergent periods, erosional processes carried away surface material. During subsequent submerged periods, sedimentary processes again resulted in the build-up of thick layers on the ocean bottom. The irregularity of the bedrock layers in some of the geologic formations in Allegheny County are undoubtedly due to the redeposition of sediments on the unevenly eroded surfaces which were created during the emergent periods.

Extensive swamp areas were then formed during the latter stages of the long depositional period. Thick layers of vegetation formed in the swamps were included as a part of the sediments. It is these sediments which were later transformed, by the geologic processes of pressure and consolidation, into the valuable coal beds found within the geologic strata of the area.

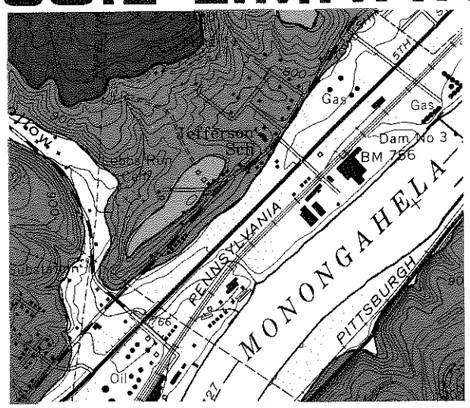
As the inland sea receded, the entire mass of sediments was raised above the level of the sea. During this raising period, folding and squeezing of the rock strata took place. Results of this phenomenon are evidenced by the presence of the gently sloping anticlines and synclines which are found throughout the County. Drainage patterns were established in this newly created land mass, and the process of erosion began again. Ultimately, the topography was nearly featureless, consisting of broad flat hills and wide broad valleys. This resulted in a relatively level surface known as a peneplane. Drainage of the surface at this time was northward.

Subsequently, the area was affected by the invasion of the glacial ice from the north. Although the glacier did not extend into Allegheny County, it did affect the topography and drainage patterns. The advance of the glacier prevented further northward drainage. The streams, which formerly flowed northward, were then forced to find outlets to the south. Thus, the Allegheny River became a much larger stream and glacial outwash filled the valleys. In some places outwash reached a depth of 100 feet. River terraces of glacial debris are in evidence today on the slopes above the major streams of the County.

Stratigraphy

Surface rocks extend from the Permian through the Pennsylvanian systems. These include the lower portion of the Dunkard and the Pittsburgh series, consisting of the Washington, Monongahela, Conemaugh and Allegheny Formations. In the Quaternary System, Recent Alluvium and Pleistocene Glacial Gravels are found on the surface in the flood plain and stream beds of the area and on the slopes above the river bottoms. The Recent Alluvium consists, for the most part, of sand and gravel with interbedded silt and clay

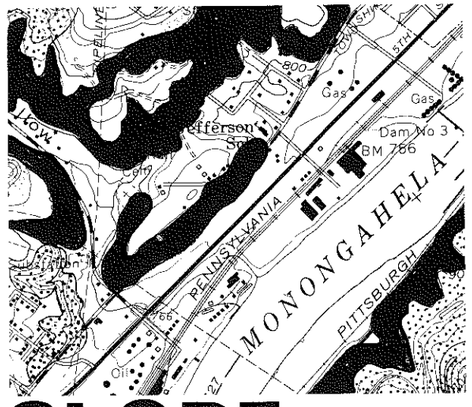
SOIL LIMITATIONS EQUATION



GEOLOGY

- RECENT ALLUVIAL
- TERRACE DEPOSITS
- MONONGAHELA
- CONEMAUGH

+

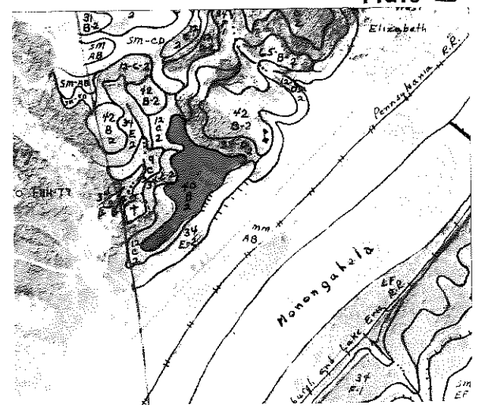


SLOPE

- 0% - 8%
- 8% - 16%
- 16% - 25%
- 25% AND OVER

=

Plate B



SOIL CLASSIFICATION

SOILS LIMITATIONS FOR ON-LOT SEWERAGE SYSTEM

- SLIGHT
- MODERATE
- SEVERE

strata. The glacial deposits consist primarily of well-rounded pebbles and sharp angular sand.

Rocks of the Washington Formation cap the highest hilltops in the County. These rocks are primarily sandstone, shaley sandstones, shales and coal. The Monongahela Formation consists of an interbedded sequence of limestone, sandstone, shale and economically important coals. The Pittsburgh Coal, the most valuable geologic strata of the area, forms the base of the Monongahela Formation. Conemaugh Formation rocks, which are found on the surface in the major portion of the County, consist of a sequence of sandstone, shale, clay-shale and limestone. The limestone, where found, is generally thin and discontinuous. Several minor coal seams are also found within the Conemaugh Formation. These are, however, thin, boney and economically unimportant. The oldest rocks exposed on the surface in Allegheny County are members of the Allegheny Formation. These consist of a sequence of sandstone, limestone, shale and economically important coals. The Upper Freeport Coal, of great value, is found at the top of the Allegheny Formation.

Structural Geology

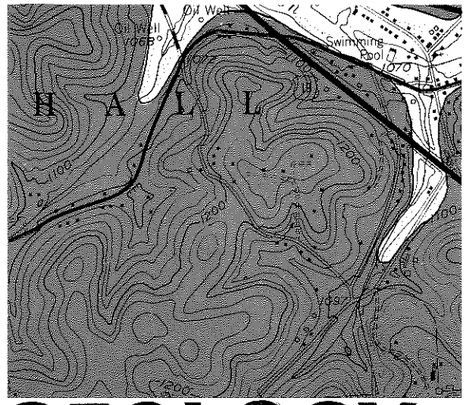
The rocks of Allegheny County are all sedimentary in nature. Originally they were laid down in a horizontal position. The originally flat-lying beds have been tilted and squeezed into a gently rolling series of anticlines and synclines. The anticlinal and synclinal axes trend northeast and southwest. Plate 5 of this report is a map showing the position of the structural axes in Allegheny County.

Major faulting is apparently absent in the region. However, there are numerous indications of crushing and shearing of rock where displacement, if any, is generally of a minor nature. Unconformities, however, are widespread throughout the County, and in many instances these have been erroneously recorded as faulting. Also, cross-bedding is very prevalent in most all of the sandstones encountered within the region. The cross-bedding is often similar in appearance to the unconformities.

Overburden Conditions

With the exception of the alluvium and glacial soils found in the stream beds and terrace deposits, soils of Allegheny County are predominantly residual in nature. That is, they have been formed by the chemical and physical weathering of the in-place rock. The geologic strata previously described herein are subject to differential weathering. The shales weather much more rapidly than the more massive, harder sandstones and limestones. As a result, much of the soil cover in the County is of a clay to silty-clay nature, having been derived from shales. In those areas where massive sandstones outcrop, small isolated pockets of sand to silty-sand material can be found. Predominantly, however, soils throughout the County are of a fine grained, impervious nature. The depth of soil will vary from a few inches in those areas where the massive sandstones are found, to 20 to 25 feet in those areas where soft limestone and/or clay shales predominate. As previously mentioned, some of the glacial outwash exist in depths in excess of 100 feet.

SOIL LIMITATIONS EQUATION



GEOLOGY

- RECENT ALLUVIAL
- TERRACE DEPOSITS
- MONONGAHELA
- CONEMAUGH

+

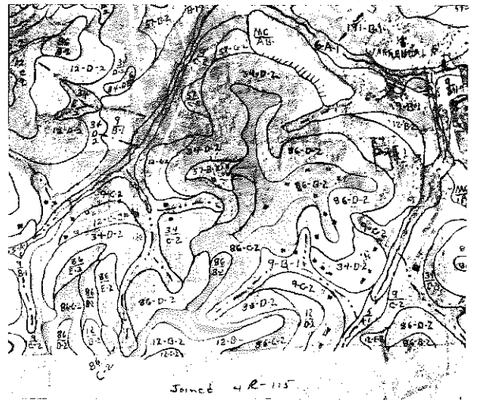


SLOPE

- 0% - 8%
- 8% - 16%
- 16% - 25%
- 25% AND OVER

=

Plate C



SOIL CLASSIFICATION

SOILS LIMITATIONS FOR ON-LOT SEWERAGE SYSTEM

- SLIGHT
- MODERATE
- SEVERE

The origin of the soils covering the surface of the County make it possible to, in general, relate geologically the suitability of various areas for such uses as on-site sewage and solid waste disposal, as outlined in the report titled "Soil Survey Interpretations for Allegheny County, Pennsylvania." Where the soil cover is natural and has not been contaminated by industrial, mine or man-made disturbances, generalizations concerning soil characteristics can be made. These generalizations can be useful in locating those areas where soil limitations would classify in the slight to moderate ranges. Examples of the use of the generalizations are illustrated in the following paragraphs and accompanying Plates A, B and C. The slope and soil suitability conditions cited in these examples are further defined on Plates 3 and 6, Slope and Soil Suitability Maps.

Shown on Plate A are three areas in the Fox Chapel section where the natural soils limitations would be slight for on-site sewage disposal. These soils are terrace deposits consisting of gravels, sands, silts and minor percentages of clay resulting from the actions of glacial melt waters. This combination of soil constituents tends to produce a well drained strata and gentle to moderate slopes.

Surrounding the terrace deposits are residual soils which are primarily the product of the weathering of various shales in the mid-Conemaugh Formation. These soils contain notably higher percentages of clay, with slopes considerably steeper and soil suitability generally severe.

Other isolated areas in the County exist in a very similar geologic environment. The same soil suitability ranges can be anticipated where this environment persists.

Plate B depicts a second geologic environment in which soil limitations would be slight for use in on-site sewage disposal. This area is again a terrace deposit consisting of stratified deposits of gravel, sand, silt and minor clay percentages. These soils form a well drained strata and moderate slopes. This combination results in slight soil limitations for on-site sewage disposal.

Adjacent soil deposits are the result of the weathering shales, limestones and sandstones of the Upper Conemaugh Formation. This environment produces what is primarily a deep, fine grained soil with localized sandy pockets, moderately to well drained on moderate slopes. The United States Department of Agriculture Soil Conservation Service Classification for this combination is severe.

A geologic environment similar to that which has been described would be expected to produce a similar series of soil suitability ratings wherever encountered in the County.

As a final example of the use of the geologic environment in determining the general soil characteristics of an area, Plate C illustrates an area where soil limitations are classified as moderate and are totally residual and the product of the in-place decomposition of the underlying bedrock.

Sandstones are the parent materials from which the soils in this area are derived. The Morgantown sandstone of the Conemaugh Formation is the major origin of the granular soils which are relatively deep, well drained and of moderate slope. This combination results in the moderate classification of the soils.

Adjacent to these suitable soils, however, are soil deposits derived primarily from the decomposition of red shales constituting the mid to lower portion of the Conemaugh Formation. These soils have a higher clay content and vary from well to poorly drained. The classification of these deposits for on-site sewage disposal is severe.

Sandstone strata are found throughout the geologic formations on the surface of the County. These include the Connellsville, Birmingham, Buffalo and Mahoning Members. Although the over and under lying strata for each of these members may vary considerably and, therefore, influence the composition of the soils derived therefrom, each could possibly produce a granular deposit which would be moderately suited for on-site disposal.

Therefore, throughout the County it would be expected that soils resulting from the decomposition of a sandstone could be considered acceptable for on-lot sewage disposal. In this instance, however, it must be noted that each area considered would require on-site inspection and testing.

In addition to the previously noted structural axes map, this report includes Plate 4, which is a map of the geology of Allegheny County. This map has been compiled from the data, published and unpublished, on file in the office of the State Geologist, Bureau of Topographic and Geologic Survey, Harrisburg, Pennsylvania.

V. WATER & SEWER PROBLEM AREAS

WATER AND SEWER PROBLEM AREAS

Within the 730 square miles of land area which is Allegheny County, there are a number of scattered regions which are faced with the need to find immediate remedies for problems associated with the lack of adequate sewerage facilities. These problems take the form of unsanitary surface conditions as well as the contamination of surface and subsurface water supplies. In relatively undeveloped areas, the malfunctioning of on-lot facilities (septic tanks) is the primary source of trouble, while in more urbanized localities, the use of old, and in many instances undersized, sewers creates these problems.

Plate 7 represents pictorially the general location of these areas and was developed from information obtained from the Allegheny County Health Department, the Southwestern Pennsylvania Regional Planning Commission, as well as from Comprehensive Sewerage Plans prepared individually by some of the municipalities in the County. Although pollution of our water resources also can and does occur as a result of inadequate treatment of underground mine discharges or uncontrolled leaching in strip mines used as solid waste landfill areas, only those areas are shown where the problem is a result of inadequate sewerage facilities.

Succeeding chapters of this report contain information relating to proposed public sewerage systems for those areas currently without such facilities. Indications are that in some of these areas, the construction of the proposed facilities can be financed at this time. In other areas where rapid development is not anticipated, the proposed systems can be used as guides for the sizing and location of interim facilities as the need for such facilities arises.

Sewer and water problems in those areas of the County which lie within the service district of an operating sewerage agency are generally associated with the sewage collection system per se and, as such, have not been the subject of an in-depth analysis in this report.

VI. EXISTING & PROPOSED WATER SUPPLY SYSTEMS

EXISTING AND PROPOSED WATER SUPPLY SYSTEMS

One major factor in the growth and development of any area is the availability of potable water. There exist within Allegheny County five (5) private and forty-nine (49) public water supply systems which serve approximately 1.4 million people. The municipalities of Bradford Woods and Sewickley Hills Boroughs and the Townships of Fawn, Aleppo and South Versailles have no community water facilities and depend solely upon private on-lot wells as a source of supply. Twenty-seven (27) municipalities within the County have available systems to serve less than 30 per cent of their total land area, while seventy-five (75) municipalities have 100 per cent of their land area served by public and private water supply facilities. The remaining twenty-seven (27) municipalities have 40 to 80 per cent of their total land areas under service. Even though less than 75 per cent of the land area of the County is within public or private water supply service areas, the existing systems do serve a major portion of the population.

Water systems have been proposed for Bradford Woods Borough, Marshall Township, Pine Township, Richland Township, Hampton Township, Frazier Township and Fawn Township. In addition, the following municipalities have proposed expansion of their existing systems: McCandless Township, Bell Acres Borough, Sewickley Heights Borough, Aleppo Township, West Deer Township, Indiana Township, O'Hara Township, Springdale Township, Elizabeth Township, Forward Township, Findlay Township, South Fayette Township, North Fayette Township, Robinson Township and Collier Township.

Five (5) major public and private water supply systems – The South Pittsburgh Water Company, The Pittsburgh Municipal Water Works, the Municipal Authority of the Borough of West View, the Wilkinsburg Penn Joint Water Authority and the McKeesport Municipal Water Works – serve the majority of the population of Allegheny County which is provided with water treatment and distribution facilities.

Plate 8 delineates the existing and proposed service areas of the public and/or private water treatment and distribution facilities. In addition, this plate designates the location of existing water treatment facilities within the County.

Table VII lists the existing public and private water supply purveyors who provide treatment and distribution and those purveyors who only purchase and distribute water from another potable supply. Table VIII tabulates by municipality the percentage of population within that municipality served by approved water supply systems.

TABLE VII

ALLEGHENY COUNTY

EXISTING PUBLIC AND PRIVATE WATER PURVEYORS

	Average Daily Consumption (gal.)	Design Capacity (gal.)	Capacity Utilized (%)	Population Served	Design (+) Population
Aspinwall (Pu)	295,000	345,000	85	3,730	4,360
Blawnox (Pu)	275,000	175,000	157	2,270	1,440
Brackenridge (Pu)	650,000	1,900,000	34	5,200	15,200
Braddock (Pu)	2,254,200	4,500,000	50	12,560	25,070
Cheswick (Pu)	133,000	360,000	37	2,800	7,580
Clearview Water Supply Company (Pr)	2,000,000	4,000,000	50	17,000	34,000
Coraopolis (Pu)	1,026,900	3,000,000	34	9,500	27,750
Duquesne (Pu)	1,500,000	1,500,000	100	15,020	15,020
East Deer (PuD)	571,300	——	——	2,990	——
East McKeesport Water Company (PrD)	133,000	——	——	3,500	——
Edgeworth (Pu)	590,300	1,500,000	39	8,000	20,330
Elizabeth Township (Pu)	813,000	1,000,000	81	12,000	14,760
Etna (Pu)	550,000	1,250,000	44	5,520	12,540
Findlay Township Authority (PuD)	96,000	——	——	3,250	——
Forward Township Water Authority (PuD)	84,000	——	——	1,400	——
Fox Chapel (Pu)	1,150,000	4,000,000	29	11,000	38,260
Glenfield (PuD)	23,600	——	——	440	——
Hampton Township Water Authority (PuD)	750,000	——	——	10,000	——
Harmar (PuD)	159,900	——	——	3,050	——
Harrison Township Water Authority (PuD)	1,000,500	——	——	17,600	——
Clearview Water Supply					
Homestead (PuD)	386,500	——	——	6,200	——
Liberty (PuD)	162,700	——	——	3,800	——
McKeesport (Pu)	9,400,000	10,000,000	94	70,000	74,470
Millvale (Pu)	750,000	1,500,000	50	6,600	13,200
Monongahela Valley Water Corporation (Pr)	5,060,000	6,800,000	74	38,000	51,070
Monroeville Water Authority (PuD)	2,100,000	——	——	26,000	——
Moon Township (Pu)	817,000	3,500,000	23	14,500	62,120
Neville Township (PuD)	1,500,000	——	——	2,500	——
North Versailles (Pu)	840,000	1,000,000	84	15,000	17,860
Oakdale (Pu)	76,000	240,000	32	1,700	5,330
Oakmont (Pu)	4,700,000	6,000,000	78	57,100	72,893
O'Hara Township (PuD)	Included in Fox Chapel				
Pittsburgh (Pu)	70,130,000	150,000,000	47	650,000	1,105,882
Plum Boro Authority (PuD)	650,000	——	——	10,000	——
Portvue (PuD)	268,900	——	——	6,000	——
Rankin (PuD)	480,000	——	——	5,200	——
Reserve (PuD)	Included in City of Pittsburgh				
Richland Township Water Authority (PuD)	134,000	——	——	1,600	——
Robinson Township (Pu)	800,000	1,500,000	53	10,000	18,750
Sewickley (Pu)	720,000	1,750,000	41	8,000	19,445
Shaler (Pu)	2,594,700	3,000,000	86	35,000	40,467

TABLE VII (Continued)

ALLEGHENY COUNTY
EXISTING PUBLIC AND PRIVATE WATER PURVEYORS

	Average Daily Consumption (gal.)	Design Capacity (gal.)	Capacity Utilized (%)	Population Served	Design (+) Population
Sharpsburg (Pu)	1,000,000	1,500,000	67	7,000	10,500
South Pittsburgh Water Company (Pr) (Includes a portion of Washington County)	52,419,000	67,500,000	78	380,000	489,375
Springdale (Pu)	540,000	1,296,000	42	5,800	13,920
Tarentum (Pu)	1,424,800	2,000,000	71	11,200	15,748
Wall Borough (PuD)	25,000	———	——	300	——
Western Allegheny County (Pu)	300,000	42,000	714	6,500	910
West View (Pu)	11,934,000	24,000,000	50	145,400	292,608
Wilkinsburg-Penn (Pu)	22,300,000	27,500,000	81	235,000	289,801
Witmer Park Co-Op Association (Pu) (McCandless Township)	2,750	28,800	10	135	1,415
White Oak (PuD)	123,200	———	——	2,750	——
Versailles (PuD)	123,800	———	——	2,800	——

Pr — Private System
Pu — Public System
PuD — Distribution Facilities Only - Public
PrD — Distribution and Storage Facilities Only - Private
\+ — Based on the present per capita consumption

TABLE VIII
POPULATION SERVED BY APPROVED WATER SYSTEMS

Municipality	% of Population Served by Water System	Public Purveyor	Private Purveyor
SECOND CLASS CITY			
Pittsburgh	100	X	X
THIRD CLASS CITIES			
Clairton	100		X
Duquesne	100	X	
McKeesport	100	X	
BOROUGHS			
Aspinwall	100	X	
Avalon	100	X	
Baldwin	100		X
Bell Acres	10	X	
Bellevue	100	X	
Ben Avon	100	X	
Ben Avon Heights	100	X	
Bethel Park	100		X
Blawnox	100	X	
Brackenridge	50	X	
Braddock	100	X	
Braddock Hills	100	X	
Bradford Woods	0		
Brentwood	100		X
Bridgeville	100		X
Carnegie	100		X
Castle Shannon	100		X
Chalfant	100	X	
Cheswick	100	X	
Churchill	100	X	
Coraopolis	100	X	
Crafton	100		X
Dormont	100		X
Dravosburg	100		X
East McKeesport	100	X	
East Pittsburgh	100	X	
Edgewood	100	X	
Edgeworth	100	X	
Elizabeth	100	X	
Emsworth	100	X	
Etna	100	X	

TABLE VIII (Continued)
POPULATION SERVED BY APPROVED WATER SYSTEMS

Municipality	% of Population Served by Water System	Public Purveyor	Private Purveyor
Boroughs (Continued)			
Forest Hills	100	X	
Fox Chapel	100	X	
Franklin Park	10	X	
Glassport	100		X
Glenfield	75	X	
Greentree	100		X
Haysville	20	X	
Heidelberg	100		X
Homestead	100	X	
Ingram	100		X
Jefferson	40		X
Leetsdale	100	X	
Liberty	100	X	
Lincoln	20	X	
McDonald	100		X
McKees Rocks	100	X	
Millvale	100	X	
Monroeville	90	X	
Mt. Oliver	100		X
Munhall	100	X	X
North Braddock	100	X	
Oakdale	75	X	
Oakmont	100	X	
Osborne	100	X	
Pitcairn	100	X	
Pleasant Hills	80		X
Plum	20	X	
Port Vue	100	X	
Rankin	100	X	
Rosslyn Farms	75		X
Sewickley	100	X	
Sewickley Heights	50	X	
Sewickley Hills	0		
Sharpsburg	100	X	
Springdale	100	X	
Swissvale	100	X	
Tarentum	60	X	
Thornburg	50		X
Trafford	0		
Turtle Creek	100	X	
Verona	100	X	
Versailles	100	X	

TABLE VIII (Continued)
POPULATION SERVED BY APPROVED SYSTEMS

Municipality	% of Population Served by Water System	Public Purveyor	Private Purveyor
Wall	30	X	
West Elizabeth	100		X
West Homestead	100		X
West Mifflin	50		X
West View	100	X	
Whitaker	100		X
Whitehall	100		X
White Oak	40	X	
Wilkinsburg	100	X	
Wilmerding	100	X	
FIRST CLASS TOWNSHIP			
Aleppo	0		
Baldwin	80		X
Collier	10		X
Crescent	50	X	
East Deer	20	X	
Elizabeth	50	X	X
Harrison	75	X	X
Kennedy	50	X	
Leet	50	X	
McCandless	60	X	
Mt. Lebanon	100		X
Neville	100	X	
North Versailles	75	X	
O'Hara	100	X	
Penn Hills	75	X	
Reserve	100	X	
Robinson	50	X	
Ross	75	X	
Scott	100		X
Shaler	100	X	
South Fayette	10		X
South Versailles	0		
Springdale	30	X	
Stowe	100	X	
Upper St. Clair	50		X
Wilkins	100	X	
SECOND CLASS TOWNSHIP			
Fawn	0		
Findlay	10	X	
Forward	10	X	
Frazer	75	X	
Hampton	50	X	
Harmar	20	X	
Indiana	10	X	
Kilbuck	40	X	
Marshall	75	X	
Moon	60	X	
North Fayette	10	X	
Ohio	10	X	
Pine	5	X	X
Richland	20	X	X
South Park	30		X
West Deer	10	X	

VII. EXISTING & PROPOSED SEWERAGE SYSTEMS

EXISTING AND PROPOSED SEWERAGE SYSTEMS

Sewerage systems within Allegheny County have developed primarily in a random pattern, with many municipalities or authorities constructing sewerage facilities to serve only areas within their municipal boundaries. River based communities in many instances constructed treatment facilities to intercept storm and domestic flows gathered in existing sewers, while most of the systems in outlying areas are an outgrowth of the use of individual package-type plants which serve scattered subdivisions in these less developed regions. Of the few comprehensive systems in the County, the one constructed by the Allegheny County Sanitary Authority is by far the largest and serves 73 local municipalities, including the City of Pittsburgh, through a series of interceptor lines and one sewage treatment plant. Appendixes A, B and C, included in this report, present an inventory of the existing sewage treatment plant facilities, existing interceptor sewer facilities and the prevailing rate schedule for all facilities located in Allegheny County.

The systems proposed in this report reflect both the three-year needs and the ten-year needs for individual municipalities. To best define the existing and proposed systems, however, the presentations in this section will be made by drainage basin, with the result that systems for some municipalities within the County will appear in more than one drainage basin in this section. Individual drainage basins will be presented in a general clockwise order, starting in the northwestern section of the County.

As a part of the preparation of this report, six major drainage basins within the County were considered as priority areas. The systems proposed for these six basins will be presented in this section with the financial prospectus being detailed in Section VIII.

The sizing of the sewers and sewage treatment plants for this report were determined by using the criteria established by the Sanitary Water Board in their "Sewerage Manual" and it has been assumed that all plants will provide the equivalent of at least secondary treatment. Estimates have been based on construction costs anticipated in 1971.

BIG SEWICKLEY CREEK

(Plates 10, 11, 16 and 17) 19,443 Total Acres



Allegheny County – 10,761 Acres

Bell Acres Borough
Bradford Woods Borough
Franklin Park Borough
Leet Township
Leetsdale Borough
Marshall Township

Beaver County – 8,682 Acres

Ambridge Borough
Economy Borough
Harmony Township

Existing Facilities

The Big Sewickley Creek Drainage Basin is very sparsely populated and utilizes individual septic tank – tile field systems as a method of domestic waste disposal. Two (2) small package treatment plants located in Economy Township, Beaver County, and a short section of interceptor constructed by the Leet Township Authority for service to the Fair Oaks area are the only existing facilities. The Leet Township interceptor connects to the Ambridge Municipal Authority System for ultimate treatment and disposal.

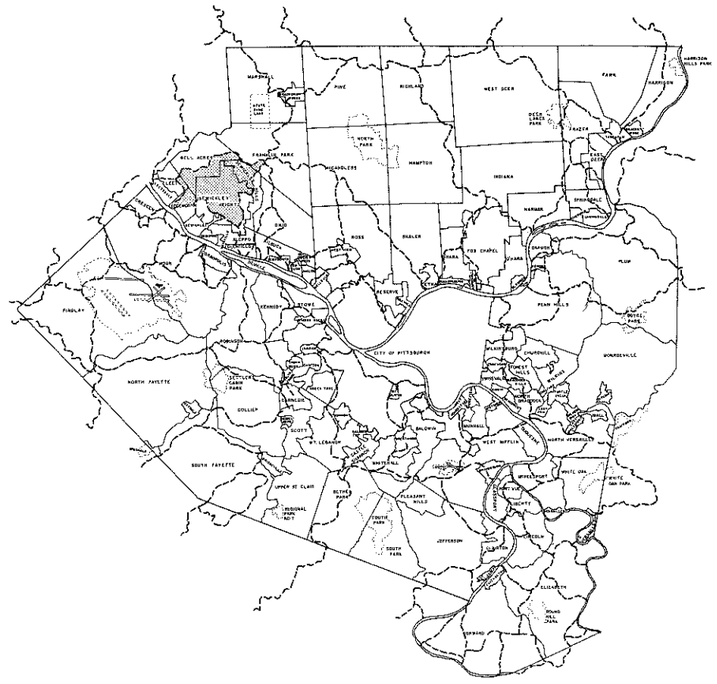
Proposed Facilities

Population projections for this basin indicate that sufficient customers would not be available in the next ten-year period for supporting a public system. For the purpose of future planning, the least cost system for this basin was determined and is shown on Plates 10, 11, 16 and 17. The main elements of this system consist of a sewage treatment plant having an ultimate design capacity of 1.65 million gallons per day at the mouth of Big Sewickley Creek and a main interceptor traversing the Creek into Marshall Township.

In the northern extremities of this basin, the Pennsylvania Game Commission's game lands have isolated a portion of the drainage basin located in Marshall Township. The least cost system for this particular area of the drainage basin would be the construction of a sewage treatment plant, interceptor sewers and pumping stations as shown on Plates 11 and 17. However, since the trend is toward providing tertiary treatment for discharges into small streams, the cost of tertiary treatment would in all probability eliminate this as a least cost system and consideration should be given to pumping this flow to the proposed Pine Creek system.

LITTLE SEWICKLEY CREEK

(Plates 16 and 17) 6,154 Acres



Bell Acres Borough
Edgeworth Borough
Leetsdale Borough
Sewickley Heights Borough
Sewickley Hills Borough
Leet Township

Existing Facilities

This drainage basin has three (3) extended aeration plants serving the Franklin Park Elementary School, the Sewickley Heights Plan of Lots and the Allegheny Country Club. The discharge of the treated effluent from these plants is to Little Sewickley Creek. The only other provision for sewage disposal in this basin is the availability of an 18" stub on the Leetsdale sewerage system for serving portions of Edgeworth Borough and Leet Township. This stub is located on the Leetsdale interceptor at the mouth of Little Sewickley Creek.

Proposed Facilities

Population projects for this basin indicate that sewerage facilities could not be supported within the next ten-year period. Plate 16 provides a layout of a system that should be used as a guide in developing facilities for the future. The basic element of this system is an interceptor traversing Little Sewickley Creek which is connected to the existing Leetsdale Authority facilities for treatment and disposal.

The Borough of Sewickley Heights proposes no changes in the present zoning for their municipality prior to 1985. Domestic wastes from this area will continue to be disposed of through the use of individual septic tank – tile field systems. The Quaker Valley School District is proposing new educational facilities, the location of which is shown on Plate 1. Indications are that the School District will have to construct a package-type plant for serving their buildings unless the surrounding municipalities, authorities and interested developers can unite to promote the start of a public sewerage system.

OHIO RIVER BASIN

(Plate 16) 3,257 Acres



Edgeworth Borough
Glenfield Borough
Haysville Borough
Osborne Borough

Leetsdale Borough
Sewickley Borough
Sewickley Heights Borough
Aleppo Township

Existing Facilities

The existing facilities located in this basin are the Boroughs of Leetsdale and Sewickley sewerage systems. The service area for the Leetsdale sewerage system encompasses 100% of the Borough of Leetsdale, the southern portion of Leet Township and all of Edgeworth Borough. Sewerage is treated at the Leetsdale plant which discharges into the Ohio River. This plant has a design capacity of one million gallons per day and provides intermediate degree treatment. The Leetsdale Municipal Authority is under Sanitary Water Board orders to upgrade the treatment facilities to the equivalent of secondary treatment. The Borough of Sewickley sewerage system serves the entire Boroughs of Sewickley and Osborne. The sewage from this system is treated in the Sewickley treatment plant which also discharges into the Ohio River. The treatment plant is a 1.35 million gallon per day facility which is presently being upgraded to secondary treatment.

Proposed Facilities

The Leetsdale Municipal Authority, as previously stated, has been issued Sanitary Water Board orders to upgrade its facilities to the equivalent of secondary degree treatment. The present capacity of this plant will be adequate to serve the entire existing and future service area; therefore, no additional increase in capacity is proposed. The extension of the 18" interceptor along Little Sewickley Creek is the only extension of interceptor proposed for this system. The portion of Sewickley Heights Borough within the Ohio River Drainage Basin will continue to use the existing on-lot disposal facilities.

A review of this area indicates that a portion of Aleppo Township and the entire Borough of Haysville could feasibly be served by the existing plant in Sewickley. The main elements of such an extension would be an 8" line along Merriman Road in Aleppo Township and an 8" line parallel to the Penn Central Railroad tracks in the Borough of Haysville, as shown on Plate 16. The line along Merriman Road would serve the developing portions of Aleppo Township, and the 8" line along the road parallel to the railroad tracks would serve the Sterling Paint and Varnish Company plant and those homes which lie between the railroad tracks and the Ohio River. These two sewers would be connected to a new lift station constructed next to Center Avenue, and sewage could be pumped across Center Avenue to the existing pump station owned by the Borough of Sewickley. That portion of the Borough of Glenfield within the Ohio River Basin will experience little, if any, development in the future and, therefore, no sewers are planned within the next decade.

KILBUCK RUN AND TOMS RUN

(Plates 16, 17 and 35)

4,744 Total Acres



KILBUCK RUN – 3,309 Acres

Franklin Park Borough
Glenfield Borough
Sewickley Heights Borough
Sewickley Hills Borough
Aleppo Township
Ohio Township

TOMS RUN – 1,435 Acres

Glenfield Borough
Aleppo Township
Kilbuck Township
Ohio Township

Existing Facilities

At the present time there are no public sewerage systems within the Kilbuck Run Drainage Basin and disposal of wastes is provided by individual septic tank – tile field systems. A State-owned sewage treatment plant serving the Dixmont State Hospital complex is the only existing treatment facility in the Toms Run Drainage Basin.

Proposed Facilities

The Kilbuck Run and Toms Run Drainage Basins were combined together for a study area. The Allegheny County Sanitary Authority has verbally indicated a willingness to extend their service area to include the Kilbuck Run and Toms Run Drainage Basins, provided an interceptor was constructed by others and connected to the Alcosan system in Emsworth. Several alternatives were considered, including the construction of a treatment plant to serve the Kilbuck Run and Toms Run Drainage Basins. The results of the study indicate that the most feasible solution would be to connect to the 30" Alcosan interceptor which presently terminates at Lowries Run in Emsworth Borough. However, it should be indicated that this system does not appear to be feasible within the next ten-year period. Development could conceivably occur at a faster rate than projected, and a further analysis should be made of this area within the next five to ten years.

The main elements for the system proposed for these two drainage basins with eventual connection to the Alcosan interceptor at Lowries Run would include the following elements as outlined on Plates 16, 17 and 35: construction of an interceptor along Kilbuck Run to Blackburn Road ranging in size from 10" to 15" which will serve those portions of Aleppo Township, Sewickley Hills Borough and Glenfield Borough in the Kilbuck Run Drainage Basin; the construction of a 15" to 18" interceptor along Route 65 which would pick up the proposed 15" interceptors from Toms Run and Kilbuck Run and connect to the existing Alcosan interceptor. The Toms Run Drainage Basin interceptor would range in size from 10" to 15" and would be located along Toms Run to serve those portions of Ohio Township, Kilbuck Township, Aleppo Township and Glenfield Borough within the Toms Run Drainage Basin. The existing Dixmont State Hospital sewage treatment plant would be abandoned and connected to the Toms Run line. The 18" interceptor along Route 65 would connect to a proposed pump station and force main at Emsworth and then connect to a gravity line leading to the 30" Alcosan interceptor at Lowries Run.

LOWRIES RUN

(Plate 17) 10,977 Acres



Ben Avon Borough
Ben Avon Heights Borough
Emsworth Borough
Franklin Park Borough
Kilbuck Township
McCandless Township
Ohio Township
Ross Township

Existing Facilities

This drainage basin is part of the Alcosan service area and, with the exception of three small sub-areas, the sewage emanating from this region is conveyed for treatment at the Alcosan sewage treatment plant in Woods Run. The three small sub-areas previously mentioned are the Thompson Terrace Plan of Lots in Ohio Township, the Ohio Township Elementary School, and the Royal Ridge Field Club in Franklin Park Borough. Sewage in each of these areas is treated at an extended aeration treatment plant located in the area. One main interceptor traverses Lowries Run from the Alcosan interceptor in the Borough of Emsworth northward to the Ingomar section of McCandless Township. This interceptor ranges in size from 18" to 8" and is owned jointly by Ross and McCandless Townships. The area served by this interceptor includes the western half of Ross Township, the southwestern corner of McCandless Township, the southeastern part of Franklin Park Borough, all of Emsworth Borough, portions of Ohio Township, and approximately one-half of the Boroughs of Ben Avon and Ben Avon Heights.

Proposed Facilities

The main elements of the system proposed for this drainage basin include the construction, within a three-year period, of the Bear Run trunk line ranging in size from 15" to 10" as shown on Plate 17. This proposed line will make it possible to eliminate the existing Thompson Terrace and Royal Ridge Field Club sewage treatment plants. Eight-inch trunk lines are proposed within the next ten-year period for Crawford Run in Ohio Township, a subbasin of Lowries Run. The proposed and existing systems for this drainage basin are illustrated on Plate 17.

BRUSH CREEK

(Plate 11) 5,615 Acres
(In Allegheny County)



Allegheny County – 5,615 Acres

Bradford Woods Borough
Marshall Township
Pine Township

Butler County

Cranberry Township

Existing Facilities

Brush Creek originates in Allegheny County and flows in a northwesterly direction into Cranberry Township, Butler County. The Allegheny County portion of this basin, which consists of 5,600 acres, is located in Marshall and Pine Townships and Bradford Woods Borough. An existing sewerage system located in Cranberry Township, Butler County consists of a sewage treatment plant and interceptor sewers ranging in size from 15" to 10". This interceptor terminates 500 feet north of the Marshall Township boundary. Also located within this drainage basin is a small package plant in Marshall Township serving the Howard Johnson restaurant facility along the Pennsylvania Turnpike, a small septic tank – sand filter plant located in Pine Township serving a separate subdivision, and a small extended aeration plant serving a privately owned motel along Route 19 in Marshall Township.

Proposed Facilities

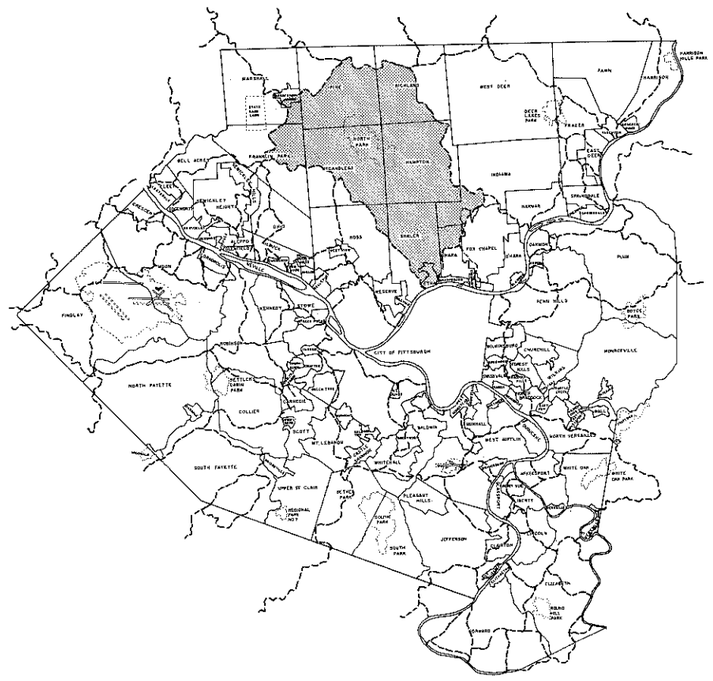
A comprehensive sewerage system has been proposed for the Brush Creek Drainage Basin of Allegheny County. This system would be multi-municipal in scope and would include portions of four municipalities located in two Counties. Sewerage facilities would be constructed to serve Marshall Township, Pine Township and Bradford Woods Borough in Allegheny County and the Regional Industrial Development Corporation complex located in both Marshall Township and Cranberry Township, Butler County.

The Cranberry Authority is presently increasing the capacity and upgrading their existing sewage treatment plant to a point capable of providing secondary treatment. Plans have also been completed for a new 0.5 million gallon per day secondary degree treatment plant to be located along Brush Creek. This additional capacity will serve all portions of the proposed comprehensive system for the next five to ten years.

Marshall Township will construct interceptors ranging in size from 24" to 8" for connection to the Cranberry Township system. Since the existing Cranberry Township interceptor is only 12" in diameter, a parallel interceptor will be constructed, when the need arises, from the termination point of the 24" interceptor to the existing treatment plant in Cranberry Township. The existing and proposed systems for this basin are shown on Plate 11.

PINE CREEK

(Plates 11, 12, 17, 18, 24 and 36) 42,801 Acres



Bradford Woods Borough
Etna Borough
Franklin Park Borough
Hampton Township
Indiana Township
McCandless Township
Marshall Township
O'Hara Township
Pine Township
Richland Township
Ross Township
Shaler Township

Existing Facilities

The Pine Creek Basin, with an area of 42,800 acres, is one of the largest drainage basins in Allegheny County. The lower portion of the basin is part of the Alcosan service area and is served by an interceptor which is located adjacent to Pine Creek and which connects to the main Alcosan interceptor at the confluence of Pine Creek and the Allegheny River. This interceptor ranges in size from 36" to 8". At the center of Etna Borough this interceptor branches into three separate lines, with one line serving the eastern branch of Little Pine Creek, second line serving the western branch of Little Pine Creek, and the third line proceeding north along Pine Creek and serving the major portion of Shaler Township.

There are approximately 29 sewage plants in the upper half of the Pine Creek Drainage Basin. An 18" interceptor is located along the north fork of Pine Creek in North Park and terminates at an existing County-owned septic tank – sand filter plant. The larger sewage treatment plants in this basin serve the southeastern portion of McCandless Township and are owned and operated by the McCandless Township Sanitary Authority. These plants are Longview No. 1, 2 and 3, the Covington Plant and the A & B Plant. More than 50% of the area of McCandless Township is served by public sewerage systems either through these Authority-owned plants or through the Lowries Run System which is part of the Alcosan service area. The eastern portion of this basin, which lies in Hampton and Richland Townships, is served by numerous small package-type treatment plants as shown on Plates 11, 18, 24 and 36.

Proposed Facilities

Two comprehensive sewerage systems have been proposed for the Upper Pine Creek Drainage Basin. One system would serve the western half of the drainage basin which includes portions of McCandless, Marshall and Pine Townships, and the Boroughs of Franklin Park and Bradford Woods. The other system is the Hampton Township Municipal Authority system which would serve portions of Hampton and Richland Townships.

A feasibility study has been prepared by the McCandless Township Sanitary Authority to determine the most feasible method of providing sewerage facilities in the western half of the upper portion of the Pine Creek Basin. The study included eight separate proposals or alternate methods.

As a result of this study and a series of meetings held under the auspices of Allegheny County, it has been proposed that the McCandless Township Sanitary Authority construct a sewerage system which would serve the five municipalities.

This system is shown on Plates 12, 17, 18 and 36 and would phase out nine existing plants. The proposed sewage treatment plant would be constructed along Pine Creek below North Park Lake in Hampton Township. The interceptors to the treatment plant would range in size from 42" to 8" and would provide service to the remaining unsewered area of McCandless Township, the developing area in the southwestern corner of Pine Township, and those portions of Franklin Park Borough, Marshall Township and Bradford Woods Borough which lie within or immediately adjacent to the Pine Creek Drainage Basin. The Cost Estimate and Revenue Summary for this system are given in Section VIII.

The Hampton Township Municipal Authority has prepared the design for a comprehensive system which can serve the portions of Hampton Township and Richland Township lying within the Pine Creek Drainage Basin. It is anticipated that this system will be constructed within the next two years.

The proposed 1.0 million gallon per day sewage treatment plant will be located in Allison Park, Hampton Township, with the main interceptor running to the Richland Township – Hampton Township boundary. In addition, four trunk lines ranging in size from 15" to 8" are proposed for the

PINE CREEK (CONTINUED)

Gourdhead Run, McCaslin Run, Crouse Run and Willow Run areas (Plate 18). The proposed treatment plant will phase out 20 small package sewage treatment plants in Hampton Township and one package plant in Richland Township. This proposed system is shown on Plates 12 and 36.

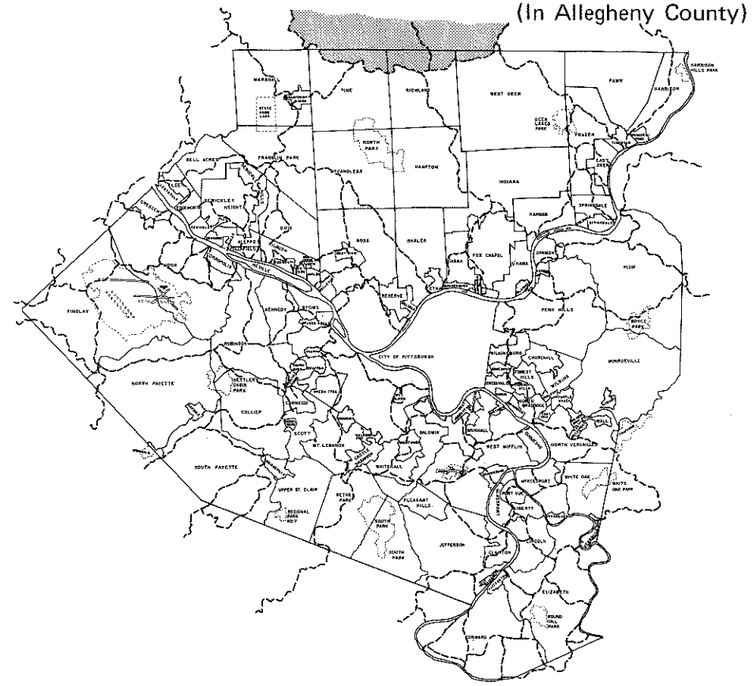
The eastern portion of Pine Township and the western portion of Richland Township, located within the Pine Creek Drainage Basin, would not be able to support a public system within the next ten-year period. Plates 11, 12, 17, 18 and 36 illustrate a future system which should be utilized for providing sewer service when the need arises.

The remainder of Pine Creek is within the Alcosan service area. Major sewer construction within this area will involve the extension of existing interceptors to serve the developing portions of Shaler Township.

BREAKNECK CREEK AND GLADE RUN

(Plates 11 and 12)

3,409 Total Acres
(In Allegheny County)



BREAKNECK CREEK – 2,636 Acres (in Allegheny County)

Pine Township — Richland Township

GLADE RUN – 773 Acres (in Allegheny County)

Richland Township — West Deer Township

BREAKNECK CREEK AND GLADE RUN

Existing Facilities

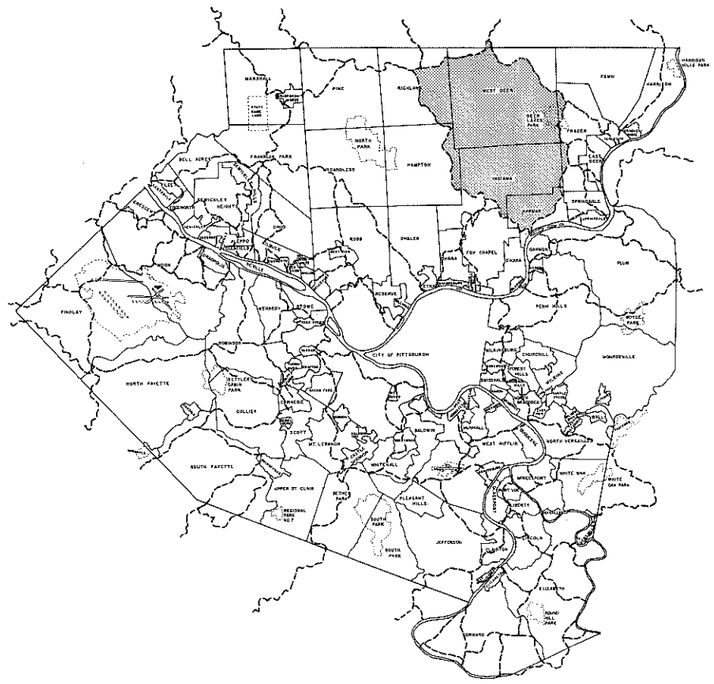
These two drainage basins originate within the boundary of Allegheny County and extend into Butler County. The only existing facility is a sewage treatment plant located on Breakneck Creek in Richland Township. Sewage disposal in the remaining area is provided by individual on-lot septic tank – tile field systems.

Proposed Facilities

Population projections indicate that major development is not anticipated in this area prior to the year 2000 and, therefore, public sewerage systems do not appear to be feasible in the foreseeable future. Approved on-lot facilities will continue in use for the disposal of domestic wastes with package-type plants being utilized to serve small areas of concentrated development as required.

DEER CREEK

(Plates 12, 13, 18, 19 and 37) 32,959 Acres



Fox Chapel Borough
Frazer Township
Hampton Township
Harmar Township
Indiana Township
Richland Township
West Deer Township

Existing Facilities

The major sewerage facility in the Deer Creek Basin is the Allegheny Valley Joint Sanitary Authority system. The service area for this system includes portions of Harmar and Springdale Townships and the Boroughs of Cheswick and Springdale.

The existing sewage treatment plant is located in Harmar Township along the Allegheny River near the confluence of Deer Creek and the Allegheny River and has a capacity of 3.0 million gallons per day. The plant provides the equivalent of intermediate degree treatment with the Authority currently under orders from the Sanitary Water Board to increase this degree of treatment to the equivalent of secondary. The main interceptor to this treatment plant is a force main which originates in Springdale Borough and follows the course of the Allegheny River through Cheswick Borough and Harmar Township. This force main varies in size from 20" to 12" and terminates at the pump station located near the treatment plant.

Eleven package-type plants drain into the Deer Creek Drainage Basin and are either extended aeration or septic tank – sand filter type processes. One of these package plants is located in Hampton Township, two in Harmar Township, one in Indiana Township, one in Richland Township, and six in West Deer Township.

Proposed Facilities

The area in the Deer Creek Drainage Basin was divided into five basic sewerage districts. The first of these districts lies in the northwest corner of the drainage basin and includes the Orchard Park and Bakerstown areas of Richland Township, plus the northwest corner of West Deer Township, and one small portion of Middlesex Township in Butler County. The second district includes a small portion of Hampton Township, the southwest corner of West Deer Township and the northwest corner of Indiana Township. The third district encompasses the eastern portion of West Deer Township above the community of Russellton, while the fourth district includes the remainder of the eastern portion of West Deer Township below Russellton as well as the eastern section of Indiana Township down to and including the Rural Ridge area. The last area contains the southern portion of the drainage basin including 60% of Indiana Township and all of that portion of Harmar Township which lies within this basin.

Of the alternate schemes analyzed, the most feasible solution for providing sewerage service in the Deer Creek Drainage Basin includes a series of collection systems, each with its associated treatment facility, as shown on Plates 12, 13, 18, 19 and 37.

The system proposed for the northwest corner of the drainage basin requires the construction of a sewage treatment plant on Deer Creek north of the community of Indianola. This plant would have a design capacity of 2.0 million gallons per day with the interceptor network varying in size from 27" to 8". The sewage treatment plant presently located in Richland Township could be phased out and the collection system served by that plant connected directly to the proposed system.

The sewerage system proposed for the Russellton area would include a sewage treatment plant located on Little Deer Creek below Russellton. The design capacity of this plant would be 0.6 million gallons per day with the interceptor size varying from 15" to 8".

The sewage treatment plant to serve the area below Russellton and including Rural Ridge would be located just south of Rural Ridge along Little Deer Creek. The proposed capacity of a plant required to serve this total area has been established at 0.4 million gallons per day, with the interceptor varying from 15" to 8". Because of the critical pollution problem which currently exists in this area, however, a feasibility study for Rural Ridge only had been prepared for the Indiana Township Board of Supervisors. As a result of that study, a sewage treatment plant with a capacity of 75,000 gallons per day has been designed along with a 10" interceptor. As part of the least cost system for this area, it is proposed that the smaller treatment plant be constructed in conjunction with the interceptor sized to accommodate the entire basin.

DEER CREEK (CONTINUED)

The system proposed for the southern portion of the total drainage basin calls for the expansion of the Allegheny Valley Joint Sanitary Authority service area to include those indicated portions of Indiana and Harmar Townships. It is further proposed to increase the capacity of the Authority's plant by 1.0 million gallons per day and to extend the interceptor system into the affected areas.

The Cost Estimate and Revenue Summary for the various proposals for the Deer Creek Drainage Basin are given in Section VIII with the plans for the proposed interceptors and sewage treatment plant locations shown on Plate 37. The Revenue Summary indicates that financing of the construction and operation of all of the facilities proposed for the Deer Creek Basin is feasible at this time.

TAWNEY RUN AND RIDDLE RUN

Existing Facilities

Approximately 60% of the area of the Tawney Run Drainage Basin has existing sewage facilities with treatment being provided at the Allegheny Valley Joint Sanitary Authority plant located in Harmarville, Harmar Township. Gravity flow interceptors are constructed in Springdale Township and in Cheswick Borough and drain into the force main along the Allegheny River. There is one existing 8" line located in the Riddle Run Drainage Basin. The remaining area of the Riddle Run Drainage Basin is presently unsewered.

Proposed Facilities

The present service area for the Allegheny Valley Joint Sanitary Authority extends to the Springdale Township – Frazer Township boundary. Tawney Run extends into Frazer Township while Riddle Run extends into Frazer Township and into the southern portion of East Deer Township.

Population projections for these two basins to the year 2000 indicate that development will occur slowly and that sewage facilities would not be feasible by the year 2000. Should sufficient development occur, the most feasible method for providing sewerage facilities would be the construction of collection systems in both Tawney Run and Riddle Run and the installation of a sewage treatment plant on Riddle Run at the Frazer – Springdale boundary. The existing and proposed systems for these basins are shown on Plate 19.

TAWNEY RUN AND RIDDLE RUN

(Plate 19) 4,295 Acres



Cheswick Borough
Springdale Borough
East Deer Township

Frazer Township
Harmar Township
Indiana Township
Springdale Township

CRAWFORD RUN AND DAYS RUN

(Plate 19)

4,239 Acres



Tarentum Borough

East Deer Township
Frazer Township

Existing Facilities

The only portions of Crawford Run and Days Run presently sewered are located along the Allegheny River and are served by the Upper Allegheny Valley Sanitary Authority system. A 6.0 million gallon per day intermediate degree treatment plant owned and operated by the Authority is located on the River in East Deer Township. This facility also serves the Boroughs of Brackenridge and Tarentum and the Townships of East Deer and Harrison in the Upper Allegheny River Drainage Basin. The interceptor which serves the treatment plant ranges in size from 12" to 36" and also includes a section of 24" force main.

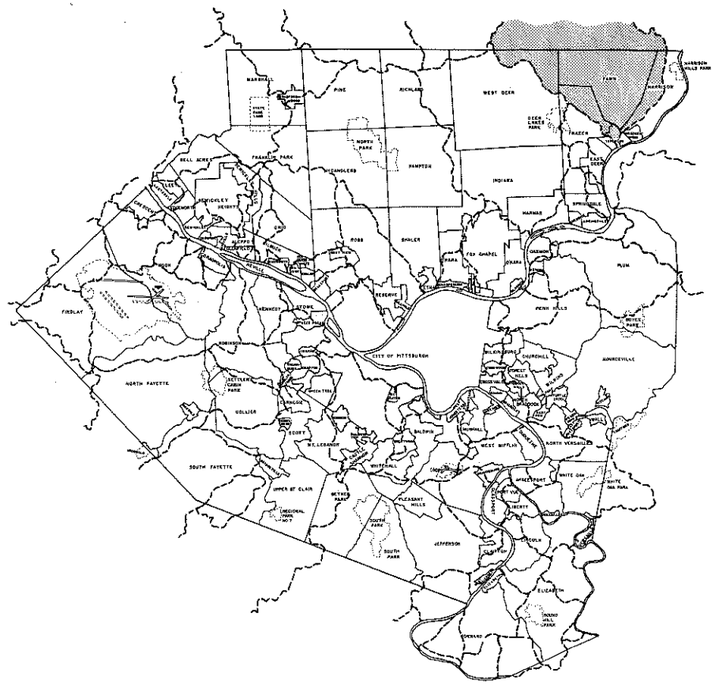
Proposed Facilities

As development occurs within the Crawford Run and Days Run Drainage Basins, the need for adequate sewerage facilities will increase. Population projections indicate that a system will be needed in this drainage basin by the year 2000. To provide service to this area, 8" lines are proposed for construction as illustrated on Plate 19. These lines would then be connected to the existing interceptor which, in turn, connects to the Upper Allegheny Valley Sanitary Authority plant on the Allegheny River in East Deer Township.

BULL CREEK

(Plates 13, 14, 19 and 20)

31,839 Acres



Allegheny County – 15,141 Acres

Brackenridge Borough
Tarentum Borough
Fawn Township
Frazer Township
Harrison Township
West Deer Township

Butler County – 16,698 Acres

Buffalo Township
Clinton Township
Middlesex Township

Existing Facilities

The Bull Creek Drainage Basin originates in Butler County and extends through Fawn and Harrison Townships and the Borough of Tarentum. The only existing facility located within this drainage basin is an interceptor ranging in size from 24" to 18" which connects to the main interceptor of the Upper Allegheny Valley Sanitary Authority system in Tarentum. This interceptor serves the Borough of Tarentum, part of the Borough of Brackenridge, and the community of Natrona Heights in Harrison Township. The drainage area of Fawn Township within the basin utilizes individual septic tank – tile field systems for the disposal of domestic waste.

Proposed Facilities

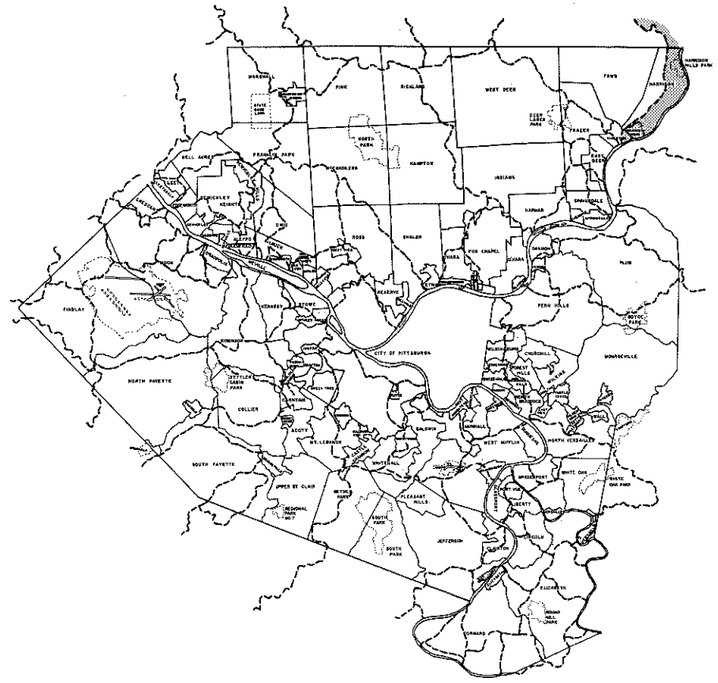
An analysis was made of the Bull Creek Drainage Basin to determine the feasibility of a total comprehensive system of the entire drainage basin. The drainage basin was divided into four areas. The first of these areas included the eastern portion of the drainage basin, the second included the western portion, the third included the Days and Crawford Run section, with the central portion of the drainage basin being included in the fourth area.

The results of the analysis for this basin indicate that the least cost system will consist of a sewage treatment plant having an ultimate design capacity of 1.0 million gallons per day located along Bull Creek in the community of Fawn Township which would serve the western portion of the basin with the remaining areas to be sewered and connected to the Upper Allegheny Valley Joint Sanitary Authority system.

Since present population within the drainage basin is relatively small and widely scattered, the feasibility of financing a comprehensive system in the near future is minimal. Until such time as sufficient population is available to support a comprehensive system, individual on-lot facilities and localized package plants should be utilized for the disposal of domestic waste with the comprehensive system as shown on Plates 13, 14, 19 and 20 being used as a guide for future planning.

UPPER ALLEGHENY RIVER

(Plates 14 and 20) 2,826 Acres



Brackenridge Borough

Tarentum Borough
Harrison Township

Existing Facilities

The Upper Allegheny River Basin is considered to be that area which makes up approximately 50% of the area of Harrison Township, all of Brackenridge Borough, and the eastern portion of Tarentum Borough. Approximately 30% of the area is served by the existing interceptor along Bull Creek which connects to the Upper Allegheny Valley Sanitary Authority system. The interceptor along the Allegheny River ranges in size from 15" to 30" at its point of connection with the Bull Creek interceptor.

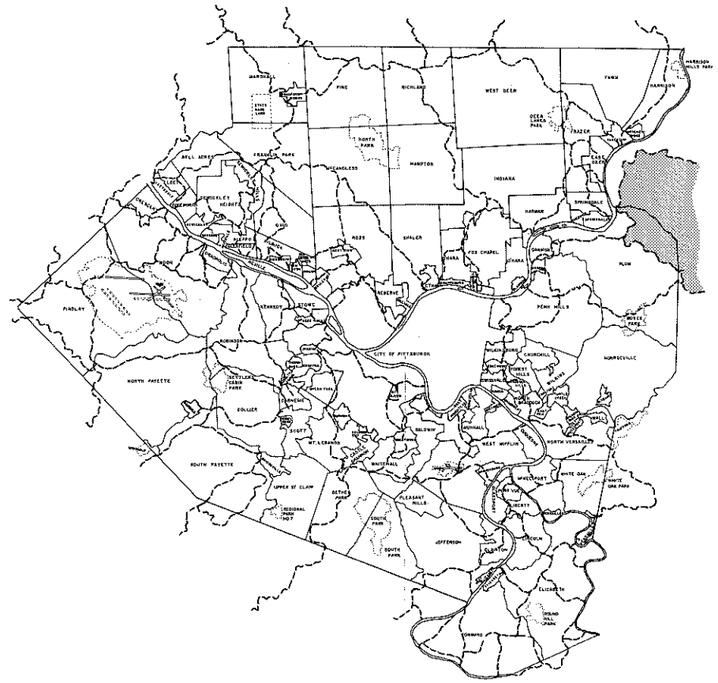
Proposed Facilities

Sewers ranging in size from 8" to 18" are currently being designed to serve this entire basin. This system would be connected to the existing Bull Creek interceptor and the interceptor traversing the Allegheny River. Sewage treatment will be provided in the existing Upper Allegheny Valley Sanitary Authority treatment plant located in East Deer Township. This plant presently provides intermediate degree treatment but has been ordered by the Sanitary Water Board to upgrade to the equivalent of secondary treatment. This system is shown on Plates 14 and 20.

PUCKETA CREEK

(Plates 19 and 20)

2,822 Acres (in Allegheny County)



Plum Borough

Existing Facilities

Approximately 25% of the area of the Pucketa Creek Drainage Basin is within Allegheny County. The remaining 75% of the drainage is located in Westmoreland County. The major sewage treatment facility located in this drainage basin is the New Kensington treatment plant located at the confluence of Pucketa Creek and the Allegheny River in the City of New Kensington, Westmoreland County. This is a 7.0 million gallon per day treatment facility providing intermediate treatment and is presently under Sanitary Water Board orders to upgrade to the equivalent of secondary treatment. A portion of the Logans Ferry area of Plum Borough and the Logans Ferry Heights area are also served by this treatment plant.

Proposed Facilities

An analysis was made of the southern half of the Pucketa Creek Drainage Basin along the Allegheny County – Westmoreland County boundary line. Population projections indicate that development in this basin will not be of sufficient magnitude to support public sewerage facilities in the near future. Because of the proximity of the New Kensington treatment facilities, however, the least cost system consists of interceptor sewers serving the area and eventually connecting to the New Kensington system. A preliminary analysis indicates that these interceptors would range in size from 18" to 8" as shown on Plates 19 and 20.

PLUM CREEK

(Plates 19, 20, 25, 26 and 38)

13,215 Total Acres
(13,143 Acres in Allegheny County)



Oakmont Borough
Plum Borough

Verona Borough
Penn Hills Township

Existing Facilities

The Plum Creek Drainage Basin is one of the largest areas between the Allegheny and Monongahela Rivers. The major portion of this acreage is located in Plum Borough and Penn Hills Township, while a small percentage, near the mouth of Plum Creek, lies within the Boroughs of Oakmont and Verona. Existing facilities within this basin were constructed primarily to service rapidly growing subdivisions. This type of development considered the needs within the boundaries of the individual subdivision and created systems which are not easily expanded, are expensive to operate and, in many instances, create stream pollution due to the limited assimilative capacity of the receiving streams.

The Plum Borough Municipal Sanitary Authority has two treatment plants serving the developments of Garlow Heights and Regency Park. These plants serve populations of 1,000 and 3,300 people respectively. The Township of Penn Hills is presently constructing a 2.2 million gallon per day sewage treatment plant adjacent to Plum Creek. It is anticipated that this plant will eventually serve 15,000 people. The existing plants and their associated systems are presented on Plate 38.

Proposed Facilities

The Plum Creek Drainage Basin, because of its potential for rapid growth and the existence of fragmented systems, was considered a priority area and a feasibility study was performed to determine the economics of a comprehensive system serving the total basin. Five alternatives were considered including the use of the Oakmont facilities, the use of the Penn Hills Township – Plum Creek facilities, and various combinations of one or more new plants to be located along Plum Creek.

The results of this study indicated that the least cost system included the treatment of domestic waste from the Penn Hills Township area at the new Plum Creek plant presently under construction and, in addition, the installation of a new 2.0 million gallon per day sewage treatment plant to serve the Plum Borough portion of the drainage basin. The existing and proposed sewage treatment plants and their associated interceptor system and trunk lines are shown graphically on Plates 19, 20, 25, 26 and 38. The Cost Estimate and Revenue Summary for the proposed system are included in Section VIII and indicates the feasibility of the proposed system.

ALLEGHENY RIVER

(Plate 19) 2,324 Acres



Oakmont Borough Plum Borough

Existing Facilities

The Oakmont Municipal Sanitary Authority operates a 2.5 million gallon per day intermediate degree treatment plant which serves the entire Borough of Oakmont and a small portion of Penn Hills Township. The only other facility in this basin is an 80,000 gallon per day sewage treatment plant located in the Logans Ferry area of Plum Borough.

Proposed Facilities

This area is fully developed and the only proposed construction will be the upgrading of the Oakmont sewage treatment plant to the equivalent of secondary treatment as required by the Sanitary Water Board.

INDIAN CREEK, QUIGLEY CREEK AND SANDY CREEK

(Plates 19, 24 and 25)

3,360 Total Acres



INDIAN CREEK – 425 Acres

Verona Borough

Penn Hills Township

QUIGLEY CREEK – 730 Acres

Penn Hills Township

SANDY CREEK – 2,205 Acres

Penn Hills Township

Existing Facilities

The total area of Sandy Creek and approximately 75% of the area of Indian and Quigley Creeks is served by the Sandy Creek treatment plant in Penn Hills Township, a 1.8 million gallon per day secondary treatment plant serving a population of approximately 20,000. Although this plant is presently overloaded, the completion of the Plum Creek system will permit diversion of sewage emanating from the Hammill area of Penn Hills to the Plum Creek sewage treatment plant, thereby reducing the flow to the Sandy Creek plant. When this occurs, the existing treatment plant will have sufficient capacity to accommodate present and future developments.

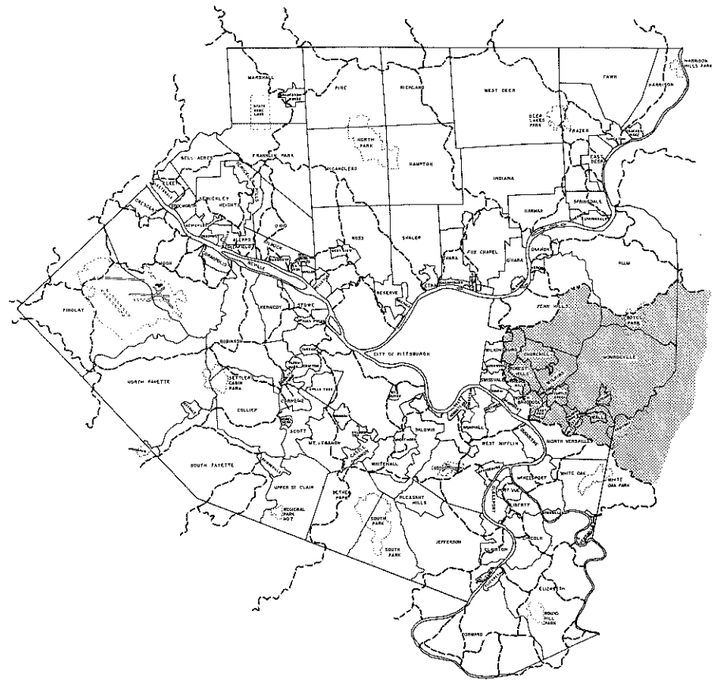
Proposed Facilities

It is proposed that sewage treatment for the area around Lincoln and Nadine Roads ultimately be provided at the Sandy Creek sewage treatment plant, with the interceptor serving the area to be connected to the existing pump station at Nadine Road. The existing and proposed systems are illustrated on Plates 19, 24 and 25.

TURTLE CREEK

(Plates 25 and 26)

31,328 Acres (in Allegheny County)



Braddock Hills Borough
Chalfant Borough
Churchill Borough
East McKeesport Borough
East Pittsburgh Borough
Forest Hills Borough
Monroeville Borough
North Braddock Borough
Pitcairn Borough
Plum Borough
Trafford Borough
Turtle Creek Borough
Wall Borough
Wilkinsburg Borough
Wilmerding Borough
North Versailles Township
Penn Hills Township
Wilkins Township

Existing Facilities

Turtle Creek itself is one of the larger tributaries of the Monongahela River, and the Turtle Creek Basin covers portions of eastern Allegheny County as well as portions of Westmoreland County. Approximately 75% of the drainage basin within Allegheny County is in the Alcosan area and is served by an interceptor ranging in size from 54" to 24" and running along Turtle Creek to the Borough of Trafford. The Abers Creek area of the Turtle Creek Basin is served by an 0.70 million gallon per day secondary degree treatment plant located adjacent to the Holiday Park Development. One of the most densely populated municipalities within this drainage basin is the Borough of Monroeville, which at the present time is 80% sewered and connected to the Alcosan system. The southeastern portion of Penn Hills Township is located within the Turtle Creek Drainage Basin and contains two sewage treatment plants. These are the Long Road plant and the Gascola plant which have respective capacities of 1.2 million gallons per day and 0.9 million gallons per day. Both plants provide the equivalent of secondary treatment and serve the major portion of Penn Hills Township within this drainage basin. In addition, the Plum Borough Markhaven plant is located in this basin and serves approximately 650 people.

Proposed Facilities

Extension of sewers within the Alcosan service area should be made to serve developing portions of Wilkins Township and Monroeville Borough as development occurs. These collector sewers would convey sewage to the Alcosan system for final treatment.

Other areas within the Turtle Creek Drainage Basin but outside of Alcosan service area include portions of Penn Hills Township, Plum Borough and North Versailles Township.

The single facility proposed for the Penn Hills Township portion of the Turtle Creek Drainage Basin is a pump station to be located adjacent to Rodi Road at the Penn Hills boundary line with the discharge being conveyed to the Gascola plant. The exact location of this pump station will be dependent on the final location of the proposed four-lane highway in the area.

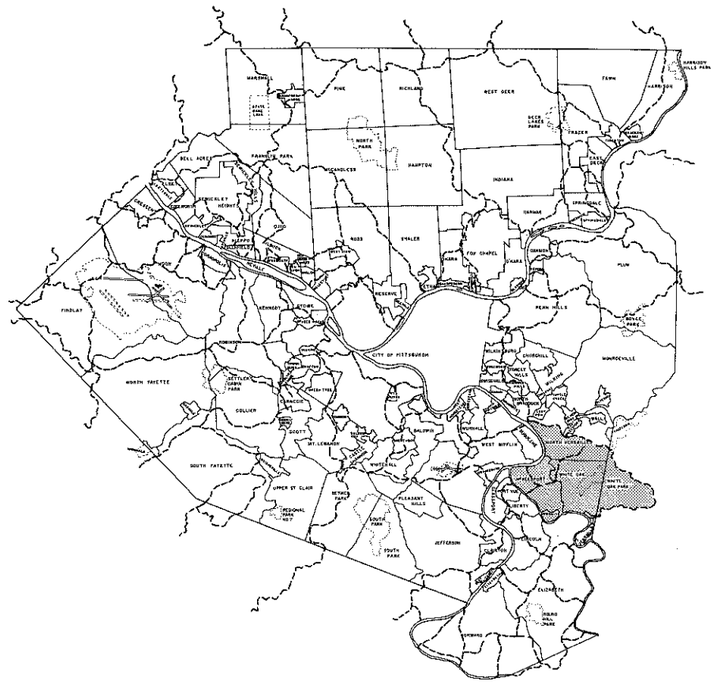
There are approximately 6,000 acres of Plum Borough in the northeast corner of the Turtle Creek Drainage Basin, and the projected population for this area for the year 2000 is 16,000.

The least cost system proposed for this region, assuming that Alcosan does not extend their service district to include this area, calls for the construction of an additional 0.6 million gallon per day capacity at the existing Holiday Park sewage treatment plant. Areas adjacent to the Markhaven treatment plant could be served by this facility when the need arises.

If at a future date the Alcosan system is extended to encompass this drainage basin, consideration should be given to the abandonment of the Holiday Park sewage treatment plant. The existing and proposed facilities are illustrated on Plates 25 and 26.

CROOKED RUN AND LONG RUN

(Plates 25 and 31) 9,309 Total Acres (In Allegheny County)



CROOKED RUN – 2,869 Acres

City of McKeesport
East McKeesport Borough
White Oak Borough
North Versailles Township

LONG RUN – 9,582 Total Acres (6,440 Acres in Allegheny County)

City of McKeesport
Versailles Borough
White Oak Borough
North Versailles Township
South Versailles Township

Existing Facilities

Crooked Run is a tributary of the Monongahela River and flows through North Versailles Township and the City of McKeesport. At the present time, a major portion of this drainage basin is sewered with treatment being provided by the City of McKeesport plant located at the confluence of the Youghiogheny River and the Monongahela River. Interceptors are presently being constructed in North Versailles Township to serve the upper portion of the Crooked Run Drainage Basin.

Long Run is a tributary of the Youghiogheny River and flows through North Versailles Township, White Oak Borough, Versailles Borough and a part of North Huntington Township, Westmoreland County. The lower portion of the Long Run Drainage Basin is served by an interceptor which is connected to the City of McKeesport sewerage system for final treatment and disposal.

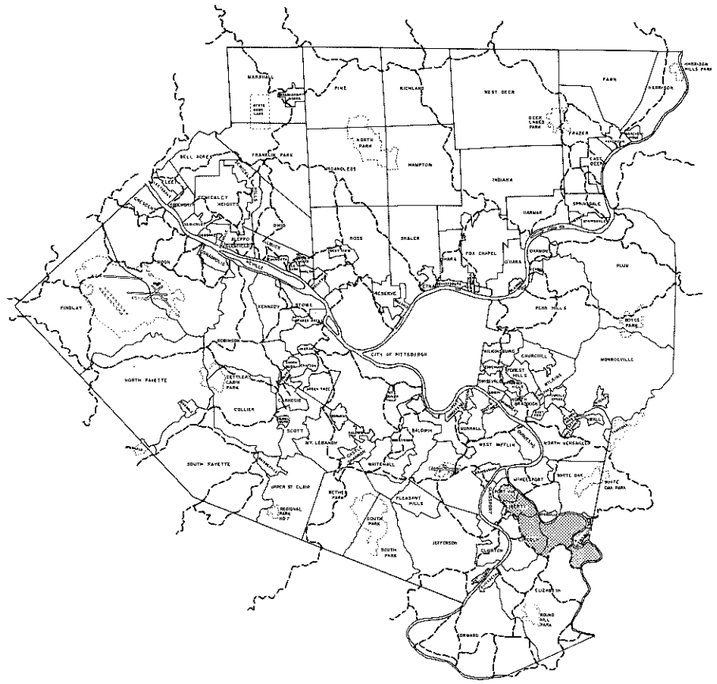
Proposed Facilities

A large portion of the Crooked Run Drainage Basin lies within the City of McKeesport service area. The only proposed facilities are extensions of existing sewers along Crooked Run in North Versailles Township as shown on Plate 31.

An analysis of the Long Run Drainage Basin indicates that the least cost system involves the construction of interceptors serving the entire basin and ranging in size from 18" to 10". Connection to the McKeesport interceptor would be made at Long Run with sewage treatment being provided at the City of McKeesport plant. Population growth in this area has been such that the provisions of a part of these facilities should be feasible in a three-year program.

YOUGHIOGHENY RIVER

(Plate 31) 5,376 Acres



Existing Facilities

The Youghiogheny River Basin is defined as that area which includes the many small drainage basins flowing directly into the southern side of the Youghiogheny River. Sewerage facilities which exist within the Youghiogheny River Basin are located in the Boston and Greenock areas of Elizabeth Township. Sewage from the south side of the Youghiogheny River is pumped across the River from Boston into Versailles Borough where it enters the City of McKeesport system.

Proposed Facilities

Little expansion is expected in those areas of Port Vue and Liberty Boroughs lying within the Youghiogheny River Basin. Most of the area in these two municipalities has been developed and provided with sewer service. As development occurs within the Elizabeth Township portion of the drainage basin, existing trunk sewers should be extended to provide service for these developing areas.

South Versailles Township is located between the ridge line of the Crawford Run Drainage Basin in Westmoreland County and the Youghiogheny River. The least cost system for providing sewerage service in this area, as shown on Plate 31, involves the pumping of sewerage across the River and into the Elizabeth Township system in the vicinity of the Greenock area. Treatment of the sewage would then be provided by the McKeesport system.

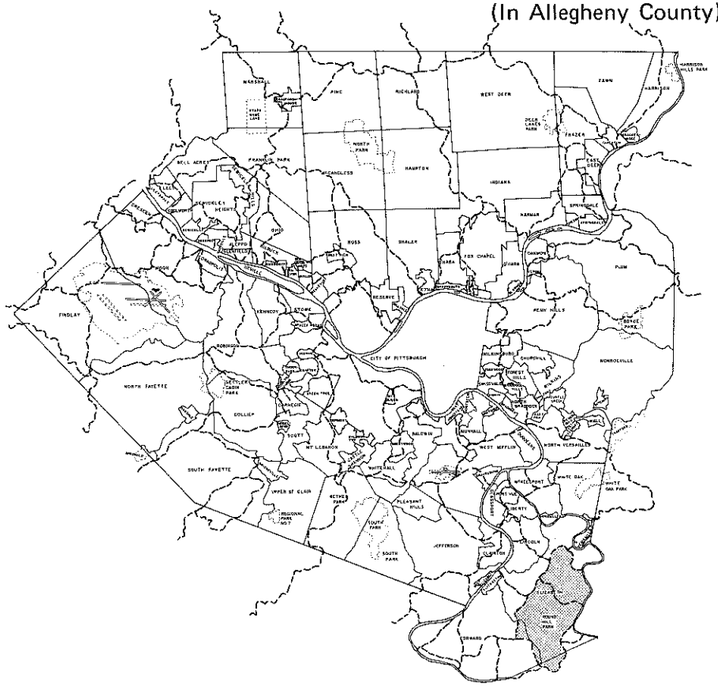
Glassport Borough
Liberty Borough
Lincoln Borough

Port Vue Borough
Elizabeth Township
South Versailles Township

WILDCAT RUN, DOUGLASS RUN AND POLLOCK RUN

(Plates 31 and 34)

8,860 Total Acres
(In Allegheny County)



WILDCAT RUN – 2,551 Acres

Elizabeth Township

DOUGLASS RUN – 6,529 Acres Total (5,905 Acres in Allegheny County)

Elizabeth Township Forward Township

POLLOCK RUN – 404 Acres (In Allegheny County)

Elizabeth Township

Existing Facilities

These three drainage basins lie within the eastern portion of Elizabeth Township and drain directly into the Youghiogheny River. The only existing facilities are located in the Wildcat Run area and serve approximately 80% of the area. Interceptors range in size from 30" to 8" at the sewage treatment plant, which is located along the Youghiogheny River in the community of Buena Vista in Elizabeth Township. A portion of the community of Mt. Vernon is also served by these facilities. Residents of the Douglass Run and Pollock Run areas utilize on-lot facilities for sewage disposal.

Proposed Facilities

With a large portion of the Wildcat Run already sewered, the only expansion of this system would involve the extension of the existing trunk sewers to developing areas.

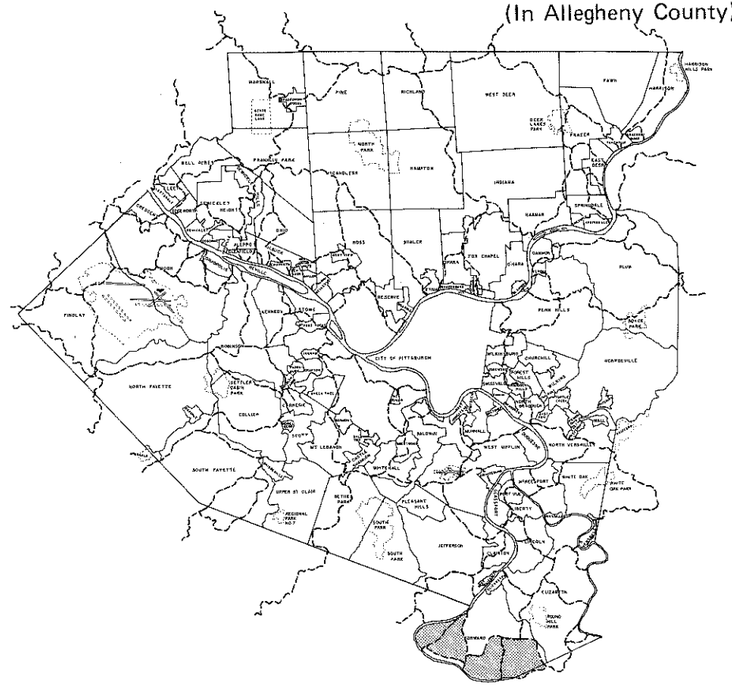
A study of the Douglass Run area indicates that development sufficient to support public sewerage facilities will probably not occur prior to 1980. However, as the area grows, it is proposed that sewers be constructed as shown on Plates 31 and 34 with treatment being provided at the Elizabeth Township Municipal Authority plant or at the McKeesport plant as indicated in the analysis of the Upper Monongahela River Basin.

It is not anticipated that the area within the Pollock Run Basin will develop in the foreseeable future. Isolated developments could utilize package plants for treatment and disposal.

BECKETTS RUN, SUNFISH RUN, KELLY RUN AND BUNOLA RUN

(Plates 33 and 34)

6,552 Total Acres
(In Allegheny County)



BECKETS RUN – 2,261 Acres (1,982 Acres in Allegheny County)

SUNFISH RUN – 1,573 Acres

KELLY RUN – 1,543 Acres

BUNOLA RUN – 1,454 Acres

Forward Township

Existing Facilities

These drainage basins are located in Forward Township and drain directly into the Monongahela River. There are no existing sewerage facilities within these drainage basins and disposal of domestic waste is by individual on-lot systems.

Proposed Facilities

The area within these four drainage basins is very sparsely populated and development substantial enough to warrant public facilities is not expected prior to the year 2000. This area should continue to use septic tank – tile field systems for the disposal of domestic wastes.

FALLEN TIMBER RUN

(Plates 30, 31, 33 and 34) 6,243 Acres



Elizabeth Borough

Elizabeth Township
Forward Township

Existing Facilities

Fallen Timber Run includes an area in the northern portion of Forward Township as well as the Borough of Elizabeth with the only existing sewerage facility within the basin serving the Borough of Elizabeth and portions of Elizabeth Township in the Wylie Run Drainage Basin. This system includes a 0.77 million gallon per day intermediate degree sewage treatment plant on the Monongahela River and the associated interceptor and collection systems.

Proposed Facilities

These portions of the Fallen Timber Run Drainage Basin in the area adjacent to Perry Mill Run are presently sparsely populated and major development is not anticipated during the next ten-year period. Those portions of Elizabeth Township and Forward Township which are adjacent to Route 51 are currently developed to the point where extension of the existing interceptor in Wylie Run could be feasible within the next three years. This proposed interceptor would range in size from 15" to 12", with treatment of the sewage emanating from the newly serviced area to be provided at the Elizabeth Borough Sanitary Authority plant or at the McKeesport plant as indicated in the analysis of the Upper Monongahela River Basin. The existing and proposed systems are graphically illustrated on Plates 30, 31, 33 and 34.

LOBBS RUN AND WYLIE RUN

(Plates 30, 31 and 33)

4,770 Total Acres
(In Allegheny County)



LOBBS RUN – 3,592 Total Acres (1,781 Acres in Allegheny County)

Jefferson Borough

WYLIE RUN – 2,989 Acres

Elizabeth Borough

Lincoln Borough
Elizabeth Township

Existing Facilities

Lobbs Run is located on the western side of the Monongahela River with approximately 50% of the basin in Washington County and the remainder located in Jefferson Borough, Allegheny County. One small treatment facility in the northeast corner of the Lobbs Run Drainage Basin serves a development within Jefferson Borough.

The southern portion of Wylie Run on the eastern side of the Monongahela River is served by the Elizabeth Borough treatment plant. The interceptor, ranging in size from 10" to 21", is located along the tributary of Wylie Run and is connected to a pump station in Elizabeth Township. Sewage from this pump station is pumped through a 16" force main into the Elizabeth Borough treatment plant. The main portion of the Wylie Run Drainage Basin is not presently sewered.

Proposed Facilities

A feasibility study prepared for the Borough of West Elizabeth in the Upper Monongahela River Basin and the Lobbs Run Drainage Basin considered five alternatives. The results of the study indicated that although a comprehensive system would be desirable, the least annual cost system would be that one in which the Borough of West Elizabeth would construct its own 0.15 million gallon per day sewage treatment plant and would include in the service area a portion of Jefferson Borough adjacent to West Elizabeth. The West Elizabeth Borough least cost system which would serve portions of these basins should be constructed within the next three-year period. The existing and proposed systems are shown on Plates 30, 31 and 33.

UPPER MONONGAHELA RIVER

(Plates 30 and 31) 4,220 Acres



City of Clairton
City of McKeesport
Glassport Borough
Jefferson Borough

Liberty Borough
Lincoln Borough
Port Vue Borough
West Elizabeth Borough

Existing Facilities

The Upper Monongahela River Basin is defined as the area along the eastern side of the Monongahela River in the Boroughs of Glassport and Lincoln as well as the area along the western side of the Monongahela River in the City of Clairton and the Borough of West Elizabeth. Approximately 80% of the Borough of Glassport is served by a sewage treatment plant located in the northern section of the Borough adjacent to the Monongahela River. This plant is a 1.2 million gallon per day facility providing intermediate degree treatment and serves a population of 8,000 people. The City of Clairton lies southeast of the Peters Creek Drainage Basin and is totally sewered, with sewage treatment being provided by the 2.0 million gallon per day intermediate degree treatment plant owned by the Clairton Municipal Authority. The Borough of West Elizabeth has an existing collection system which discharges untreated sewage directly into the Monongahela River and has been ordered by the Sanitary Water Board to provide treatment prior to discharge.

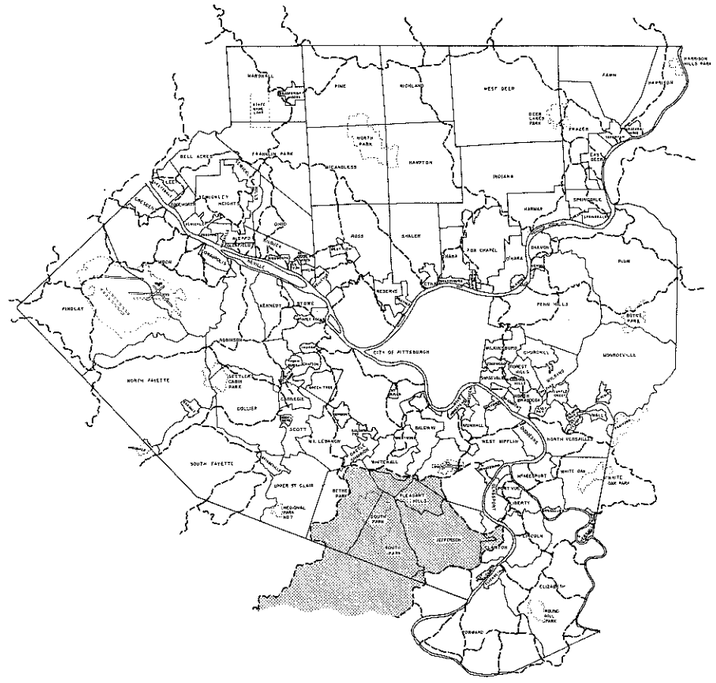
Proposed Facilities

The existing Glassport Municipal Authority plant is capable of serving all of the Borough of Glassport and those areas of Liberty and Lincoln Boroughs in the Upper Monongahela River Basin. Existing collection sewers in this area should be extended to service future developments.

A review of the area in the southeast corner of Allegheny County between the Youghiogheny River and the Monongahela River from the City of McKeesport to the Allegheny County – Westmoreland County line indicates that a detailed feasibility study should be prepared to determine the economics of providing sewage treatment at the McKeesport plant and phasing out the Elizabeth Township, Glassport Borough and the Elizabeth Borough plants by the year 2000. Sewage treatment would then be provided by the McKeesport system for all of the Youghiogheny River, Wildcat Run, Douglass Run, Fallen Timber Run and Wylie Run Basins and the area presently served by the Glassport system. The proposed facilities for West Elizabeth Borough were previously discussed in this section. The existing and proposed facilities are illustrated on Plates 30 and 31.

PETERS CREEK

(Plates 29, 30, 32, 33 and 39) 32,892 Total Acres



Existing Facilities

Peters Creek is a major tributary of the Monongahela River and flows in a northeasterly direction from Washington County through Allegheny County to its confluence with the Monongahela River at Clairton. Three treatment plants are in existence in this drainage basin. One plant is located along Piney Fork, a tributary of Peters Creek, and is owned and operated by the Bethel Park Borough Municipal Authority. This facility is located in South Park Township and serves the major portion of South Park Township and the eastern two-thirds of Bethel Park Borough. This secondary degree treatment plant serves 17,000 people and has a capacity of 3.0 million gallons per day. A second plant located in South Park Township is owned and operated by the Pleasant Hills Municipal Authority and is located along Lick Run. This secondary degree treatment plant serves 20,000 people and has a design capacity of 3.0 million gallons per day. The third large sewage treatment facility is located at Clairton and provides intermediate degree treatment. The present capacity of this plant is 2.0 million gallons per day, and it serves a population of 18,000 people. Sanitary Water Board orders have been issued for upgrading the Clairton plant to the equivalent of secondary degree treatment. Numerous small package plants are located within the Peters Creek Drainage Basin and serve individual subdivisions or isolated built-up areas. All existing facilities within the drainage basin are graphically illustrated on Plate 39.

Proposed Facilities

The results of a feasibility study prepared for the Peters Creek Joint Watershed Committee indicate that a single comprehensive system as shown on Plates 29, 30, 32, 33 and 39 is feasible at the present time and should be constructed within the next three-year period.

An interceptor is proposed for construction along Peters Creek to the Allegheny County – Washington County line with the sewage transportation charge for Jefferson Borough, South Park Township and the Washington County municipalities estimated to be approximately $.40 per 1,000 gallons. The responsibility for extending the interceptor into Washington County will be placed on the Washington County communities, and an additional sewage transportation charge will be assessed to these municipalities.

The proposed system also contemplates the upgrading of the Clairton Municipal Authority's treatment plant to provide secondary treatment for an ultimate capacity of 6.0 million gallons per day. The cost of treatment to all of the municipalities is estimated to be under $.50 per 1,000 gallons.

The existing Bethel Park and Pleasant Hills sewage treatment plants would continue in operation and the Clairton plant would serve the City of Clairton, Jefferson Borough and South Park Township in Allegheny County in addition to the Townships of Union, Peters and Nottingham and the Borough of Finleyville in Washington County. The Cost Estimate and Revenue Summary for the proposed system are included in Section VIII.

Allegheny County – 22,559 Acres

- Baldwin Borough
- Bethel Park Borough
- City of Clairton
- Jefferson Borough
- Pleasant Hills Borough
- West Mifflin Borough
- Whitehall Borough
- South Park Township

Washington County – 10,333 Acres

- Finleyville Borough
- Nottingham Township
- Peters Township
- Union Township

PINE RUN, THOMPSON RUN AND HOMESTEAD—WEST RUN

(Plates 24, 25, 30 and 31) 12,735 Total Acres



PINE RUN – 3,778 Acres

City of Clairton
Dravosburg Borough
Jefferson Borough
West Mifflin Borough

THOMPSON RUN – 5,313 Acres

City of Duquesne
City of Pittsburgh
Dravosburg Borough
West Mifflin Borough

HOMESTEAD – WEST RUN – 3,644 Acres

City of Pittsburgh
Homestead Borough
Munhall Borough
West Homestead Borough
West Mifflin Borough
Whitaker Borough

Existing Facilities

These three basins drain to the Monongahela River and are located on the south side of the River. The New England sewage treatment plant in West Mifflin Borough is located along Pine Run and serves the southern portion of West Mifflin Borough as well as that portion of the Borough which lies within the Peters Creek Drainage Basin. This plant is a 90,000 gallon per day secondary treatment facility which presently serves a population of 4,000.

The Borough of Dravosburg lies partially within the Pine Run Drainage Basin and the Thompson Run Drainage Basin. The Dravosburg Sanitary Authority operates a sewage treatment plant located on the Monongahela River. This plant is an 0.48 million gallon per day intermediate degree treatment facility serving a population of 3,500 in Dravosburg and West Mifflin Boroughs.

The City of Duquesne has a 2.0 million gallon per day intermediate degree treatment plant which serves a population of 15,000. This plant serves not only the City of Duquesne, but also portions of West Mifflin Borough in Thompson Run.

The Borough of West Mifflin also has a treatment plant located in Thompson Run. This facility is a 3.0 million gallon per day secondary degree plant serving a population of 20,000. The Kenmar Manor plant, located in the northeastern portion of West Mifflin Borough, is a 40,000 gallon per day secondary degree facility which serves a present population of 1,600.

A major portion of the Homestead – West Run Drainage Basin lies within the Alcosan service area. Interceptors within this drainage basin are connected to the Alcosan interceptor which runs along the south side of the Monongahela River in the Borough of Homestead. The Borough of Munhall is connected to the Alcosan interceptor on the south side of the Monongahela River. This interceptor crosses the River and connects to an Alcosan interceptor on the north side of the Monongahela River in the Borough of Swissvale.

Proposed Facilities

An interceptor is proposed for the southern portion of Jefferson Borough in the Coal Valley area adjacent to the West Mifflin boundary. This interceptor should be constructed within the next three years and should connect to the existing interceptor along State Street in the City of Clairton. Sewage from the entire area could then be treated at the Clairton sewage treatment plant.

The City of Duquesne and the Borough of Dravosburg have little developable acreage remaining within the drainage basin. Although no immediate need for additional facilities in the Thompson Run Drainage Basin is anticipated, any development in West Mifflin could be accommodated by an extension of the existing Thompson Run sewerage system.

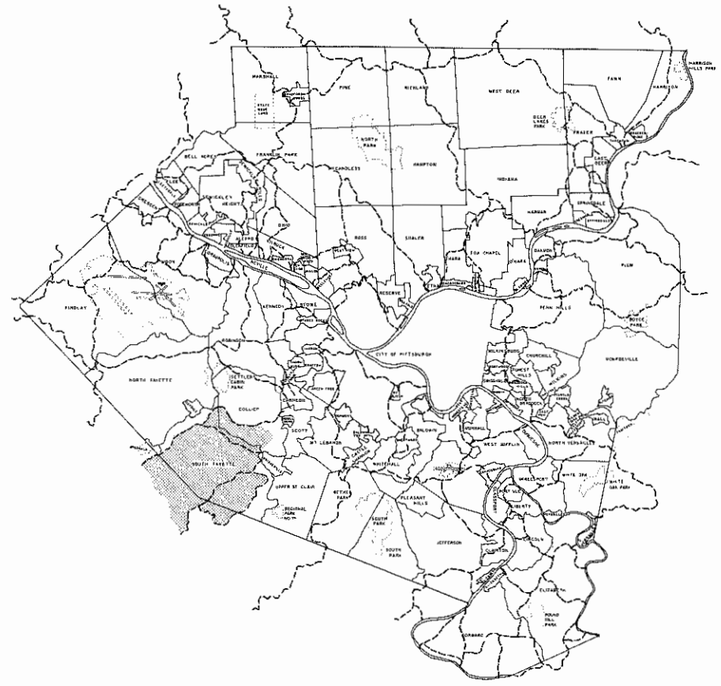
No major facilities are required in the Homestead – West Run Drainage Basin, since 75% of the area of this basin is within the Alcosan service area and is presently sewered.

The existing and proposed facilities are shown on Plates 24, 25, 30 and 31.

COAL RUN, MILLERS RUN AND THOMS RUN

(Plates 22, 23, 28 and 29)

20,800 Total Acres



COAL RUN (Chartiers Creek) – 2,949 Total Acres (2,484 Acres in Allegheny County)

South Fayette Township

MILLERS RUN (Chartiers Creek)

Allegheny County – 7,262 Acres

South Fayette Township

Washington County – 8,407 Acres

Cecil Township

Mt. Pleasant Township

THOMS RUN (Chartiers Creek) – 2,182 Acres

Collier Township

South Fayette Township

Existing Facilities

Coal Run, Millers Run and Thoms Run are three tributaries of Chartiers Creek. Coal Run and Millers Run originate in Washington County and flow in a northeasterly direction through Allegheny County to Chartiers Creek. There are two sewage treatment plants located in the Coal Run Basin, one serving the Mayview State Hospital and the other serving Fairview Manor Development in South Fayette Township. The only existing sewage treatment facility in the Millers Run Basin serves the Morgan Housing Development in South Fayette Township. The southern portion of Collier Township and a small portion of South Fayette Township lie within the Thoms Run Drainage Basin. These areas utilize individual on-lot systems for disposal of domestic waste.

Proposed Facilities

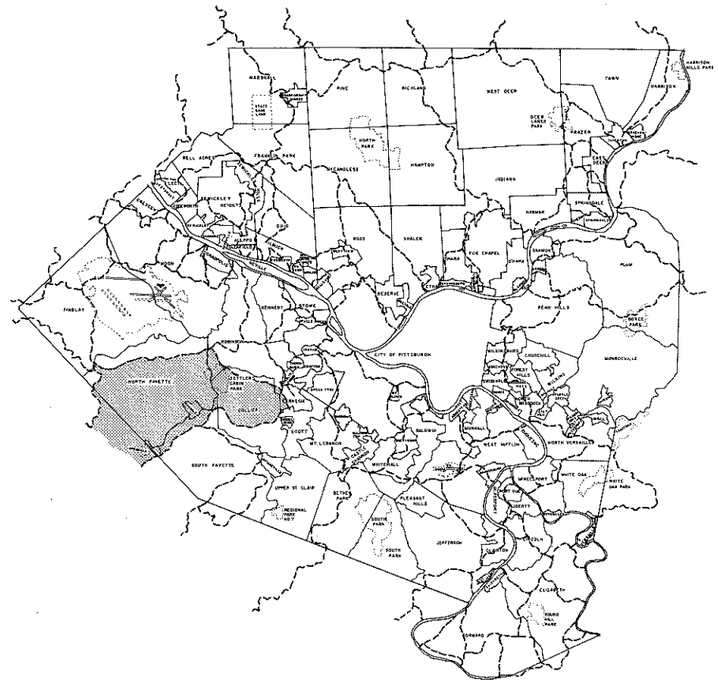
A study of the total area covered by these basins indicates that the region could best be served by the construction of a sewage treatment plant located at the confluence of Millers Run and Chartiers Creek. An interceptor, constructed along Millers Run into Washington County, would provide service to communities of Cecil, Bishop, Cowden and Venice in Cecil Township, Washington County, and the community of Southview in Mt. Pleasant Township, Washington County, along with developing areas of South Fayette Township in Allegheny County. A second interceptor parallel to Route 519 (Washington Road) would provide service to the developing areas in the Coal Run Drainage Basin. A third portion of the interceptor system is proposed for construction along Thoms Run to provide service to the Village of Presto in Collier Township and to the area adjacent to Thoms Run – Oakdale Road.

It is further proposed that this total system be constructed in two phases. The initial phase would involve the construction within the next three-year period of a 1.10 million gallon per day treatment plant and its interceptor system in the Millers Run area. Extension of trunk sewers could then be made as development occurs and the plant ultimately expanded to provide a treatment capacity of 1.60 million gallons per day.

The existing and proposed facilities are illustrated on Plates 22, 23, 28 and 29.

ROBINSON RUN

(Plates 21, 22, 23, 27, 28 and 40) 26,374 Total Acres



Allegheny County – 19,815 Acres

McDonald Borough	North Fayette Township
Oakdale Borough	Robinson Township
Collier Township	South Fayette Township

Washington County – 6,559 Acres

McDonald Borough	Cecil Township
Midway Borough	Mt. Pleasant Township
	Smith Township

Existing Facilities

Robinson Run, a major tributary of Chartiers Creek, originates in Washington County and flows through the municipalities of Midway Borough, Robinson Township and Cecil Township in Washington County and McDonald Borough, North Fayette Township, Oakdale Borough and Collier Township in Allegheny County. The Oakdale Municipal Authority presently operates a 0.3 million gallon per day intermediate degree treatment plant serving a population of approximately 1,700. The Borough of McDonald is sewered and discharges untreated sewage directly into Robinson Run. Several small sewage treatment facilities are located within North Fayette Township to serve individual subdivisions, schools and buildings. These facilities consist of a 55,000 gallon per day plant for the Glen Gormley Development, a 0.13 million gallon per day plant for the Hankey Farms Development, and treatment plants which serve the West Allegheny High School, the West Allegheny Hospital, the Waynewright Trailer Park, the Mobay Chemical Company and the Parkway West Technical School.

Proposed Facilities

The Robinson Run Drainage Basin has been designated a priority area and a feasibility study was performed to determine the best method for the provision of sewerage service. For this analysis, the basin was divided into three study areas. The first area included that portion of the drainage basin in Washington County and the entire Borough of McDonald. The second area included the major portions of North Fayette Township up to McKee Road and all of the Borough of Oakdale. The third area included that portion of Collier Township within the drainage basin and a small portion of North Fayette Township.

A number of alternatives for providing service to the total basin were considered, with the primary difference between alternatives being the number and location of proposed treatment facilities. The results of this analysis indicate that the least cost system requires the construction of separate treatment plants in each of the three analysis areas.

One plant would be located in McDonald and would serve the Borough as well as that total portion of the drainage basin within Washington County. The existing sewers in the Borough of McDonald would be connected to the proposed interceptor system. These interceptors would range in size from 10" in the vicinity of the Borough of Midway, Washington County, to 21" at the plant site. An 8" interceptor sewer would be constructed from the area around McAdam Station along Route 980 and connected to the proposed interceptor at Robinson Run. The ultimate design capacity of the McDonald sewage treatment plant should be 0.90 million gallons per day.

The existing sewage treatment plant located in Oakdale Borough would be utilized for treatment of sewage emanating from the area between Oakdale and McDonald. An increase in the capacity of this plant to 1.0 million gallons per day and upgrading of the facility to provide secondary treatment is proposed. The interceptors serving this area would range in size from 21" to 10".

The system proposed for the Robinson Run Basin downstream from Oakdale consists of the construction of an 0.90 million gallon per day plant in Collier Township and an interceptor system ranging in size from 18" to 8".

Cost figures indicate that the systems proposed for the Robinson Run Drainage Basin are feasible at this time.

Alcosan has agreed to accept a maximum sewage flow of 0.23 million gallons per day from the Robinson Run area of Collier Township. When this limit

ROBINSON RUN (Continued)

is reached, the Township Authority has agreed to construct its own treatment facilities.

It is proposed, therefore, that the Collier Township Authority proceed with the construction of the necessary interceptor and trunk sewers and connect this system to the existing Alcosan interceptor in Chartiers Creek.

The Cost Estimate and Revenue Summary for the total Robinson Run Drainage Basin are given in Section VIII and the existing and proposed facilities are illustrated on Plates 21, 22, 23, 27, 28 and 40.

CAMPBELLS RUN

Existing Facilities

Campbells Run is a large tributary of Chartiers Creek and lies almost entirely within Robinson Township. There are several small extended aeration and septic tank – sand filter plants which serve the industrial complexes along Campbells Run Road. A 28,000 gallon per day septic tank – sand filter plant serves the Knight's Bridge Plan of Lots in the vicinity of Glass Road and a 0.17 million gallon per day extended aeration plant serves 800 people in Pennsbury Village.

Proposed Facilities

A comprehensive system has been proposed by the Robinson Township Municipal Authority for the Campbells Run area. Bids have been taken and construction is expected to be completed within two years.

The design capacity of the treatment plant is 1.0 million gallon per day and the proposed interceptor along Campbells Run Road ranges in size from 12" to 21". The proposed system will phase out the existing plants which serve the Pennsbury Village and Knight's Bridge Developments and will also eliminate many of the smaller sewage facilities which serve commercial establishments along Campbells Run Road. The existing and proposed facilities are shown on Plates 22 and 23.

CAMPBELLS RUN

(Plates 22 and 23) 3,719 Acres



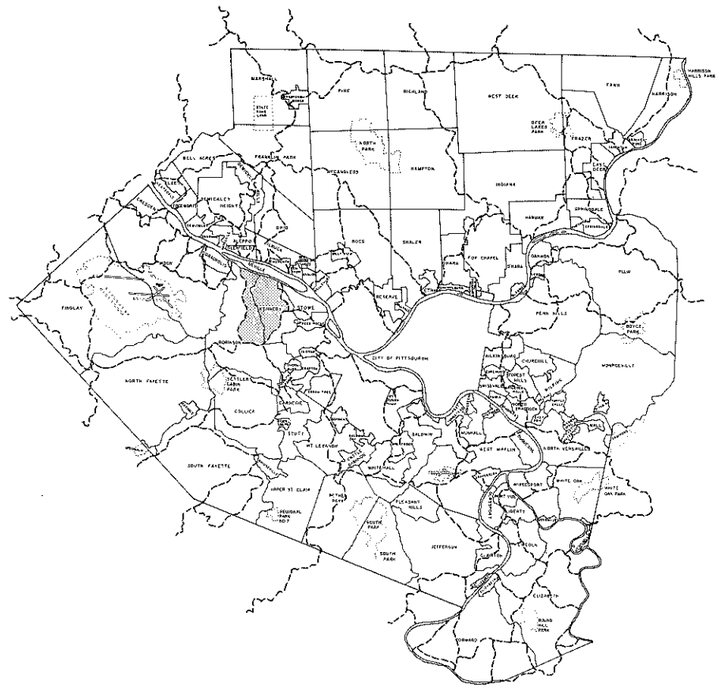
Carnegie Borough
Rosslyn Farms Borough

Collier Township
Robinson Township

MOON RUN

(Plates 16, 17, 22 and 23)

3,380 Acres



Kennedy Township

Robinson Township

Existing Facilities

The Moon Run Drainage Basin contains portions of both Robinson and Kennedy Townships. Although the portion of Kennedy Township in this basin is also in the Alcosan service area, specific connections to the Alcosan system have not been provided. Two small extended aeration treatment plants exist in Kennedy Township, with one serving the Edgeton Elm Grove Plan of Lots and the other serving the Herbst Manor Plan of Lots. Both of these treatment plants discharge into Moon Run. The Robinson Township portion of the drainage basin contains two treatment plants serving the Robinson Gardens and Douglas Hills Plans of Lots.

Proposed Facilities

The right of way for Interstate Route 279 lies generally parallel to Moon Run in the lowest area of this basin, thus eliminating the possibility of providing a gravity sewer common to both Kennedy and Robinson Townships.

The system proposed for that portion of the Moon Run Drainage Basin in Kennedy Township includes interceptors, pumping stations and force mains which should be designed to convey domestic waste to the existing Alcosan interceptor, as shown on Plates 17, 22 and 23. A preliminary cost analysis indicates that this system may be feasible within the next three-year period. A detailed feasibility study should be performed to determine the relative costs of the proposed system in comparison to the cost of a system which would include a new sewage treatment plant located at the mouth of Moon Run.

The remainder of the developing portion of Kennedy Township in the Moon Run Drainage Basin can be sewered by the construction of trunk sewers and ultimately connected to the Alcosan interceptor located along Chartiers Creek.

The construction of Interstate Route 279 will require the diversion of a portion of the sewage from the Robinson Township portion of the basin into the Montour Run Drainage Basin with treatment to be provided at the proposed Montour Run treatment plant.

It is also proposed that the Robinson Township Municipal Authority purchase the Douglas Hill Manor system, the Robinson Garden system and the Robin Hill system and provide extension for service in the immediate area of these systems.

MONTOUR RUN

(Plates 15, 16, 21, 22 and 41)

23,466 Acres



Findlay Township
Moon Township

North Fayette Township
Robinson Township

Existing Facilities

Montour Run discharges directly into the Ohio River and its basin is one of the largest drainage areas within Allegheny County. Portions of Moon, Findlay, Robinson and North Fayette Townships lie within the Montour Run Drainage Basin as does the total land area of the Greater Pittsburgh Airport. Major developments in this basin have occurred primarily within Moon and Robinson Townships.

There are no existing facilities within the Robinson or North Fayette Township portions of the basin, while three small treatment plants are currently operating in the Findlay Township area. The Moon Township Municipal Authority operates three treatment plants serving the developments of Ewing Mill Heights No. 1, Londonbury and Nyetimber. A 0.25 million gallon per day plant serves the Greater Pittsburgh Airport and another small plant serves the Air National Guard adjacent to the Airport. The relatively large communities of Imperial and Clinton in Findlay Township utilize on-lot disposal facilities.

Proposed Facilities

Montour Run was one of the drainage basins in Allegheny County considered as a priority area for the development of a comprehensive sewerage system. Feasibility studies prepared by the Moon Township Municipal Authority, the Robinson Township Authority and the Findlay Township Authority resulted in the decision to have the Moon Township Municipal Authority proceed with the design and construction of a treatment plant to be located along Montour Run. The design capacity of this treatment plant will be 2.5 million gallons per day and it will be capable of serving the entire drainage basin. The interceptor system will have one branch paralleling Montour Run to the Findlay Township boundary and another paralleling McClarens Run to the Greater Pittsburgh Airport. The proposed interceptors have been sized for ultimate flow and will serve the municipalities of Findlay Township, Robinson Township and North Fayette Township as well as Moon Township.

Three separate systems in Robinson Township will discharge into the Montour Run interceptor. One system serves the Petrie Road area and includes two pump stations which will pump sewage from a small area in the Moon Run Drainage Basin into the Montour Run Drainage Basin. Another system serves the Forest Grove area in the center of the Township with the third system serving the Beaver Acres Development between Cleaver Road and Steubenville Pike.

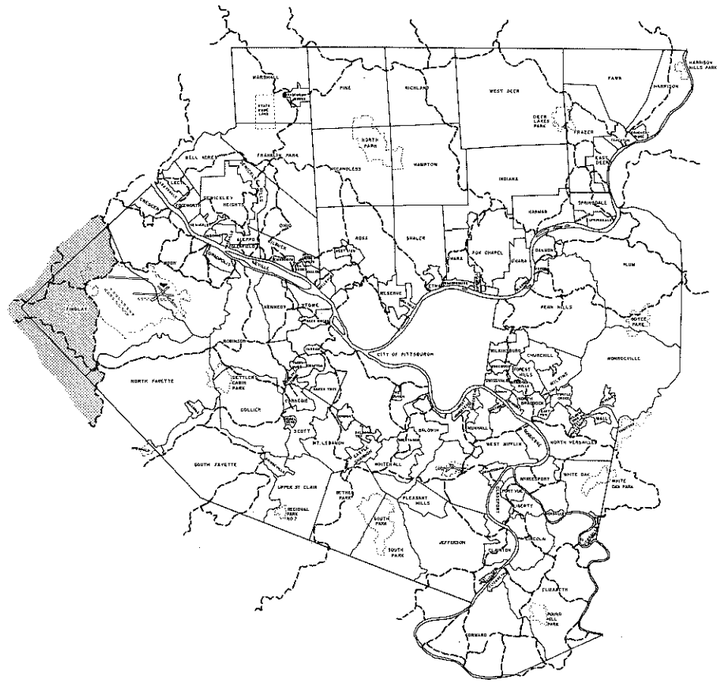
Findlay Township will construct trunk sewers to serve the developments along Aten Road and Garden Lane. Interim facilities will be constructed in the Tarquino Development and will be connected to the Montour Run interceptor at a future date. A sewage system proposed to serve the community of Clinton in Findlay Township will consist of trunk sewers, laterals, a pumping station and treatment plant. The proposed sewage treatment plant will be located in the Raredon Run Drainage Basin and a pump station will be constructed to pump the sewage from Clinton to this plant.

Allegheny County will construct a 15" interceptor sewer through the Airport property to serve the proposed cargo and terminal buildings. This interceptor will also pick up an 8" gravity sewer serving the Moon – Clinton Road area in Moon Township. The proposed systems for this drainage basin are expected to be constructed within the next three years. The existing and proposed facilities are illustrated on Plates 15, 16, 21, 22 and 41.

RACCOON CREEK, POTATO GARDEN RUN AND RAREDON RUN

(Plates 15 and 21)

11,536 Total Acres (In Allegheny County)



RACCOON CREEK – 1,445 Acres (in Allegheny County)

POTATO GARDEN RUN – 6,597 Acres (in Allegheny County)

RAREDON RUN – 3,494 Acres (in Allegheny County)

Findlay Township

Existing Facilities

There are no existing sewage treatment facilities within these three drainage basins. Development is sparse and individual septic tank – tile field systems are utilized for the disposal of domestic waste.

Proposed Facilities

Only a small portion of the Raccoon Creek Drainage Basin lies within Findlay Township in Allegheny County. Strip mine areas comprise a large percentage of this region and no facilities are proposed for construction in the near future The only development which has occurred is along Route 30 near Clinton. A small treatment facility to serve 12 homes in the Moody Plan on the south side of Route 30 is under consideration. As this area develops in the future, interceptors should be constructed along Potato Garden Run and this interim treatment facility abandoned.

Approximately 50% of the Raredon Run Drainage Basin in Findlay Township has been acquired as part of the Airport expansion program. The only proposed sewerage facilities for this area include a sewage treatment plant and trunk sewers to serve the community of Clinton, which lies in both the Raredon and Montour Run Drainage Basins. Sewage from the Montour Run section of Clinton will be pumped to the proposed sewage treatment plant, and discharge from this treatment plant would be into Raredon Run. The Raredon Run system should be constructed within the next three years. The proposed facilities are shown on Plates 15 and 21.

McCABE RUN, THORN RUN AND NARROWS RUN

(Plates 16 and 22)

3,447 Total Acres



McCABE RUN – 1,068 Acres

Coraopolis Borough — Moon Township

THORN RUN – 1,301 Acres

Coraopolis Borough — Moon Township

NARROWS RUN – 1,078 Acres

Moon Township

Existing Facilities

These three streams are tributaries of the Ohio River and drain the northern section of Moon Township and all of Coraopolis Borough. The McCabe Run Drainage Basin is almost completely developed with sewage facilities available in approximately 90% of the drainage basin. A gravity flow interceptor along McCabe Run from Moon Township connects to a force main in Coraopolis Borough and discharges into the Coraopolis plant. The Coraopolis Municipal Sanitary Authority owns and operates a 1.75 million gallon per day intermediate degree treatment plant along the Ohio River. Due to large developments within Moon Township, this plant has reached its design capacity. The Authority has recently received orders from the Sanitary Water Board requiring that this plant provide secondary treatment.

Proposed Facilities

The McCabe Run Drainage Basin currently has sewage facilities provided throughout its area. The only proposed facilities involve the extension to existing lines.

The Thorn Run Basin remains relatively undeveloped and as this area develops, sewers should be extended to serve the remaining portions of the basin.

As part of a three-year program, it is proposed that sewers be extended west on Broadhead Road approximately 3,000 feet from the Village of Carnot in the Narrows Run Drainage Basin. The existing and proposed facilities are shown on Plates 16 and 22.

FLAUGHERTY RUN AND SHOUSE RUN

(Plates 15 and 16) 7,240 Total Acres



FLAUGHERTY RUN – 5,730 Total Acres

Allegheny County – 4,949 Acres

Crescent Township Moon Township

Beaver County – 781 Acres

Hopewell Township

SHOUSE RUN – 1,510 Total Acres

Allegheny County – 837 Acres

Crescent Township Moon Township

Beaver County – 673 Acres

Hopewell Township

Existing Facilities

Portions of Moon and Crescent Townships in Allegheny County and Hopewell Township in Beaver County lie in the Flaugherty Run Drainage Basin. Sewage treatment for the Bon-Meade Plan of Lots is provided at the Crescent – South Heights Municipal Authority plant located at the confluence of Flaugherty Run and the Ohio River. One small treatment plant located in Hopewell Township serves areas of Crescent and Moon Townships; a 0.2 million gallon per day intermediate degree plant serves approximately 75% of the area of Crescent Township; two small septic tank – sand filter plants are located along Flaugherty Run and serve the Gilmary School and the Amato Plan of Lots.

Proposed Facilities

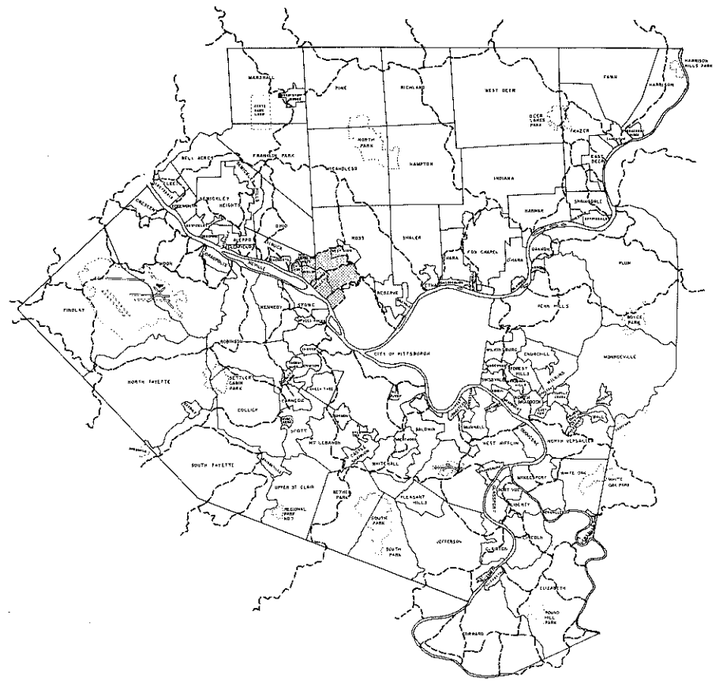
Both Crescent Township and Moon Township anticipate development within the Flaugherty Run Drainage Basin. Although only 10% of the area of Flaugherty Run is within Crescent Township, the proposed development of a 200 unit subdivision is contingent upon the availability of sewer facilities, and it is proposed that the construction of sewers in the Crescent portion of the drainage basin be included in a three-year program. On the other hand, no appreciable growth is anticipated in the near future in the Moon Township area of this basin and the proposed Moon sewer program could be considered as part of a ten-year program.

The Crescent – South Heights Municipal Authority and the Moon Township Municipal Authority are currently preparing feasibility studies for the total Flaugherty Run Drainage Basin.

Crescent Township is the only municipality in Allegheny County in the Shouse Run Drainage Basin. This area is served by the Crescent – South Heights Municipal Authority plant with the only proposed facilities being the extension of existing sewer lines. The existing and proposed facilities are shown on Plates 15 and 16.

SPRUCE RUN AND JACKS RUN

(Plates 17 and 23) 3,468 Total Acres



SPRUCE RUN – 1,520 Acres

Avalon Borough
Bellevue Borough
Ben Avon Borough
Ben Avon Heights Borough
Kilbuck Township
Ross Township

JACKS RUN – 1,948 Acres

City of Pittsburgh
Avalon Borough
Bellevue Borough
Ross Township

Existing Facilities

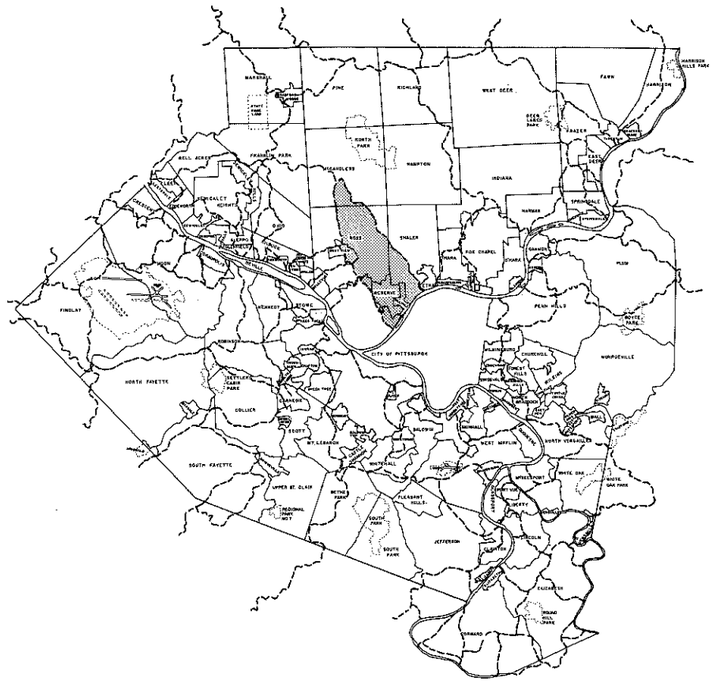
These drainage basins lie within the Alcosan service area and sewerage facilities have been provided to all of the developed portions. Existing trunk lines run along Spruce Run and Jacks Run to form the basic system. Located within the Spruce Run Drainage Basin are the Borough of Avalon, portions of the Boroughs of Ben Avon and Ben Avon Heights, Bellevue, and a portion of Ross Township. Located in the Jacks Run Drainage Basin are the southeastern half of Bellevue Borough, the southwestern corner of Ross Township and a portion of the City of Pittsburgh.

Proposed Facilities

The only proposed facilities in these drainage basins would be the extension of collection lines or laterals as the need arises. The main existing facilities are illustrated on Plates 17 and 23.

GIRTYS RUN

(Plates 17, 18, 23 and 24) 9,099 Acres



City of Pittsburgh
Etna Borough
Millvale Borough
West View Borough
McCandless Township
Reserve Township
Ross Township
Shaler Township

Existing Facilities

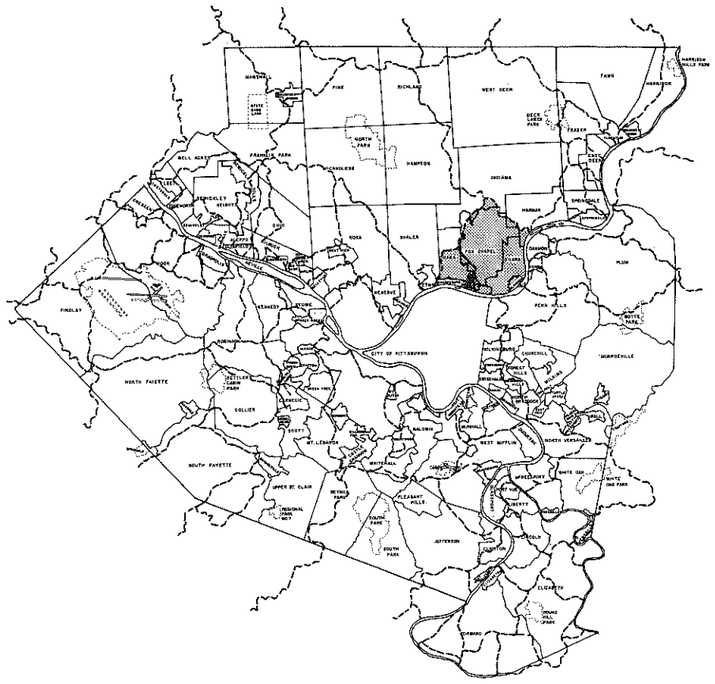
The entire area of the Girtys Run Drainage Basin lies within the Alcosan service area. An existing trunk sewer ranges in size from 30" to 15" and serves a major portion of West View Borough, Millvale Borough, the southern portion of McCandless Township, and portions of Ross, Reserve and Shaler Townships.

Proposed Facilities

The only future needs in this area are the extensions of collection lines and the elimination of storm water which presently causes flooding of basements. Part of this problem is being remedied by the lowering of the trunk lines in conjunction with current channel improvements. The main existing facilities are shown on Plates 17, 18, 23 and 24.

GUYASUTA RUN AND SQUAW RUN

(Plates 18, 19, 24 and 25) 8,831 Total Acres



GUYASUTA RUN – 2,216 Acres

Aspinwall Borough
Etna Borough
Fox Chapel Borough
Sharpsburg Borough
O'Hara Township

SQUAW RUN – 6,615 Acres

Aspinwall Borough
Blawnox Borough
Fox Chapel Borough
O'Hara Township
Harmar Township
Indiana Township

Existing Facilities

The Borough of Sharpsburg and portions of O'Hara Township, Aspinwall and Fox Chapel Boroughs lie within the Guyasuta Run Drainage Basin. Two interceptors running north to south serve this drainage basin which is a part of the Alcosan system. Sewerage facilities are available throughout the entire Guyasuta Run Drainage Basin.

The Borough of Blawnox and portions of Fox Chapel and Aspinwall Boroughs are located within the Squaw Run Drainage Basin. This entire drainage basin is provided with sewerage service.

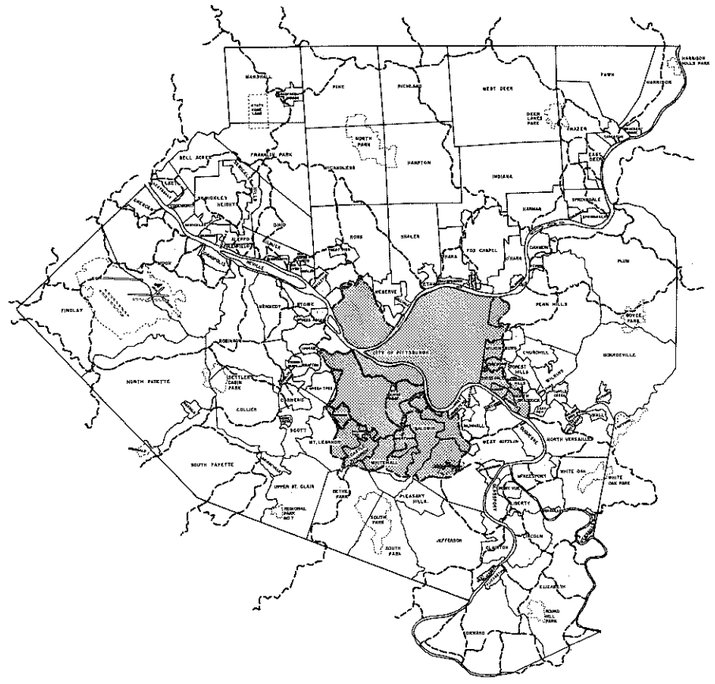
Proposed Facilities

The only proposed facilities in the Guyasuta Run Drainage Basin involve the extension of existing collection systems to serve the developing areas.

Very little area remains to be sewered in the Squaw Run Drainage Basin. The Borough of Fox Chapel has a proposed trunk sewer to be constructed along Stoney Camp Run, a tributary of Squaw Run. Three trunk sewers are also proposed for the northeast corner of the drainage basin adjacent to Harmar Township. The existing and proposed facilities are shown on Plates 18, 19, 24 and 25.

PITTSBURGH, STREETS RUN, BECKS RUN AND SAW MILL RUN

(Plates 23, 24, 25, 29 and 30) 20,889 Total Acres



STREETS RUN – 6,674 Acres

City of Pittsburgh
Baldwin Borough
Brentwood Borough
West Homestead Borough
West Mifflin Borough
Whitehall Borough

BECKS RUN – 1,837 Acres

City of Pittsburgh
Baldwin Borough
Mt. Oliver Borough

SAW MILL RUN – 12,378 Acres

City of Pittsburgh
Bethel Park Borough
Brentwood Borough
Castle Shannon Borough
Dormont Borough
Greentree Borough
Whitehall Borough
Baldwin Township
Mt. Lebanon Township

Existing Facilities

The Pittsburgh Drainage Basin covers the major portion of the City of Pittsburgh lying between the Allegheny and Monongahela Rivers. This basin also includes areas adjacent to the north and/or south banks of the Allegheny, Monongahela and Ohio Rivers. The Alcosan sewage treatment plant is located in this basin and is the largest existing sewage treatment facility in Allegheny County. The Authority recently awarded contracts for upgrading these facilities to provide the equivalent of secondary degree treatment.

The Streets Run Drainage Basin lies entirely within the Alcosan service area and is comprised of a small portion of the City of Pittsburgh as well as portions of Baldwin, Brentwood, West Homestead, West Mifflin and Whitehall Boroughs. The major portion of this basin is completely developed and provided with sewerage service. Located within the Becks Run Drainage Basin is approximately 90% of the Borough of Mount Oliver and portions of Baldwin Borough and the City of Pittsburgh. This drainage basin is also totally developed and provided with sewerage service. Saw Mill Run is a tributary to the Ohio River and its confluence with the Ohio is in the vicinity of the West End Bridge. Included in this basin are a large portion of the City of Pittsburgh and land areas in ten additional municipalities. The Saw Mill Run Interceptor was constructed by the City of Pittsburgh and ranges in size up to 48" at its connection to the Alcosan interceptor.

The high concentration of development within the Saw Mill Run Drainage Basin has resulted in an overloading of this sewer during periods of heavy rainfall. In addition, infiltration, roof drain connections, illegal tap-ins, and malfunctioning diversion structures compound the problem and have resulted in the direct discharge of untreated sewage into Saw Mill Run. If further development is to occur within this basin, additional capacity and/or renovation of the existing trunk line must be provided.

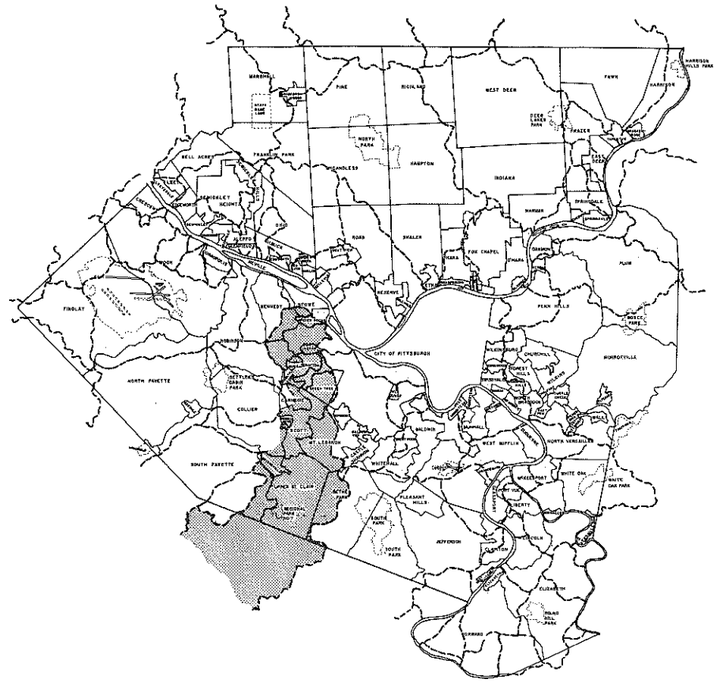
Proposed Facilities

The problems associated with the existing facilities within these drainage basins are mainly intra-city. The City of Pittsburgh Sewage System Report, dated January 1970, proposed corrective actions for many of these areas, with further studies, designs and/or construction currently under way. The existing facilities are shown on Plates 23, 24, 25, 29 and 30.

CHARTIERS CREEK

(Plates 23, 28 and 29)

25,200 Acres (in Allegheny County)



CHARTIERS CREEK – (Not including Millers, Coal, Thoms, Campbells, Robinson Runs)

City of Pittsburgh
Bethel Park Borough
Bridgeville Borough
Carnegie Borough
Crafton Borough
Greentree Borough
Heidelberg Borough
Ingram Borough
McKees Rocks Borough
Rosslyn Farms Borough
Thornburg Borough
Collier Township
Kennedy Township
Mt. Lebanon Township
Robinson Township
Scott Township
South Fayette Township
Stowe Township
Upper St. Clair Township

Existing Facilities

Chartiers Creek Drainage Basin originates in Washington County and is one of the largest basins in Allegheny County. For the purpose of this study, several tributaries of Chartiers Creek have been handled as separate entities and discussed previously in this section. These drainage basins were Millers Run, Coal Run, Thoms Run, Campbells Run and Robinson Run. The remaining area of the Chartiers Creek Basin within Allegheny County covers approximately 22,000 acres. Located within this area are portions of 19 municipalities, including the City of Pittsburgh, 10 boroughs and 8 townships. The entire area defined as the Chartiers Creek Drainage Basin lies within the Alcosan service area. The Allegheny County Sanitary Authority has constructed an interceptor along Chartiers Creek which originates at the confluence of Millers Run and Chartiers Creek and runs along Chartiers Creek to the Ohio River. This interceptor ranges in size from 45" to 24". Areas with developable acreage remaining are located in the upper reaches of the Chartiers Creek Drainage Basin within Mt. Lebanon and Upper St. Clair Townships and the western portion of Bethel Park Borough.

Proposed Facilities

The Alcosan interceptor along Chartiers Creek serves all of the municipalities on the eastern side of the Creek up to the Washington County line. Most of these communities have sewerage facilities available to all the developed areas. The Townships of Mt. Lebanon and Upper St. Clair should extend trunk sewers and collector systems as development occurs in their municipalities. The only other proposed construction involves the continuing rehabilitation or replacement of old and undersized existing sewers. The existing facilities are shown on Plates 23, 28 and 29.

VIII. PRIORITY AREAS

PRIORITY AREAS

It is evident that the provision of public sewerage facilities will not only eliminate the health hazards related to the use of on-lot facilities in developing areas of the County, but will also tend to enhance the development of those areas. It is just as evident that certain areas in the County are prime targets for development because of factors such as the availability of desirable acreage, highway construction, private investment projects and/or the construction of public facilities. It is in these priority regions that provisions for the installation of adequate sewerage facilities must be accomplished so that orderly growth may be achieved.

An analysis of these growth producing factors as they exist in Allegheny County indicates that there are several major drainage basins in the County which meet the criteria for the assignment of priority status:

1. Pine Creek Drainage Basin. (Plate 36)
2. Deer Creek Drainage Basin. (Plate 37)
3. Plum Creek Drainage Basin. (Plate 38)
4. Peters Creek Drainage Basin. (Plate 39)
5. Robinson Run Drainage Basin. (Plate 40)
6. Montour Run Drainage Basin. (Plate 41)

In each of these areas it is anticipated that the rate of development will be such that the provision of adequate sewerage facilities will be required within the next two to five years. Given these factors, it then becomes necessary to develop the basic skeletal form of a sewerage facility which will perform three functions:

1. Provide adequate sewage collection and treatment facilities for present residents.

2. Provide these facilities at a reasonable cost.

3. Provide these facilities in such a manner that anticipated growth in the area can be accommodated at minimum additional capital costs.

The sewerage systems presented in this section are the result of the analysis of alternative schemes for providing collection and treatment facilities in the various drainage basins. Some of the alternatives which were investigated are:

1. Construction of a single sewage treatment plant in each basin with an extensive interceptor system.

2. Construction of two or more treatment plants located in various sections of the basins with their attendant interceptor systems.

3. Construction of total gravity systems in lieu of pumping facilities.

4. Alternate routing of main interceptors.

The most feasible system is that one which provides for the availability of total service to the area at the least cost to all parties concerned. While it would be possible to design and construct any of the alternatives investigated, the question of finances; i.e., the ability of the users to pay the necessary charges, is of prime importance in determining the total feasibility of any proposed public facility. In developing the anticipated yearly sewage revenue required, the following basic assumptions have been made:

1. The estimated construction costs are based on costs anticipated in 1971.

2. Project costs associated with each system (engineering, legal, rights-of-way, contingencies, etc.) are equal to forty per cent (40%) of the estimated construction cost.

3. Federal Water Quality Control Grants (PL-660) in the amount of at least 33% of the project cost of eligible portions of interceptors and treatment plants will be available.

4. HUD grants in the amount of 50% of the construction cost of eligible portions of the collection system will be available.

5. Assessments will be made to properties served by the collection system and a tap-in fee will be charged.

6. Monies received from HUD grants, assessments and tap-in fees will be sufficient to cover the project costs associated with the construction of the collection system.

7. Connection to the collector system and exclusion of storm water flow from the system will be mandatory.

8. Revenue bond interest rates will be 7% for a 40-year period.

Based on these engineering and economic factors, the systems presented herein represent the most feasible of the various alternatives studied.

As indicated in Item 3 above, only a 33% construction grant is anticipated from the FWQA-PL660 Programs. During the fiscal year 1969-1970, however, 70% grants were available; and during the 1970-1971 fiscal year, it appears that 60% grants will be available.

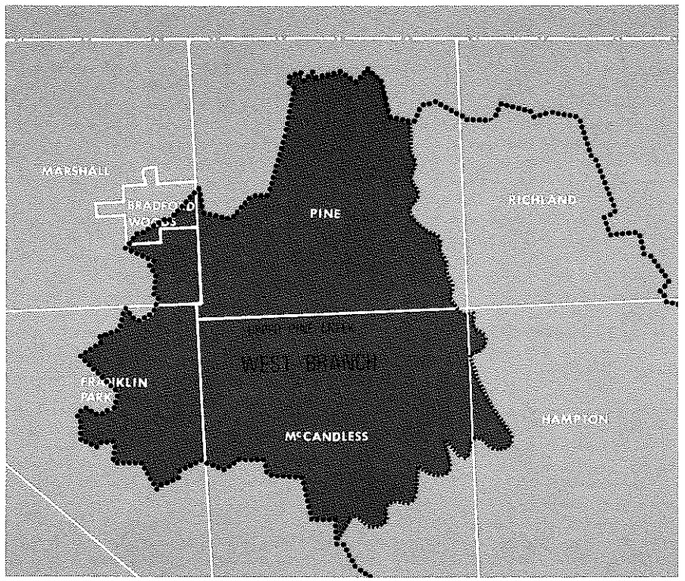
PINE CREEK DRAINAGE BASIN

Plate 36 illustrates the existing and proposed sewerage facilities for the entire Pine Creek Drainage Basin. This area has been assigned a priority rating primarily because of the anticipated development impact which the completion of Interstate Route 79 will have on this relatively undeveloped region.

The proposed system which will serve the East Branch of Pine Creek in Hampton and Richland Townships has been designed, bids taken and awards of construction contracts made.

The Cost Estimate and Revenue Summary given on the subsequent page pertain to the proposed system for the West Branch of Pine Creek in McCandless Township, Franklin Park Borough, Marshall Township, Bradford Woods Borough and Pine Township and were developed from basin information contained in the McCandless Township Sanitary Authority – Pine Creek Sewerage System – Cost Study – dated February 1970.

The Summary reflects in one instance the effect of a 33% FWQA grant and in the other instance the effect of a 74% FWQA grant plus a $1,700,000 loan from Allegheny County.



UPPER PINE CREEK DRAINAGE BASIN

COST ESTIMATE AND REVENUE SUMMARY
WEST BRANCH

Bradford Woods Borough
Franklin Park Borough
Marshall Township
McCandless Township
Pine Township

Estimated Construction Cost		
Collector Sewers		$4,800,000*
Interceptor Sewers		2,000,000
Treatment Plant (Design Population = 31,000)		1,900,000
	Total Construction Cost	$8,700,000*
Associated Project Costs		3,500,000
	Total Project Cost	$12,200,000*
Source of Funds	33% Grant	74% Grant
FWQA-PL660 Grant	$1,500,000	$3,350,000
HUD Grant	1,920,000	1,920,000
Assessments	2,680,000	2,680,000
Tap-in Charges	180,000	180,000
Revenue Bonds	5,920,000	2,370,000
Loan – Allegheny County		– 1,700,000
Annual Costs		
Debt Service	531,800	212,600
Operation and Maintenance	108,800	108,800
2% Reimbursement (Act 339)	– 63,600	– 26,600
Total Annual Income Required	$ 578,000	$ 294,800
Number of Customer Equivalent (1970)	2575	2575
Annual Cost per Customer Equivalent	$ 225	$ 115

* Estimate adjusted from figures developed by McCandless Authority.

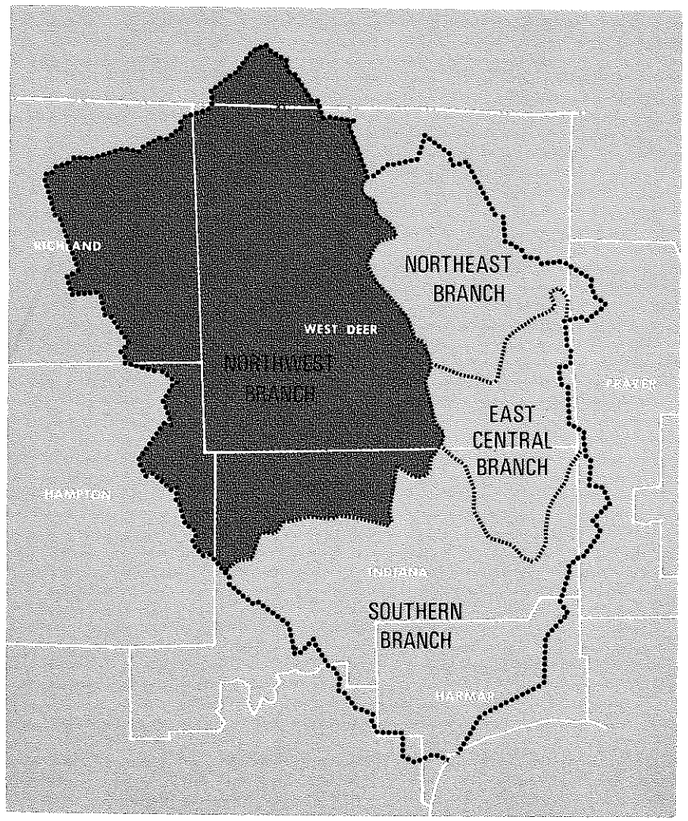
DEER CREEK DRAINAGE BASIN

Plate 37 illustrates the existing and proposed sewerage facilities for the entire Deer Creek Drainage Basin. In this area, again, the effect of highway construction will be felt upon completion of the limited access expressway which will serve the northeastern corner of the County.

A review of the Cost Estimates and Revenue Summaries on subsequent pages indicates that the anticipated population of the Northwest Branch and the Northeast Branch of the Deer Creek Drainage Basin could support a sewerage system at a reasonable cost to the residents.

A portion of the system proposed for the East Central Branch (Rural Ridge) will shortly be under construction. Plans should be made to enlarge this system in the future to accommodate the total East Central Area.

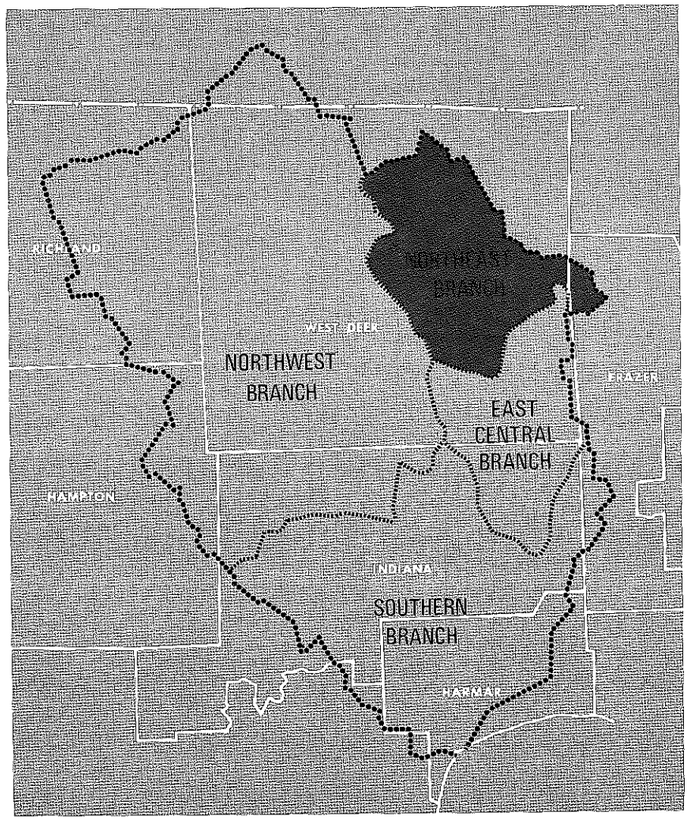
Although the estimated annual charge for the system proposed for the Southern Branch of the basin is slightly higher than can be considered economically feasible by today's standards, these costs may be adjusted downward pending final settlement of sewage rates to be charged by the Allegheny Valley Joint Sanitary Authority.



DEER CREEK DRAINAGE BASIN

COST ESTIMATE AND REVENUE SUMMARY
NORTHWEST BRANCH

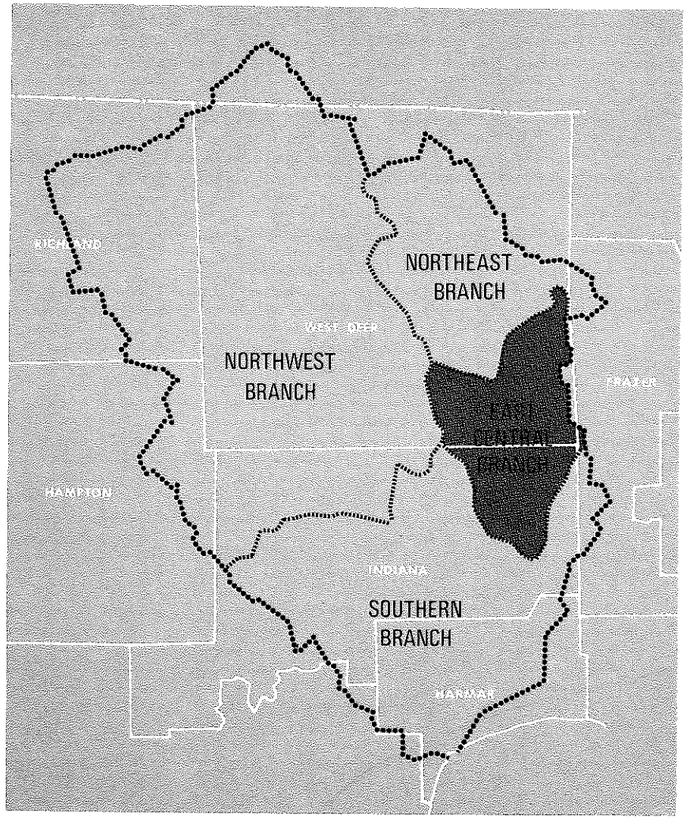
	Hampton Township Indiana Township	Richland Township West Deer Township
Estimated Construction Cost		
Interceptor Sewers		$2,300,000
Treatment Plant (Design Population = 20,000)		1,100,000
Total Construction Cost		$3,400,000
Associated Project Costs		1,360,000
Total Project Cost		$4,760,000
Source of Funds		
FWQA-PL660 Grant (33%)		$1,570,000
HUD Grant, Assessments, Tap-in Charges		To Balance Cost of Collector Sewers
Revenue Bonds		$3,190,000
Annual Costs		
Debt Service		$ 287,000
Operation and Maintenance		117,000
2% Reimbursement (Act 339)		– 64,000
Total Annual Income Required		$ 340,000
Number of Customer Equivalent (1973)		3000
Annual Cost per Customer Equivalent		$ 114



DEER CREEK DRAINAGE BASIN

COST ESTIMATE AND REVENUE SUMMARY
NORTHEAST BRANCH
(Russellton – Curtisville Area)

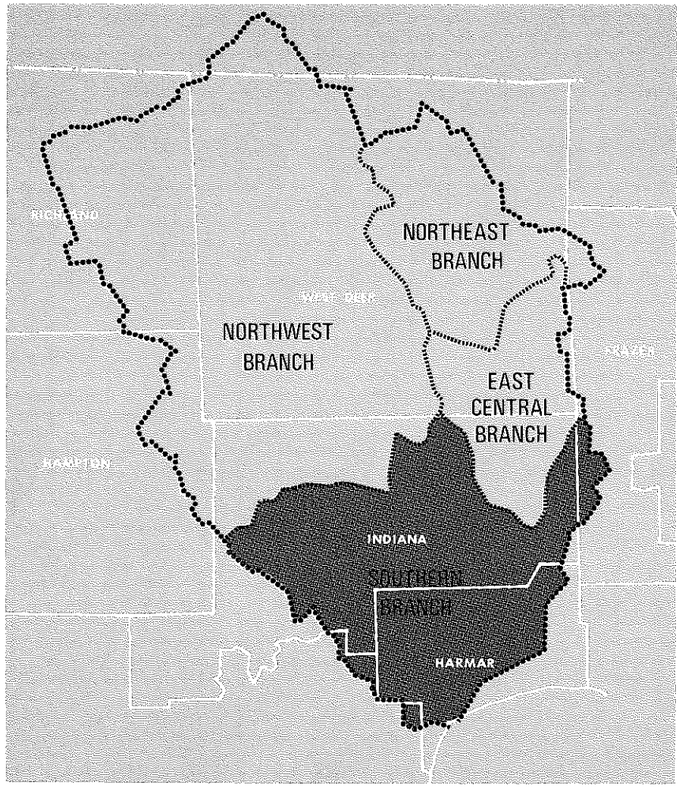
	Frazer Township	West Deer Township
Estimated Construction Cost		
Interceptor Sewers		$ 283,000
Treatment Plant (Design Population = 6,000)		420,000
Total Construction Cost		$ 703,000
Associated Project Costs		282,000
Total Project Cost		$ 985,000
Source of Funds		
FWQA-PL660 Grant (33%)		$ 325,000
HUD Grant, Assessments, Tap-in Charges		To Balance Cost of Collector Sewers
Revenue Bonds		$ 660,000
Annual Costs		
Debt Service		$ 59,400
Operation and Maintenance		40,000
2% Reimbursement (Act 339)		– 13,200
Total Annual Income Required		$ 86,200
Number of Customer Equivalent (1973)		975
Annual Cost per Customer Equivalent		$ 89



DEER CREEK DRAINAGE BASIN

COST ESTIMATE AND REVENUE SUMMARY
EAST CENTRAL BRANCH
(Rural Ridge Area)

	Frazer Township West Deer Township	Indiana Township
Estimated Construction Cost		
Interceptor Sewers		$ 275,000
Treatment Plant (Design Population = 4,000)		350,000
Total Construction Cost		$ 625,000
Associated Project Costs		250,000
Total Project Cost		$ 875,000
Source of Funds		
FWQA-PL660 Grant (33%)		$ 288,000
HUD Grant Assessments Tap-in Charges		To Balance Cost of Collector Sewers
Revenue Bonds		$ 587,000
Annual Costs		
Debt Service		$ 52,800
Operation and Maintenance		30,000
2% Reimbursement (Act 339)		– 11,700
Total Annual Income Required		$ 71,100
Number of Customer Equivalent (1973)		750
Annual Cost per Customer Equivalent		$ 95



DEER CREEK DRAINAGE BASIN

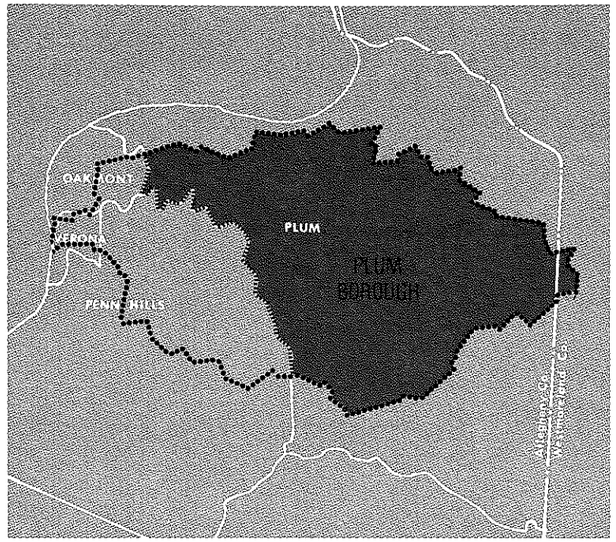
COST ESTIMATE AND REVENUE SUMMARY
SOUTHERN BRANCH

	Frazer Township Harmar Township	Indiana Township
Estimated Construction Cost		
Interceptor Sewers		$1,000,000
Additional Treatment Capacity at Present Allegheny Valley Joint Sanitary Authority Plant (Design Population = 10,000)		620,000
	Total Construction Cost	$1,620,000
Associated Project Costs		650,000
	Total Project Cost	$2,270,000
Source of Funds		
FWQA-PL660 Grant (33%)		$ 750,000
HUD Grant Assessments Tap-in Charges		To Balance Cost of Collector Sewers
Revenue Bonds		$1,520,000
Annual Costs		
Debt Service		$ 136,800
Operation and Maintenance (based on .45/1000 gal. charged by AVJSA)		100,000
2% Reimbursement (Act 339)		– 30,000
Total Annual Income Required		$ 206,400
Number of Customers Equivalent (1973)		1600
Annual Cost per Customer Equivalent		$ 129

PLUM CREEK DRAINAGE BASIN

The Plum Creek Drainage Basin, as shown on Plate 38, includes the largest single land area between the Allegheny and Monongahela Rivers which is still relatively undeveloped. With the advent of the Allegheny Valley Expressway and the continuing growth of the eastern suburbs, it is anticipated that the developable acreage in this basin will become prime land for residential growth. To date, the absence of public sewerage facilities in this area has not completely forestalled all building efforts, with the result that sewage disposal problems are occurring where septic tanks have been installed in areas not particularly suited for on-lot disposal facilities.

A review of the Cost Estimate and Revenue Summary given on the subsequent page indicates that the proposed system can be financed by the population projected for 1973.



PLUM CREEK DRAINAGE BASIN

COST ESTIMATE AND REVENUE SUMMARY
PLUM BOROUGH

Estimated Construction Cost		
Interceptor Sewers		$1,430,000
Treatment Plant (Design Population = 20,000)		1,100,000
	Total Construction Cost	$2,530,000
Associated Project Costs		1,010,000
	Total Project Cost	$3,540,000
Source of Funds		
FWQA-PL660 Grant (33%)		$1,170,000
HUD Grant, Assessments, Tap-in Charges		To Balance Cost of Collector Sewers
Revenue Bonds		$2,370,000
Annual Costs		
Debt Service		$ 214,000
Operation and Maintenance		100,000
2% Reimbursement (Act 339)		– 47,000
Total Annual Income Required		$ 267,000
Number of Customers Equivalent (1973)		2600
Annual Cost per Customer Equivalent		$ 103

PETERS CREEK DRAINAGE BASIN

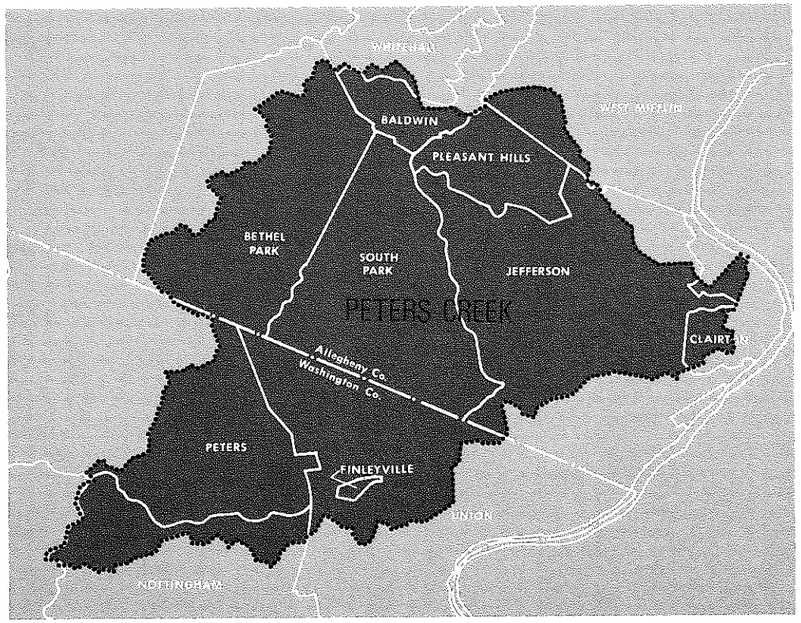
The Peters Creek Drainage Basin has been designated a priority area because of a number of municipally divorced but regionally related activities.

The Clairton Authority must undertake a construction program at its present plant and is also agreeable to provide increased capacity at the same time.

Large tracts of open land suitable for development in Jefferson Borough make this area one of the few such regions left in the South Hills.

The municipalities in Washington County are in the process of developing comprehensive sewerage plans and have expressed an interest in joining with the Allegheny County communities.

The Cost Estimate and Revenue Summary given on the subsequent page indicate the feasibility of proceeding with the proposed inter-municipal and inter-County system.



PETERS CREEK DRAINAGE BASIN

COST ESTIMATE AND REVENUE SUMMARY

ALLEGHENY COUNTY

Jefferson Borough — South Park Township

WASHINGTON COUNTY

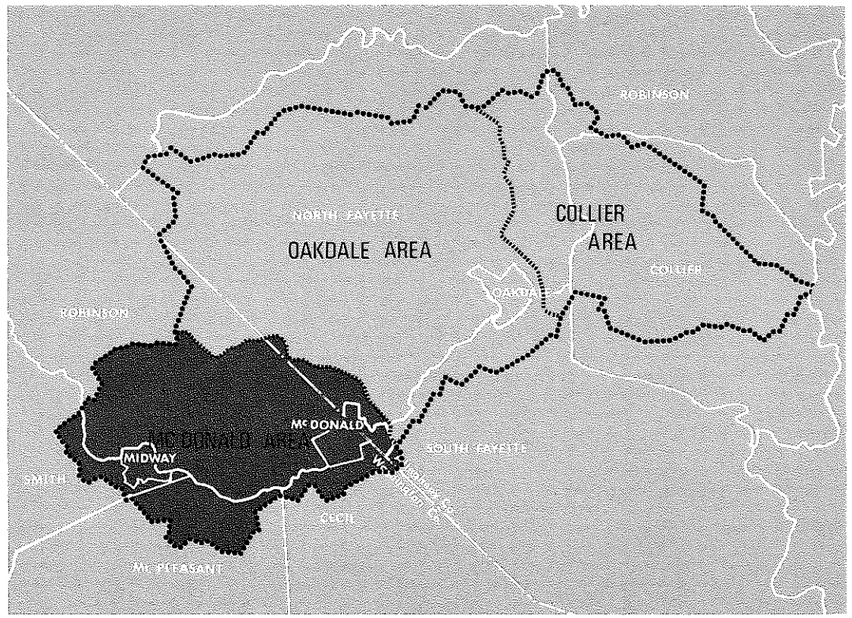
Nottingham Township — Peters Township
Union Township — Finleyville Borough

Estimated Construction Cost		
Interceptor Sewers		$1,137,000
Treatment Plant (Design Population = 60,000)		2,733,000
	Total Construction Cost	$3,870,000
Associated Project Costs (25%)		970,000
	Total Project Cost	$4,840,000
Source of Funds		
FWQA-PL660 Grant (33%)		$1,597,000
HUD Grant, Assessments, Tap-in Charges		To Balance Cost of Collector Sewers
Revenue Bonds		$3,243,000
Annual Costs		
Debt Service		$ 292,000
Operation and Maintenance		95,000
2% Reimbursement (Act 339)		– 64,800
Total Annual Income Required		$ 322,200
Number of Customer Equivalent (1975)		4700
Annual Cost per Customer Equivalent		$ 69

ROBINSON RUN DRAINAGE BASIN

Plate 40 illustrates the comprehensive systems proposed for the nine municipalities in the Robinson Run Drainage Basin. The need for immediate action has been noted by the Chartiers Panhandle Planning Commission which represents these local governments. Priority status in this report has been assigned to the Robinson Run area to assist in developing an orderly means for providing sewerage facilities, since at the present time: (1) McDonald Borough is involved in a legal suit resulting from the Borough's attempt to build a relatively small treatment plant designed to serve only residents of the Borough; (2) The existing treatment plant at Oakdale requires additional facilities to increase its volume as well as to provide secondary treatment capabilities; and (3) Collier Township's agreement with Alcosan limits sewage flow from Collier to 230,000 gallons per day or approximately 600 equivalent dwelling units.

A review of the Cost Estimates and Revenue Summaries on subsequent pages indicates that the systems proposed for the McDonald and Oakdale areas could be financed with a reasonable service charge. The estimated annual service charge associated with the Collier system could be reduced by additional grant funds or by constructing only the interceptor and collector sewer and tying into the Alcosan system until such time as growth necessitates the need for a treatment plant.



ROBINSON RUN DRAINAGE BASIN

COST ESTIMATE AND REVENUE SUMMARY
McDONALD AREA

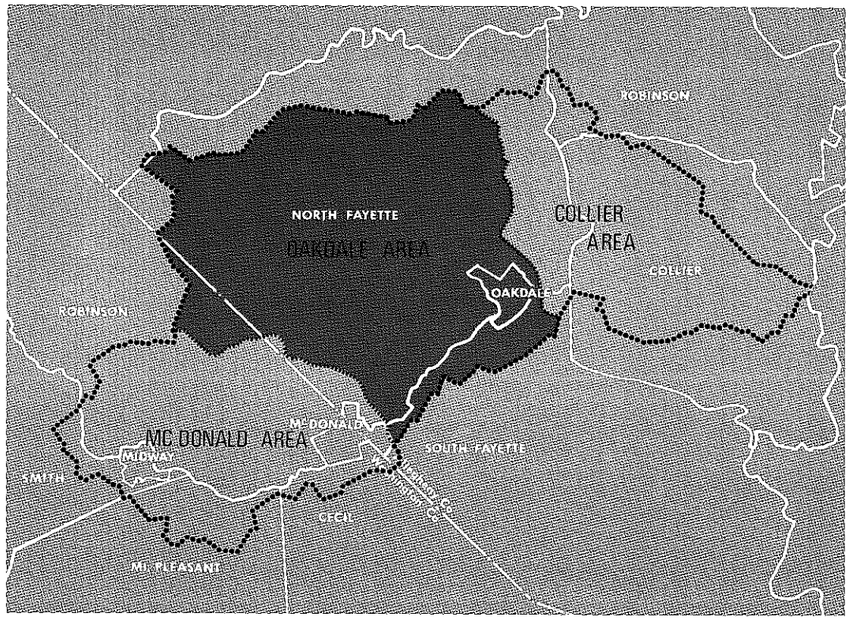
ALLEGHENY COUNTY

McDonald Borough
Robinson Township
North Fayette Township
South Fayette Township

WASHINGTON COUNTY

McDonald Borough
Midway Borough
Cecil Township
Smith Township
Mt. Pleasant Township

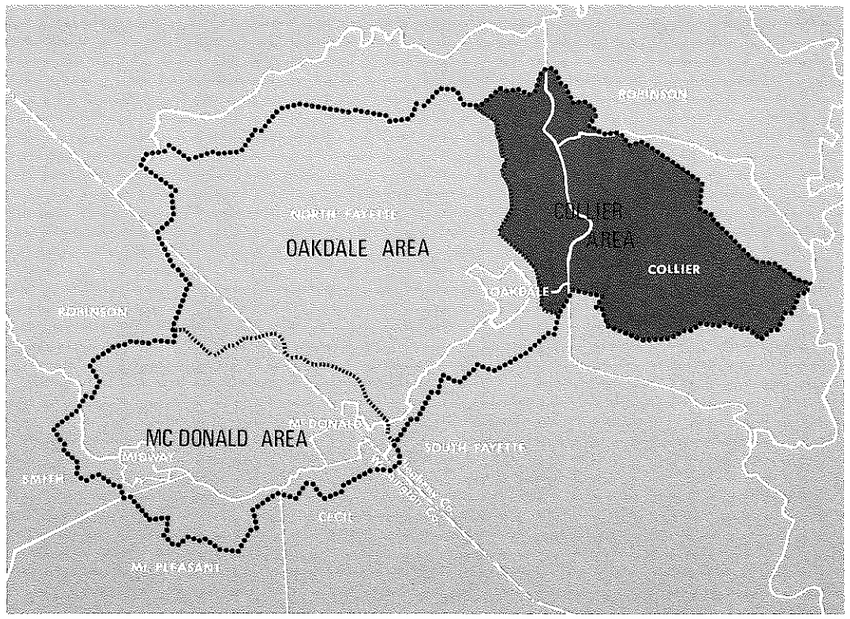
Estimated Construction Cost		
Interceptor Sewers		$ 595,000
Treatment Plant (Design Population = 9,000)		600,000
	Total Construction Cost	$1,195,000
Associated Project Costs		478,000
	Total Project Cost	$1,673,000
Source of Funds		
FWQA-PL660 Grant (33%)		$ 552,000
HUD Grant, Assessments, Tap-in Charges		To Balance Cost of Collector Sewers
Revenue Bonds		$1,121,000
Annual Costs		
Debt Service		$ 100,900
Operation and Maintenance		42,400
2% Reimbursement (Act 339)		– 22,500
Total Annual Income Required		$ 120,800
Number of Customer Equivalent (1970)		1600
Annual Cost per Customer Equivalent		$ 76



ROBINSON RUN DRAINAGE BASIN

COST ESTIMATE AND REVENUE SUMMARY
OAKDALE AREA

	Oakdale Borough	North Fayette Township South Fayette Township
Estimated Construction Cost		
Interceptor Sewers		$ 500,000
Treatment Plant (Design Population = 10,000)		650,000
Total Construction Cost		$1,150,000
Associated Project Costs		460,000
Total Project Cost		$1,610,000
Source of Funds		
FWQA-PL660 Grant (33%)		$ 530,000
HUD Grant, Assessments, Tap-in Charges		To Balance Cost of Collector Sewers
Revenue Bonds		$1,080,000
Annual Costs		
Debt Service		$ 97,200
Operation and Maintenance		48,500
2% Reimbursement (Act 339)		– 21,700
Total Annual Costs		$ 124,000
Number of Customer Equivalent (1970)		1671
Annual Cost per Customer Equivalent		$ 75



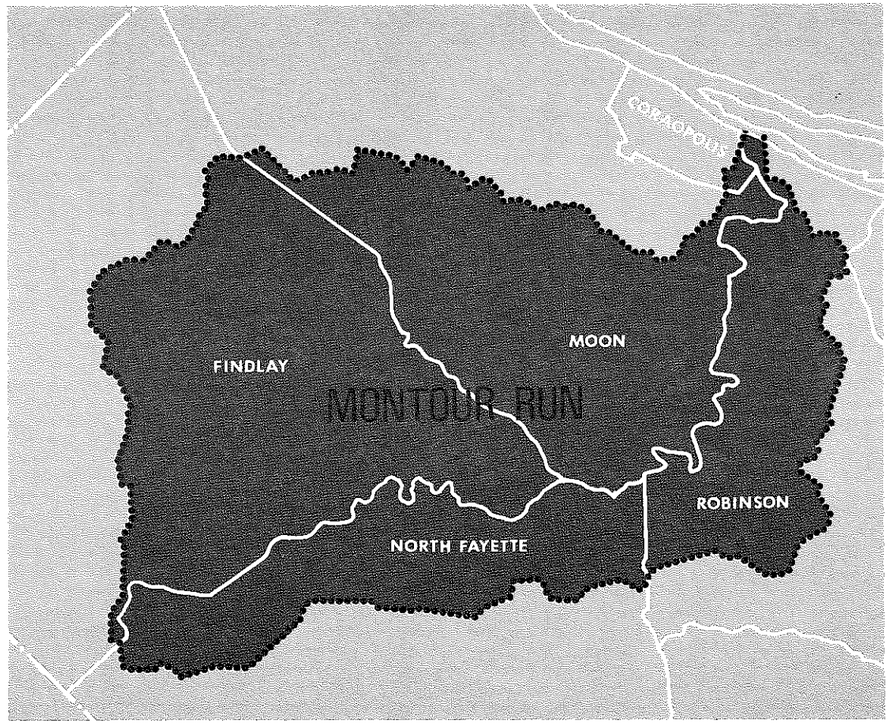
ROBINSON RUN DRAINAGE BASIN

COST ESTIMATE AND REVENUE SUMMARY
COLLIER AREA

	Collier Township	North Fayette Township
Estimated Construction Cost		
Interceptor Sewers		$ 680,000
Treatment Plant (Design Population = 9,000)		600,000
	Total Construction Cost	$1,280,000
Associated Project Costs		512,000
	Total Project Cost	$1,792,000
Source of Funds		
FWQA-PL660 Grant (33%)		$ 590,000
HUD Grant, Assessments, Tap-in Charges		To Balance Cost of Collector Sewers
Revenue Bonds		$1,202,000
Annual Costs		
Debt Service		$ 108,200
Operation and Maintenance		44,350
2% Reimbursement (Act 339)		– 24,000
Total Annual Income Required		$ 128,550
Number of Customer Equivalent (1970)		1029
Annual Cost per Customer Equivalent		$ 125

MONTOUR RUN DRAINAGE BASIN

Plate 41 illustrates the system proposed for the Montour Run Drainage Basin. Because of the growth in Moon and Robinson Townships over the past decade and the proposed expansion at the Greater Pittsburgh Airport, the need for sewerage facilities in the Montour Run Drainage Basin has become critical and the area designated for priority attention. During 1969 detailed studies were prepared by the Moon Township Municipal Authority dated March 1970 and the Robinson Township Municipal Authority dated June 1970. A review of these studies and a series of discussions held with the Allegheny County Commissioners resulted in the County's commitment to assist in this project. Final construction plans for the system are being completed by the Moon Township Municipal Authority and construction is expected to begin in 1971.



IX. CONCLUSIONS & RECOMMENDATIONS

CONCLUSIONS AND RECOMMENDATIONS

Residential, commercial and industrial development in Allegheny County will continue to occur. This statement has been made not only by professional planners and engineers, but by governmental officials, business men, industrialists and labor leaders as well. All of these groups are attempting to identify and solve the real problems of today, while at the same time anticipating the problems of tomorrow in an attempt to minimize or eliminate these problems entirely.

Previous sections of this report have contained a comprehensive review of existing conditions relating to sewerage facilities in Allegheny County, an analysis of the anticipated growth patterns in the County and, finally, a delineation of proposed sewerage facilities which will satisfy the needs created by that growth. The development of these proposed facilities has been based on the concept of provision of sewerage service by drainage basin. This type of approach affords to the residents of a given area the economies of scale and long term financial stability realized by combining sewerage requirements in populated areas with the sewerage requirements in areas of future development.

Although this area-wide concept has been proposed, accepted and utilized in various regions of the County, the responsibility for initiating specific actions relating to the provision of a public service in a given city, borough or township must lie with elected officials of that municipality – a fact recognized by the terms of the Pennsylvania Sewerage Facilities Act (Act 537). To this end the following pages contain, by governmental unit, a recapitulation of the planning elements developed in this report with specific recommendations for review and approval by each municipality. Although only 90 local governments appointed the County as their agent to prepare the Comprehensive Sewage Needs Plan, this summary, by definition of the term "comprehensive," includes recommended actions for all 129 municipalities.

In those areas of the County where the need for sewerage facilities is imminent and a construction program to be completed within three years is recommended, the required actions are:

1. All affected municipalities and/or authorities develop a mutually acceptable agreement.
2. Prepare final construction plans and specifications for the recommended facilities.
3. Delineate required land areas, rights of way and/or easements.
4. Submit plans and specifications to appropriate local, county and regional review agencies.
5. Purchase or otherwise obtain the items listed in 3.
6. Prepare and submit the application for a Sanitary Water Board Permit.
7. Prepare and submit applications for State and Federal Grants.

In those areas of the County where the construction of public sewerage facilities is not recommended for the immediate future, the systems proposed in this report should be used as a guide for ongoing planning efforts. Factors affecting the growth in a given area, as well as the growth itself, should be reviewed periodically to determine the appropriate time for construction of major elements of the system. Should scattered development within a given drainage basin take place, the comprehensive system indicated for that area should be used as a guide in locating and sizing specific elements which would eventually become an integral part of the total system.

Allegheny County

Since many of the recommendations contained in the following pages require agreements between a number of local governments and/or authorities and since the provision of a public service in a multi-municipal area could best be handled by a single agency in each area, it is recommended that Allegheny County proceed with the formation of the administrative entity which could assist local agencies as required and could serve as a catalyst for the implementation of the planning presented in this report.

City of the Second Class

PITTSBURGH (Allegheny County Sanitary Authority)

The Comprehensive Sewage Plan prepared by the City of Pittsburgh dated January 1970 delineates the actions required to alleviate the City's intra-municipal sewage problems. With regard to the Saw Mill Run Drainage Basin, it is recommended that the City join with the other affected municipalities, the County of Allegheny and the Pennsylvania Department of Transportation to develop a solution mutually satisfactory to all parties concerned.

Cities of the Third Class

CLAIRTON (Clairton Municipal Authority)

Upper Monongahela River, Peters Creek and Pine Run Drainage Basins

Although no major expansion of the sewage collection system is required within the city limits, it is recommended that the existing sewage treatment plant be upgraded to provide the equivalent of secondary treatment as ordered by the Sanitary Water Board, and that the capacity of the plant be increased in accordance with the comprehensive sewage plan proposed for the Peters Creek Drainage Basin.

DUQUESNE (Duquesne Municipal Authority)

Thompson Run Drainage Basin

Since the land area within Duquesne is almost totally developed and a sewage collection system is providing service to the area, and since the existing treatment plant has excess capabilities, there is no need for any specific construction

Duquesne (Continued)

within the City of Duquesne. It is recommended, however, that the treatment plant service area be expanded to include portions of the Thompson Run Drainage Basin as indicated by the system proposed for that basin.

McKEESPORT (McKeesport Municipal Authority)

Long Run and Crooked Run Drainage Basins

McKeesport, like other centers of urbanization, has little undeveloped area remaining within its borders and currently provides sewage service to its residents. It is recommended, however, that the area served by the McKeesport plant be expanded to include indicated areas of the Crooked Run and Long Run Drainage Basins.

Boroughs and Townships

The following portion of this section contains capsule summaries and recommendations for those boroughs and townships (in alphabetical order) which do not lie totally within the Alcosan service area.

Municipalities listed below lie primarily within the Alcosan service area. Since over eighty per cent (80%) of this land within the service area is presently developed, the only sewerage facilities recommended are minor extensions to the existing collection systems as may be required.

BOROUGHS

Aspinwall
Avalon
Bellevue
Ben Avon
Ben Avon Heights
Bethel Park
Blawnox
Braddock
Braddock Hills
Brentwood
Bridgeville
Carnegie
Castle Shannon
Chalfant
Churchill
Crafton
Dormont
East McKeesport
East Pittsburgh
Edgewood
Emsworth
Etna
Forest Hills
Fox Chapel
Greentree
Heidelberg
Homestead
Ingram
McKees Rocks
Millvale
Mount Oliver
Munhall
North Braddock
Pitcairn
Rankin
Sharpsburg
Swissvale
Trafford
Turtle Creek
Verona
West Homestead
West Mifflin
West View
Whitaker
Whitehall
Wilkinsburg
Wilmerding

TOWNSHIPS

Baldwin
McCandless
Mount Lebanon
Neville
North Versailles
Penn (Westmoreland County)
Penn Hills
Reserve
Stowe
Wilkins

The municipalities listed below also lie primarily within the Alcosan service district. However, since less than eighty per cent (80%) of this land within the service area has been developed, there will be a need for expanding the existing trunk and collector sewers. It is recommended that the orderly extension of these systems be made as development occurs.

BOROUGHS

Baldwin
Franklin Park
Monroeville
Rosslyn Farms
Thornburg
Wall

TOWNSHIPS

Collier
Indiana
Kennedy
Kilbuck
O'Hara
Ohio
Ross
Scott
Shaler
Upper St. Clair

Within the following municipalities are comprehensive sewerage systems which serve the developed areas of the municipalities and provide service to areas outside the municipal boundaries. Collection systems should be extended when future growth occurs. Consideration should be given to the expansion of existing treatment facilities to include any future development in the surrounding areas. The only proposed facilities to be considered immediately are the modification of the existing sewage treatment plants to enable them to provide the degree of treatment required by the Sanitary Water Board.

Coraopolis Borough
Dravosburg Borough
Glassport Borough
Leetsdale Borough
Oakmont Borough
Pleasant Hills Borough
Sewickley Borough

ALEPPO TOWNSHIP

Kilbuck Run and Ohio River Drainage Basins

There are no existing sewage facilities within the Township. As part of a three-year program, a collection system should be provided in the northwestern portion of the Township through Haysville, with subsequent treatment at the Sewickley treatment plant. The eastern portion of the Township should eventually be served as part of the future system proposed for the Kilbuck Run Drainage Basin.

BALDWIN TOWNSHIP

Saw Mill Run Drainage Basin

A collection system exists for the developed portions of Baldwin Township with treatment being provided at the Alcosan plant. Future development of

Baldwin Township (Continued)

the Township will be predicated on the correction of the Saw Mill Run sewerage problem. Existing trunk and collection systems should be extended throughout the Township to serve the developing portions as the need arises.

BELL ACRES BOROUGH

Little Sewickley Creek Drainage Basin

There are no planned sewerage facilities for Bell Acres Borough in the next ten-year period. On-lot disposal systems should be utilized where soil conditions permit. Should any dense development occur in any areas of the Borough, consideration should be given to the installation of package plants on an interim basis.

BETHEL PARK BOROUGH

Peters Creek Drainage Basin

The western portion of the Borough is part of the Alcosan service area. Trunk and collection sewers should be extended to the developing portions as required. The southeastern portion of the Borough is in the Peters Creek watershed and treatment is provided at the Bethel Park treatment plant. Existing trunk and collector sewers should be extended to the developing portions of the Borough to accommodate any areas not presently provided with sewerage service.

BRACKENRIDGE BOROUGH (Upper Allegheny Sanitary Authority)

Bull Creek and Upper Allegheny River Drainage Basins

Brackenridge Borough is almost totally developed, with sewer service presently being provided to all developed portions of the Borough. Treatment is provided at the Upper Allegheny Sanitary Authority plant in East Deer Township. Any further development of this system would be in the form of minor extensions to the collection systems.

BRADFORD WOODS BOROUGH

Brush Creek and Pine Creek Drainage Basins

There are no existing public sewers in Bradford Woods Borough. Two systems are proposed, with the northern portion of the Borough to be served by the proposed Brush Creek system. It is anticipated that this system will be constructed as part of a three-year program. The southern portion of the Borough will be served by the proposed Upper Pine Creek system which is also part of a three-year program.

CHESWICK BOROUGH (Allegheny Valley Joint Sanitary Authority)

Tawney Run Drainage Basin

A complete collection system serves all developed areas of the Borough with sewage treatment being provided at the Allegheny Valley Joint Sanitary Authority plant in Harmarville. Only minor extensions of the existing collection system will be required as the need arises.

COLLIER TOWNSHIP (Collier Township Sanitary Authority)

Robinson Run, Chartiers Creek and Millers Run Drainage Basins

A major portion of Collier Township lies within the Robinson Run Drainage Basin. The only existing public sewers in the Township are in the Colecrest area and portions of Kirwan Heights in the Chartiers Creek Drainage Basin. The Township was included in the feasibility study of the Robinson Run Drainage Basin. The comprehensive system developed for the Robinson Run area will serve the northern portion of the Township. For the immediate future, the proposed interceptor and collection facilities should be constructed and connected to the Alcosan interceptor. A treatment plant will have to be constructed along Chartiers Creek when the flow in the system exceeds 0.23 million gallons per day as required by the current agreement between Alcosan and the Township.

Interceptors and trunk sewers will be required as a part of a ten-year program for that portion of the Township in the Thoms Run Drainage Basin. Treatment should be provided at the proposed Millers Run treatment plant which will be constructed by the Township of South Fayette.

CRESCENT TOWNSHIP (Crescent – South Heights Municipal Authority)

Flaugherty Run and Shouse Run Drainage Basins

Those portions of the Township in the Shouse Run Basin are served by an existing collection system with sewage treatment being provided at the Crescent – South Heights Municipal Authority plant located along the Ohio River in Crescent Township. Proposed facilities in this area include minor extensions of existing trunk sewers as required and the upgrading of the plant to provide secondary treatment. The results of feasibility studies now being undertaken by both the Moon Township and Crescent – South Heights Authority will define the needs of that portion of the Township in the Flaugherty Run Drainage Basin.

EAST DEER TOWNSHIP (Upper Allegheny Sanitary Authority)

Days Run and Crawford Run Drainage Basins

Public sewerage facilities currently provide service to the developed portions of the Township. Extension of existing interceptors along Days Run and Crawford Run should be part of a long-range construction program as development occurs in the outlying portions of the Township.

EDGEWORTH BOROUGH (Leetsdale Municipal Authority)

Ohio River Basin

Edgeworth Borough (Continued)

The entire developed portion of Edgeworth Borough is served by public sewerage facilities and no major extension of these facilities is proposed. An extension to the existing 18" sewer adjacent to Little Sewickley Creek within the Borough should be constructed in the future as development occurs in the area.

ELIZABETH BOROUGH (Elizabeth Borough Sanitary Authority)

Fallen Timber Run and Wylie Run Drainage Basins

Although the major portion of the Borough of Elizabeth has been developed requiring no further expansion of their sewerage facilities, these facilities should be expanded to provide service for the developing areas along Fallen Timber Run and Wylie Run as part of a three-year program.

ELIZABETH TOWNSHIP (Elizabeth Township Sanitary Authority)

Wylie Run, Wildcat Run and Douglass Run Drainage Basins

Collection systems exist in the western portion of the Township in the Wylie Run Drainage Basin and in the northern and eastern portions of the Township along the Youghiogheny River. Extension of interceptors and trunk sewers should be considered as part of a three-year program for the Wylie Run and Wildcat Run Drainage Basins. A proposed collection system should be considered as part of a ten-year program for the Douglass Run Drainage Basin with treatment being provided at the Buena Vista plant located along the Youghiogheny River.

FAWN TOWNSHIP

Bull Creek Drainage Basin

There are no existing public sewerage systems within the Township. Negotiations should be held with the Upper Allegheny Sanitary Authority to obtain an extension of the Authority's existing service area and collection facilities. Proposed facilities should be constructed in the northeastern corner of the Township as part of a three-year program. Anticipated development in the remainder of the Township does not appear to be sufficient to support a comprehensive sewerage system within the next ten years.

FINDLAY TOWNSHIP

Montour and Potato Garden Run Drainage Basins

There are no collection systems within the Township and only one small package plant is in existence. Several small package plants are proposed to serve isolated developments within the Township until such time as a comprehensive system has been constructed. As part of a three-year program, Findlay Township should construct interceptor and trunk sewers to serve those developed portions of the Township within the Montour Run Drainage Basin. An agreement has been formulated with the Moon Township Municipal Authority for treatment at the proposed plant along Montour Run. As part of a three-year program, a small system is proposed for the Clinton area of the Township and includes collection sewers and a package plant. A re-evaluation should be made of the Potato Garden Run area of Findlay Township within the next five years to determine if sufficient growth has occurred to support a comprehensive system.

FORWARD TOWNSHIP

Fallen Timber Run Drainage Basin

There are no existing public sewerage facilities in the Township. Negotiations should be instituted between the Township and Elizabeth Borough for the provision of treatment services at the Elizabeth sewage treatment plant and an interceptor and collection system constructed to serve the developed area along Route 51. The use of on-lot disposal systems should be continued, where soil conditions permit, until such time as a comprehensive public system can be supported.

FRANKLIN PARK BOROUGH

Pine Creek and Lowries Run Drainage Basins

Several small package plants serve scattered sections of Franklin Park Borough. As part of a three-year program, the Borough has signed an agreement with the McCandless Township Sanitary Authority which provides for service to the Pine Creek Basin. A portion of the Borough lies within the Lowries Run Drainage Basin and service should be provided to this area by Alcosan via the Bear Run and Lowries Run interceptors.

FRAZER TOWNSHIP

Bull Creek, Crawford Run, Days Run, Deer Creek and Tawney Run Drainage Basins

There are no existing public sewers in Frazer Township. As part of a three-year program, the Township should seek agreement with the Upper Allegheny Valley Joint Sanitary Authority for the extension of their present service area to include those portions of Frazer Township in the Crawford Run and Days Run Drainage Basins. A small portion of the western part of the Township should be included in the proposed Rural Ridge System in Indiana Township.

It is anticipated that the southern portion of the Township will not develop sufficiently to support a sewerage system prior to the year 2000. Should this area develop, consideration should be given to a system with a treatment plant to be located along Riddle Run adjacent to the Frazer Township-Springdale Township Boundary.

GLENFIELD BOROUGH

Kilbuck Run Drainage Basin

Glenfield Borough (Continued)

There are no public sewerage facilities in the Borough. As development occurs in the Kilbuck Run Drainage Basin, collection facilities should be provided with subsequent treatment at the Alcosan sewage treatment plant.

HAMPTON TOWNSHIP (Hampton Township Municipal Authority)

Pine Creek Drainage Basin

There are a large number of package plants located in the Township serving individual developments. A comprehensive system has been planned for the Township and will include that portion of Richland Township which also lies in the Pine Creek Drainage Basin. As part of the three-year program, a sewage treatment plant is to be constructed in the Allison Park area along Pine Creek, thus permitting the phasing out of the existing package plants. Further extensions of the trunk sewers and collection systems are being planned as part of a ten-year program as development occurs.

HARMAR TOWNSHIP (Allegheny Valley Joint Sanitary Authority)

Deer and Tawney Creek Drainage Basins

The developed portions of Harmar Township are served by an existing collection system and treatment is provided at the Allegheny Valley Joint Sanitary Authority plant in Harmarville. Interceptor sewers as proposed in the Deer Creek study should be constructed within the next three years.

HARRISON TOWNSHIP (Upper Allegheny Sanitary Authority)

Bull Creek and Upper Allegheny River Drainage Basins

Harrison Township is part of the Upper Allegheny Sanitary Authority service area. An existing collection system serves the southwestern portion of the Township. The proposed collection system serving the northern area of the Township should be constructed within the next three years. Interceptors for this system have been sized to accommodate these portions of Fawn Township and Buffalo Township, Butler County, which also lie in the Bull Creek Drainage Basin.

HAYSVILLE BOROUGH

Ohio River Drainage Basin

There are no existing sewerage facilities within the Borough. Interceptors should be constructed to serve the developed portions of the Borough and an agreement formulated with the Borough of Sewickley for treatment at the Sewickley sewage treatment plant. Construction of these interceptors should be part of a three-year program. Any additional development in the Borough will necessitate extensions to the proposed system.

INDIANA TOWNSHIP

Deer Creek and Pine Creek Drainage Basins

It is recommended that the Township proceed with the development of the systems proposed for the Deer Creek and Pine Creek Drainage Basins as part of a three-year program.

JEFFERSON BOROUGH

Peters Creek and Upper Monongahela River Drainage Basin

There are only a few small collection systems and package plants which exist in Jefferson Borough. It is proposed that the southeastern portion of the Borough adjacent to West Elizabeth be included in the proposed West Elizabeth system, with treatment being provided at the West Elizabeth Borough sewage treatment plant. The remaining portion of Jefferson Borough is in the Peters Creek Drainage Basin for which a comprehensive system utilizing the Clairton plant for treatment has been proposed.

KENNEDY TOWNSHIP

Moon Run and Chartiers Creek Drainage Basins

The northern and eastern portions of Kennedy Township have sewerage facilities provided for the developed areas. Since all of Kennedy Township is within the Alcosan service area, the proposed interceptor system with pumping stations serving the Moon Run portion of Kennedy Township should be constructed as part of a three-year program.

KILBUCK TOWNSHIP

Lowries, Kilbuck and Toms Run Drainage Basins

All of Kilbuck Township is within the Alcosan service area. The only public facility in the Township is the Lowries Run interceptor. A collection system should be provided in the Lowries Run portion of Kilbuck Township within the next ten-year period. It is not anticipated that the Toms Run portion of Kilbuck Township will have sufficient population within the next ten-year period to support a comprehensive sewer system.

LEET TOWNSHIP (Leet Township Municipal Authority)

Big Sewickley Creek and Little Sewickley Creek Drainage Basins

The only existing facilities in Leet Township include an area adjacent to Leetsdale Borough and a small section along Big Sewickley Creek Road which is connected to the Borough of Ambridge Municipal Authority Sewerage System.

There are no planned sewerage facilities for the next ten-year period except the possible extension of the existing facilities. Should development occur,

Leet Township (Continued)

an analysis should be made to determine the feasibility of extending the Leetsdale system along Little Sewickley Creek, and the use of package plants in the Big Sewickley Creek drainage basin on an interim basis.

LIBERTY BOROUGH (Liberty Sanitary Authority)

Youghiogheny River Basin

Existing facilities have been provided for the developed portion of Liberty Borough. The Borough lies within the area served by the City of McKeesport and treatment is provided at McKeesport's sewage treatment plant. Future sewerage needs include the extension of trunk and collection sewers as development occurs within the Borough.

LINCOLN BOROUGH

Youghiogheny, Upper Monongahela River and Wylie Run Drainage Basins

Sewerage facilities exist in the developed portions of Lincoln Borough in the Youghiogheny River Basin. Treatment is provided at the McKeesport sewage treatment plant. The western portion of Lincoln Borough in the Upper Monongahela River and Wylie Run Basins does not have sufficient population to support sewerage facilities, and the use of on-lot disposal systems should be continued where favorable soil conditions exist. As development occurs in the area, treatment should be provided at the existing Glassport Borough plant.

MARSHALL TOWNSHIP

Brush, Pine and Big Sewickley Creek Drainage Basins

The only existing sewers are in a small development in the southeastern portion of the Township in the Pine Creek Drainage Basin. There are two planned comprehensive systems in Marshall Township as part of a three-year program. The proposed Brush Creek system will serve the northern portion of the Township, and the proposed Pine Creek system will serve the southeastern portion of the Township. The western portion of the Township is part of the Big Sewickley Creek Drainage Basin and sufficient development is not anticipated within the next ten-year period to support a comprehensive sewer system. Should enough development occur in the area between proposed Interstate Route 79 and the Pennsylvania State Game Lands, this area should be pumped into the Pine Creek system.

McCANDLESS TOWNSHIP (McCandless Township Sanitary Authority)

Pine Creek, Lowries Run and Girty's Run Drainage Basins

Sewerage facilities exist in the Lowries Run and Girty's Run portions in the southeastern corner of McCandless Township. This portion of the Township is in the Alcosan service area, and any future facilities in these drainage basins would entail only the extension of existing collection systems. A comprehensive sewerage system has been proposed for the Upper Pine Creek Drainage Basin and includes the northern half of McCandless Township along with portions of Pine Township, Bradford Woods Borough, Marshall Township and Franklin Park Borough. This system should be constructed as part of a three-year program.

McDONALD BOROUGH

Robinson Run Drainage Basin

As a result of the Robinson Run feasibility study, a comprehensive system has been proposed for this area with a sewage treatment plant to be constructed in McDonald Borough to serve the Borough and the upstream communities in Washington County. This system should be part of a three-year program.

MOON TOWNSHIP (Moon Township Municipal Authority)

Montour Run, Flaugherty Run, Narrows Run, Thorn Run and McCabe Run Drainage Basins

The major portion of Moon Township lies in the Montour Run Drainage Basin. A comprehensive sewerage system is proposed for this area of the Township and includes a sewage treatment plant to be constructed along Montour Run within the next three-year period. The construction of this system will phase out several small package plants and pump stations which currently serve scattered developments in the Township. In the northeastern portion of the Township, including sections of the Narrows Run, Thorn Run and McCabe Run Drainage Basins, existing sewer facilities have been constructed to serve the developed portions of these areas with treatment provided at the Coraopolis treatment plant. Should further development occur in these three drainage basins, sewerage facilities would be provided by the extension of the existing trunk and collector sewers. A feasibility study is currently being prepared by the Moon Township Municipal Authority and the Crescent – South Heights Authority for the Flaugherty Run Drainage Basin.

NORTH FAYETTE TOWNSHIP

Robinson Run Drainage Basin

North Fayette Township lies within the central portion of the Robinson Run Drainage Basin. Other than a few package plants and their associated sewers, there are no existing sewage treatment or collection facilities in the Township. The results of the feasibility study for the Robinson Run Drainage Basin indicate that North Fayette Township should enter into an agreement with the Borough of Oakdale for sewage transportation and treatment at the Oakdale Borough plant. The eastern portion of North Fayette Township should be included in a comprehensive system planned for Collier Township in the Robinson Run Drainage Basin. These systems should be part of a three-year program.

NORTH VERSAILLES TOWNSHIP

Crooked Run, Long Run and Turtle Creek Drainage Basins

In the Crooked Run area of the Township, the only construction required is the orderly extension of existing sewers. Connecting to the White Oak system, trunk lines should be constructed in the next three-year period to serve the Long Run area.

OAKDALE BOROUGH (Oakdale Municipal Authority)

Robinson Run Drainage Basin

The existing Oakdale sewage treatment plant should be upgraded and additional capacity provided as part of three-year program. This plant should serve the developing portions of Oakdale Borough and a large portion of North Fayette Township, as delineated in the Robinson Run feasibility study.

OHIO TOWNSHIP

Lowries Run, Toms Run and Kilbuck Run Drainage Basins

A portion of Ohio Township is within the Alcosan service area and a proposed three-year program should include the construction of an interceptor along Bear Run to the Ohio Township, Franklin Park Borough boundary. As part of a ten-year program, an interceptor sewer should be extended along Crawford Run to serve the developed areas in the northern portion of the Township as well as those developing areas in the western section of the Township. It is not anticipated that sewers will be needed within the next ten-year period for the Toms Run or Kilbuck Run areas.

OSBORNE BOROUGH

Ohio River Basin

The Borough is completely sewered and no major facilities are required.

PENN HILLS TOWNSHIP

Plum Creek, Sandy Creek, Quigley Creek, Turtle Creek and Indian Creek Drainage Basins

There are several existing systems in Penn Hills Township serving the developed areas. The Township is currently constructing a sewage treatment plant and interceptor system in the Plum Creek Drainage Basin to serve that portion of the Township within the basin. As further development occurs within the Township, trunk sewers should be extended in the Plum, Indian, Quigley and Sandy Creek Drainage Basins. A small portion of the Township in the Turtle Creek Drainage Basin should be served by a proposed future pump station discharging to the Gascola treatment plant.

PINE TOWNSHIP

Brush Creek and Pine Creek Drainage Basins

The Township should complete negotiations with the municipalities and authorities involved in the systems proposed for both the Brush Creek and Upper Pine Creek Drainage Basins. These systems should be operational within three years.

PLUM BOROUGH

Plum Creek, Turtle Creek and Pucketa Creek Drainage Basins

Sewerage facilities exist in several developed portions of Plum Borough. The results of the feasibility study for the Plum Creek Drainage Basin indicate that a comprehensive system should be constructed within the next three years to serve that portion of the Borough in this Basin. In the Turtle Creek portion of Plum Borough, expansion of the collection system and sewage treatment plant serving the Holiday Park area adjacent to Route 286 should be made. The remaining portions of Plum Borough should utilize on-lot disposal systems until sufficient development occurs to warrant the installation of comprehensive sewerage systems.

PORT VUE BOROUGH

Youghiogheny and Upper Monongahela River Drainage Basins

Port Vue Borough is in the City of McKeesport service area. All of the developed portions of the Borough have been provided with sewerage facilities. No specific construction, other than the orderly extensions of existing collection systems, is needed.

RESERVE TOWNSHIP

Reserve Township is part of the Alcosan service area and extensions of existing trunk sewers should be made to serve developing portions of the Township.

RICHLAND TOWNSHIP

Deer Creek, Pine Creek, Breakneck Creek and Glade Run Drainage Basins

There is one existing sewerage system serving the Orchard Park area in the southeastern portion of Richland Township in the Deer Creek Drainage Basin. This system should become an integral part of the facilities proposed for the northwest section of the Deer Creek Drainage Basin. The collection systems for the Pine Creek Drainage Basin section of the Township should connect to the proposed Hampton Township system. All of these facilities should be part of a three-year program.

ROBINSON TOWNSHIP

Campbells Run, Montour Run and Moon Run Drainage Basins

There are a number of small package plants which exist within Robinson Township. Several comprehensive sewerage systems have been proposed as a part of a three-year program to provide facilities for the entire Township. One system is in the Campbells Run Drainage Basin and consists of a sewage treatment plant and associated sewers which will serve the entire basin. A second system is proposed for the southern portion of the Moon Run Drainage Basin to serve the developed areas in that part of the Township. The western half of the Township will be served by the proposed interceptor trunk and collector sewers in the Montour Run Drainage Basin, with treatment being provided by the proposed Montour Run sewage treatment plant.

SEWICKLEY HEIGHTS BOROUGH

There are no public sewerage facilities in the Borough and growth sufficient to support such facilities is not anticipated in the near future. The eastern portion of the Borough lies in the Kilbuck Run Drainage Basin and as development occurs along Kilbuck Run and Interstate Route 279, this area should become part of the system proposed for the Kilbuck – Toms Run region.

SEWICKLEY HILLS BOROUGH

Little Sewickley Creek and Kilbuck Run Drainage Basins

Because of the sparse development within the Borough, there are no existing sewerage facilities and development sufficient to support such facilities is not anticipated in the near future. The eastern portion of the Borough lies within the Kilbuck Run Drainage Basin and as development occurs along Kilbuck Run and Interstate Route 279, this area should become part of the system proposed for the Kilbuck – Toms Run region.

SOUTH FAYETTE TOWNSHIP

Chartiers Creek, Millers Run and Coal Run Drainage Basins

A comprehensive sewerage system is proposed for that portion of South Fayette Township in the Millers Run Drainage Basin. Within the next three years, an interceptor should be constructed along Millers Run through South Fayette Township to serve South Fayette Township and the upstream communities in Washington County, and a sewage treatment plant should be constructed along Millers Run adjacent to Chartiers Creek. It is not anticipated that the Coal Run portion of South Fayette Township will have sufficient development to support a collection system within the next ten years. When development does occur in this area, however, the collection system should be provided and connection made to the proposed Millers Run sewage treatment plant.

SOUTH PARK TOWNSHIP

Peters Creek Drainage Basin

South Park Township lies totally within the Peters Creek Drainage Basin. A comprehensive sewerage system exists within the Piney Fork area in the southwestern portion of the Township. The remaining portions of South Park Township should be served by the proposed comprehensive system for the Peters Creek Drainage Basin as part of a three-year program.

SOUTH VERSAILLES TOWNSHIP

Youghiogheny River Drainage Basin

There are no existing sewerage facilities in South Versailles Township. It is not anticipated that sufficient development will occur within the Township to support a comprehensive sewer system within the next ten years. As development occurs, the feasibility of constructing a collection system and force main for pumping sewerage across the Youghiogheny River and into the existing Elizabeth Township system should be investigated.

SPRINGDALE BOROUGH (Allegheny Valley Joint Sanitary Authority)

Riddle and Tawney Run Drainage Basins

The Borough is part of the Allegheny Valley Joint Sanitary Authority service area, with existing facilities serving the developed portions of the Borough. Extension of existing trunk and collection systems should be made as the need arises.

SPRINGDALE TOWNSHIP (Allegheny Valley Joint Sanitary Authority)

Riddle and Tawney Run Drainage Basins

The Township is part of the Allegheny Valley Joint Sanitary Authority service area, with existing facilities serving the developed portions of the Township. Extension of existing trunk and collection systems should be made as the need arises.

TARENTUM BOROUGH (Upper Allegheny Sanitary Authority)

Bull Creek Drainage Basin

The Borough is part of the Upper Allegheny Sanitary Authority service area and no additional facilities are required within the Borough limits.

VERSAILLES BOROUGH

Long Run Drainage Basin

Sewerage service is provided for the developed portions of Versailles Borough and treatment is provided at the City of McKeesport sewage treatment plant. No specific construction, other than the orderly extension of existing collection systems, is required.

WEST DEER TOWNSHIP

Deer Creek and Bull Creek Drainage Basins

It is recommended that the Township proceed with the development of the systems proposed for the Deer Creek Drainage Basin and consider the feasibility of the system proposed for the Bull Creek Drainage Basin.

WEST ELIZABETH BOROUGH (West Elizabeth Water and Sewage Authority)

Upper Monongahela River Drainage Basin

The Borough has an existing collection system which discharges directly into the Monongahela River. A feasibility study prepared by the Borough recommends the construction of an interceptor system and sewage treatment plant to serve the Borough and the surrounding areas. This system should be part of a three-year program.

WEST MIFFLIN BOROUGH

Thompson Run Drainage Basin

Facilities exist in the developed portions of West Mifflin Borough. Extension of sewerage facilities should be made as development occurs.

WHITE OAK BOROUGH

Long Run Drainage Basin

White Oak Borough is included in the City of McKeesport service area. The southern portion of the Borough is served by existing facilities with treatment provided at the City of McKeesport sewage treatment plant. Extensions should be made to these interceptors and trunk sewers as development occurs in the northern portion of the Borough.

APPENDIX

TABLE A

EXISTING SEWAGE TREATMENT PLANTS

Facility	Treatment Capacity (M.G.D.) Design Flow	Treatment Capacity (M.G.D.) Present Flow	Treatment Capacity Utilized (%)	Population Served Design	Population Served Present	Population Capacity Utilized (%)	Degree of Treatment Present	Degree of Treatment Required	Receiving Stream Name	Receiving Stream Classification	Effect of Industrial Waste on Treatment Process	Drainage Basin Served	Municipality Served
Alcosan	150	135	90	1,500,000	1,200,000	80	I	S	Ohio River	S		Girtys Becks Sawmill Thompson Streets Chartiers Peters Homest'd-West Run	
MUNICIPALITIES SERVED City of Pittsburgh, Boroughs of Aspinwall, Avalon, Baldwin, Bellevue, Ben Avon, Ben Avon Heights, Bethel Park, Blawnox, Braddock, Braddock Hills, Brentwood, Bridgeville, Carnegie, Castle Shannon, Chalfant, Churchill, Crafton, Dormont, East McKeesport, East Pittsburgh, Edgewood, Emsworth, Etna, Forest Hills, Fox Chapel, Franklin Park, Greentree, Heidelberg, Homestead, Ingram, McKees Rocks, Millvale, Monroeville, Mt. Oliver, Munhall, North Braddock, Pitcairn, Rankin, Rosslyn Farms, Sharpsburg, Swissvale, Thornburg, Trafford, Turtle Creek, Verona, Wall, West Mifflin, West View, Whitaker, Whitehall, Wilkinsburg, Wilmerding; Townships of Baldwin, Collier, Indiana, Kennedy, Kilbuck, McCandless, Mt. Lebanon, Neville, North Versailles, O'Hara, Ohio, Penn Hills, Reserve, Ross, Scott, Shaler, Stowe, Upper St. Clair, Wilkins; and Penn Township in Westmoreland County.												
Allegheny Valley Joint Sanitary Authority	3.0	1.3	43	30,000	13,000	43	I	S	Allegheny River	S		Deer Creek, Tawney Run	Cheswick, Harmar Township, Springdale Borough and Township
Northern Disposal Corporation	0.016	0.0045	28	6,000	1,000	17	S	C	Trib/Little Sewickley Creek	C	None	Ohio River	Bell Acres
Bethel M.S.A.	3.0	2.0	67	27,000	17,000	68	S	B	Piney Fork	B	None	Peters Creek	Bethel Park
Clairton M.S.S.	2.0	1.8	90	22,000	19,600	89	I	S	Peters Creek	S	None	Peters Creek	Clairton
Collier Township USA Missile Site	0.08	0.08	100	1,800	1,800	100	S	C	Thoms Run	C	None	Robinson	Missile Master Site
Coraopolis M.S.A.	1.75	1.73	99	19,000	18,800	99	I	S	Ohio River	S	None		Coraopolis
Crescent – South Heights M.A.	0.2	0.1	50	3,000	2,000	67	I	S	Ohio River	S	None	Spring Run, Shouse Run, Part/ Flaugh. Run	Crescent, South Heights

TABLE A (Continued)

EXISTING SEWAGE TREATMENT PLANTS

Facility	Treatment Capacity (M.G.D.) Design Flow	Treatment Capacity (M.G.D.) Present Flow	Treatment Capacity Utilized (%)	Population Served Design	Population Served Present	Population Capacity Utilized (%)	Degree of Treatment Present	Degree of Treatment Required	Receiving Stream Name	Receiving Stream Classification	Effect of Industrial Waste on Treatment Process	Drainage Basin Served	Municipality Served
Dravosburg SR and M.S.S.	0.48	0.35	73	4,800	3,500	73	I	S	Mon. River	S	None	Mon. River	Dravosburg
Elizabeth S.A.	0.77	0.33	43	8,000	3,500	44	I	S	Mon. River	S	None	Mon. Rvr.	Elizabeth Borough
Elizabeth Township M.S.A.	0.408	.24	59	5,000	3,520	70	I	S	Youghiogheny River	S	None	Yough. River	Elizabeth Township
Fawn Township Crestwood Acres	0.0034			49			S	C	Little Bull Cr.	C	None	Bull Cr.	
Findlay Township													
Catholic Institute of Pittsburgh	0.0138			150			S	C	Trib/ Flaugherty Run	C	None		Individual Establishments
Montour Motor Inn	0.0051			128			S	B	McClaren Run	B	None		
Franklin Park													
Alpine Estates	0.035	0.005	14	600	75	13	S	A	Trib/North Park Lake	A	None		
Kings Ridge	0.030	0.025	84	3,000	2,000	67		B	Trib/Bear Run	B	None		Portions of Franklin
North Hills Field Club	0.0286			1,776			S	S	Trib/Bear Run	S	None		Park Borough
North Allegheny Joint School	0.0043			600	600	100	S	B	Bear Run	B	None	Lowries Run	
Franklin Elementary School	0.085			1,177			S	B	Lowries Run	B	None	Lowries Run	
Frazer Township West Penn Refuse							S	C	Riddle Run	C		Ally. Rvr.	
Glassport M.S.S.	1.2	0.8	67	12,000	8,000	67	I	S	Mon. River	S	None	Mon. Rvr.	Glassport
Hampton Township M.S.S.													
Hamlet Place MA-468S024									Crouse Run Pine Creek	B B			
Boulevard Est.	0.010	0.00896	90	130	120	92	S	B	McCaston Run	B	None	Pine Cr.	
Fox Run	0.0022			32			S	B	Gourhead Run	B	None	Pine Cr.	
Hampton Farms No. 1	0.005	0.00476	95	68	68	100	S	B	Cider Run	B	None	Pine Cr.	Portions of Hampton
Hampton Farms No. 2	0.054	0.024	44	80	80	100	S	B	Gourhead Run	B	None	Pine Cr.	Township

TABLE A (Continued)

EXISTING SEWAGE TREATMENT PLANTS

Facility	Treatment Capacity (M.G.D.) Design Flow	Treatment Capacity (M.G.D.) Present Flow	Treatment Capacity Utilized (%)	Population Served Design	Population Served Present	Population Capacity Utilized (%)	Degree of Treatment Present	Degree of Treatment Required	Receiving Stream Name	Receiving Stream Classification	Effect of Industrial Waste on Treatment Process	Drainage Basin Served	Municipality Served
Hampton Township M.S.S. (Continued)													
Hampton Farms Nos. 3, 4 and 5	0.0055	0.00476	87	76	68	90	S	B	McCastin Run	B	None	Pine Cr.	
Northern Disp. Corporation													
Highland Manor	0.010	0.007	70	100	100	100	S	B	Harts Run	B	None	Pine Cr.	
Hampton Manor	0.0059			84			S	B	Trib/Crouse Run	B	None	Pine Cr.	
Hampton Terrace	0.020	0.0182	91	292	260	89	S	B	Crouse Run	B	None	Pine Cr.	
North Hampton	0.01736	0.007	40	248	108	44	S	B	Pine Creek	B	None	Pine Cr.	
Northwood Acres	0.054	0.0322	60	780	460	59	S	B	Pine Creek	B	None	Pine Cr.	
Royal Crest	0.0003	0.000168	56	32	24	75	S	B	Crouse Run	B	None	Pine Cr.	
Tall Timber No. 1	0.005	0.00252	50	36	36	100	S	B	Pine Creek	B	None	Pine Cr.	
Tall Timber No. 2	0.010			132			S	B	Pine Creek	B	None	Pine Cr.	
Tremont Farms	0.005	0.00252	50	56	36	64	S	B	McCastin Run	B	None	Pine Cr.	Portions of Hampton Township
Winchester Park	0.015	0.01344	90	196	192	98	S	B	Pine Creek	B	None	Pine Cr.	
St. Catherine R. C. Church	0.0034			340			S	B	Willow Run	B	None	Pine Cr.	
Poff School	0.0057			440			S	B	Trib/Crouse Run	B	None	Pine Cr.	
Shoppers Plaza	0.0128						S	B	Crouse Run	B	None	Pine Cr.	
5001 Assoc. Inc.	0.0055			134			S	B	Crouse Run	B	None	Pine Cr.	
Conleys Motel	0.0093			308			S	B	Crouse Run	B	None	Pine Cr.	
Harmar Township													
Gulf R & D	0.07			700			S	C	Trib/ Deer Creek	C	None	Deer Cr.	
Westinghouse Atomic							S	C	Wilson Run	C		Ally. Rvr.	
McCrady, Inc.								C	Unnamed Trib.	C			
Jones Motor	0.0035			100			S	C	Deer Creek	C	None	Deer Cr.	
Milliken Brick	0.0009			25			S	C	Deer Creek	C	None	Deer Cr.	
Indiana Township M.S.S.													
Indianola	0.10	0.09	90	1,000	900	90	S	C	Deer Creek	C	None	Deer Cr.	
Ottawa Hills	0.0112			160				C	Squaw Run	C	None	Squaw Run	Portions of Indiana Township
Dorseyville Junior High School	0.0135			1,038			S	C	Blue Run	C	None	Deer Cr.	
Indiana Township No. 0269420	0.075	0.060	80	750	600	80	S	C	Little Deer Creek	C	None	Deer Cr.	

TABLE A (Continued)

EXISTING SEWAGE TREATMENT PLANTS

Facility	Treatment Capacity (M.G.D.) Design Flow	Treatment Capacity (M.G.D.) Present Flow	Treatment Capacity Utilized (%)	Population Served Design	Population Served Present	Population Capacity Utilized (%)	Degree of Treatment Present	Degree of Treatment Required	Receiving Stream Name	Receiving Stream Classification	Effect of Industrial Waste on Treatment Process	Drainage Basin Served	Municipality Served
Jefferson M.S.S.													
a. No. 1	0.0085			128			S	B	Peters Crèek	B	None	Peters Cr.	Jefferson Borough
b. No. 2	0.14			350			S	B	Peters Creek	B	None	Peters Cr.	Jefferson Borough
c. No. 3	0.0135			1,040			S	B	Lewis Run	B	None	Lewis Run	Jefferson Middle School
Lawson Nursing Home	0.004			66			S	B	Trib/Lewis Run	B	None	Lewis Run	Jefferson Borough
Kennedy Township													
Dr. Williams Junior High	0.0144			800			S	C	Unnamed Trib.	C		Ohio Rvr.	
Elm Grove Manor	0.014			200			S	B	Trib/Moon Run	B		Moon Run	Portions of Kennedy
Herbst Manor	0.010			140	140		S	B	Trib/Moon Run	B		Moon Run	Township
Kenvue No. 1	0.0084			120	120		S	B	Trib/Moon Run	B	None	Moon Run	
Kilbuck Township													
Dixmont State Hospital	0.55			2,200			S	C	Toms Run	C	None		Dixmont Hospital
Leet Township													
Watson Home	0.020			200					Trib/Sewickley Creek		None	Ohio Rvr.	Watson Home
Leetsdale M.S.A.	1.0	0.40	40	10,000	4,300	43	I	S	Ohio River	S	None		Leetsdale Borough
Marshall Sewage Company	0.025			240		95	S	A	Trib/North Park Lake	A		Pine Cr.	Portions of Marshall
Motel No. 6	0.0238						S	C	Brush Creek	C	None	Pine Cr.	Township
McCandless Township S.A.									Little Pine Creek	B		Pine Cr.	
A. & B. System	0.40	0.240	60	4,000	2,400	60	S	B	Trib/Pine Creek	B			
Crestwood Manor	0.044	0.034	77	630	490	78	S	A	Trib/North Park Lake	A	None	Pine Cr.	
Divine Providence School	0.025			250			S	B	Little Pine Creek	B	None	Pine Cr.	
Ingomar School	0.0056			375			S	B	Unnamed Trib.	B	None	Pine Cr.	
Longvue No. 1	1.20	0.50	42	12,000	5,000	42	S	B	Little Pine Creek	B	None	Pine Cr.	

TABLE A (Continued)

EXISTING SEWAGE TREATMENT PLANTS

Facility	Treatment Capacity (M.G.D.) Design Flow	Treatment Capacity (M.G.D.) Present Flow	Treatment Capacity Utilized (%)	Population Served Design	Population Served Present	Population Capacity Utilized (%)	Degree of Treatment Present	Degree of Treatment Required	Receiving Stream Name	Receiving Stream Classification	Effect of Industrial Waste on Treatment Process	Drainage Basin Served	Municipality Served
McCandless Township S.A. (Continued)													
Longvue No. 2	0.10	0.185	185	1,000	1,000	100	S	B	Girtys Run	B	None	Ally. Rvr.	
Longvue No. 3	0.125	0.280	224	1,250	2,800	224	S	A	Trib/North Park Lake	A	None	Pine Cr.	
Briarwood Manor	0.024			240			S	B	Trib/Pine Creek	B	None	Pine Cr.	Portions of McCandless Township
Meadow Brook 1-2-3	0.0151			200			S	B	Trib/ Pine Creek	B	None	Pine Cr.	
Meadow Brook No. 4	0.096			240			S	B	Trib/ Pine Creek	B	None	Pine Cr.	
Municipal Building	0.0016			70 Reg. 300 Occas.			S	A	Trib/North Park Lake	A	None	Pine Cr.	
Covington Place	0.0145			208			S	A	Trib/North Park Lake	A	None	Pine Cr.	
North Park Swimming Pool	0.050	(Based on 10 gpc/5000 people Max. — 1937)					S	B	Pine Creek	B	None	Pine Cr.	
North Park Boat House	0.0075			500			S	A	North Park Lake	A	None	Pine Cr.	
St. Johns Hospital	0.010			160			S	A	Trib/North Park Lake	A	None	Pine Cr.	
Vincentian Home	0.235			200			S	B	McKnight Run	B	None	Girtys Run	
Wexford Plaza	0.004			57			S	A	Trib/North Park Lake	A	None	Pine Cr.	
McKeesport S.A.	9.5	4.75	50	94,000	80,000	85	I	S	Yough. River	S	None	Yough. River	McKeesport
Moon Township M.A.													
Amato	0.003			148			S	C	Flaugherty Run	C	None	Montour Run	
Ewing Mill Heights No. 1	0.048			600			S	B	Trib/Montour Run	B	None	Montour Run	
Londonbury	0.0875			875			S	B	Montour Run	B	None	Montour Run	Portions of Moon Township
Bon Air Village	0.0174			248			S	B	Trout Run	B	None	Montour Run	
Nye Timber	0.0243			346			S	B	Meeks Run	B	None	Montour Run	
Air National Guard	0.0544			1,450			S	B	McClarens Run	B	None		
Greater Pittsburgh Airport	0.250			9,000			S	B	McClarens Run	B	None		

TABLE A (Continued)

EXISTING SEWAGE TREATMENT PLANTS

Facility	Treatment Capacity (M.G.D.) Design Flow	Treatment Capacity (M.G.D.) Present Flow	Treatment Capacity Utilized (%)	Population Served Design	Population Served Present	Population Capacity Utilized (%)	Degree of Treatment Present	Degree of Treatment Required	Receiving Stream Name	Receiving Stream Classification	Effect of Industrial Waste on Treatment Process	Drainage Basin Served	Municipality Served
North Fayette Township													
Glen Gormley	0.0266	0.030	55	380	200	36	S	C	Trib/Robinson Run	C	None	Chartiers Creek	
Hankey Farms	0.130	0.080	62	1,325	1,200	91	S	C	North Fork/ Robinson Run	C	None	Chartiers Creek	
West Allegheny Joint School	0.0153			850			S	B	Trib/Montour Run	B	None	Montour Run	North Fayette Township
West Allegheny Hospital	Discharges into mine – citation of 4/7/69 – No application or Permit												
D. Wainwright Trailer Park	0.0059			84			S	C	North Fork/ Robinson Run	C	None	Chartiers Creek	
Parkway West Technical School	No application on file (Contract No. A-45)						S	C	Trib/Pinkerton Run	C	None	Chartiers Creek	
Oakdale M.A.	0.30	0.1728	58	3,000	1,728	58	S	C	Robinson Run	C	None	Chartiers Creek	Oakdale
Oakmont M.S.S.	2.5	0.80	32	12,000	8,000	67	I	S	Plum Creek	S	None	Plum Cr.	Oakmont
O'Hara Township M.S.S.													
Chapel Highlands	0.0083			418			S	B	Little Pine Creek	B		Pine Creek	
Hofer Plan							S	B	Little Pine Creek	B		Pine Creek	O'Hara Township
Dorsey Manor	0.0314			448			S	B	Little Pine Creek	B		Pine Creek	
Ohio Township M.S.S.	0.02176	0.0272	125	775	750	97	S	B	Bear Run	B		Lowries Run	
Avonworth School Authority	0.018			800			S	B	Bear Run	B	None	Lowries Run	Ohio Township
Thompson Terrace	0.0217			272			S	B	Unnamed Trib.	B	None	Lowries Run	

TABLE A (Continued)

EXISTING SEWAGE TREATMENT PLANTS

Facility	Treatment Capacity (M.G.D.) Design Flow	Treatment Capacity (M.G.D.) Present Flow	Treatment Capacity Utilized (%)	Population Served Design	Population Served Present	Population Capacity Utilized (%)	Degree of Treatment Present	Degree of Treatment Required	Receiving Stream Name	Receiving Stream Classification	Effect of Industrial Waste on Treatment Process	Drainage Basin Served	Municipality Served
Penn Hills Township													
Gascola	0.90	0.80	89	9,000	8,000	89	S	B	Thompson Run	B	None	Turtle Creek	
Long Road	1.20	0.70	58		12,000		S	B	Long Run	B	None	Turtle Creek	Penn Hills Township
Shade Run	0.24			2,400	1,500	75	S	C	Long Run	C	None	Turtle Creek	
Plum Creek	2.20	1.30	59	22,000	13,000	59	S	B	Plum Creek	B	None	Plum Cr.	
Sandy Creek	1.80	2.0	111	18,000	20,000	111	S	S	Sandy Creek	S	None	Ally. Rvr.	
Pine Township													
W. Disp. (Armagh)	0.036	0.0042		616	60		S	B	Trib/Montour Run	B	None	Pine Creek	Pine Township
Wyckloe Plans	0.0086			124	124		S	A	Trib/North Park Lake	A	None	Pine Creek	
Pleasant Hills M.A.	3.0	1.75	58	30,000	20,000	67	S	B	Lick Run	B	None	Peters Cr.	Pleasant Hills Borough
Plum M.S.S.													
Garlow Heights	0.120			1,200	1,000	83	S	B	Unnamed Trib.	B	None	Plum Creek	
Holiday Park	0.696			8,700	7,200	83	S	B	Abers Run	B	None	Turtle Cr.	
Mark Haven	0.067			750	652	87	S	B	Unnamed Trib.	B	None	Turtle Cr.	Plum Borough
Regency Park	0.412			2,500	3,356	134	S	B	Plum Creek	B	None	Plum Cr.	
Logans Ferry Heights	0.080			800			S	C	Unnamed Trib.	C	None	Ally. Rvr.	
Alcoa Logans Ferry	0.252			175			C	C	Allegheny River	C	None	Ally. Rvr.	
Richland Township													
W. Pa. Disp. Orchard Park	0.10	0.060		1,818	1,189		S	C	W. Brush Deer Creek	C		Deer Creek	
W. Pa. Disp. Arcadia							S	C	Deer Creek	C		Deer Creek	Richland Township
St. Barnabas Home	0.022			150			S	B	Willow Creek	B		Pine Cr.	
Venus Diner	0.004			40 Motel Guest/ 300 seat diner			S	B	Crouse Run	B		Pine Cr.	

TABLE A (Continued)

EXISTING SEWAGE TREATMENT PLANTS

Facility	Treatment Capacity (M.G.D.) Design Flow	Treatment Capacity (M.G.D.) Present Flow	Treatment Capacity Utilized (%)	Population Served Design	Population Served Present	Population Capacity Utilized (%)	Degree of Treatment Present	Degree of Treatment Required	Receiving Stream Name	Receiving Stream Classification	Effect of Industrial Waste on Treatment Process	Drainage Basin Served	Municipality Served
Robinson Township M. A.													
Douglas Hill Manor	0.04			400				C	Moon Run	B	None	Moon Run	Robinson Township
Knights Bridge	0.028	0.008	28	280	80	35		C	Campbells Run	C	None	Camp. Run	
Montour Jt. School	0.0286			2,200			S	B	Moon Run	B	None	Moon Run	
Pennsbury Village	0.170	0.080	47	1,700	800	47	S	C	Campbells Run	C	None	Camp. Run	
Robin Hill	0.0196	0.0048	25	196	48	25	S	B	Moon Run	B	None	Moon Run	
Robinson Gardens	0.0872	0.045	52	872	450	52	S	B	Trib/ Moon Run	B			
Calgon Inc.	0.021			750			S	B	Trib/ Campbells Run	B	Slight	Chartiers Creek	Portions of Robinson Township
Mobay Chemical	0.0035			100			S	C	Campbells Run	C	None	Chart. Cr.	
Holiday Inn	0.020			1,045			S	B	Montour Run	B	Slight - Laund.	Montour Run	
Crucible Center	0.0131			375			S	C	Campbells Run	C	Slight	Chart. Cr.	
Vista Ind. Park	0.0022			150			S	C	Campbells Run	C	None	Chart. Cr.	
D.D.M. Disposal	0.17			1,700			S	C	Campbells Run	C	None	Chart. Cr.	
Earl Greenwald	Single Family – 3 bedroom permit – complete						S	B	Moon Run	B	None	Moon Run	
Robinson Township No. 0269418	0.625			2,500			S	B	Moon Run	B	None	Moon Run	
Robinson Township No. 0269416	2.50			10,000			S	C	Campbells Run	C	None	Chart. Cr.	
Robinson Township No. 0269417	0.625			2,500			S	C	Unnamed Trib.	C		Chart. Cr.	
Sewickley M.S.S.	1.40	0.65	47	9,500	7,000	74	I	S	Ohio River	S	None	Ohio Rvr.	Sewickley Borough & Osborne
Sewickley Heights													
Allegheny Country Club	0.020			Avg. 600 Members			S S	C C	Trib/Little Sew. Creek	C		Little Sew. Cr.	
South Fayette Township M.S.S.													
Fairview Manor	0.021	0.023	109	3,200	3,500	109	S	C	Trib/Chartiers Creek	C	None	Chartiers Creek	
Morgan Housing (Allegheny Housing)	0.073			547			S	C	Millers Creek	C	None	Chart. Cr.	South Fayette Township
Mayview State Hosp.	0.500			5,000			S	C	Chartiers Cr.	C	Laund.	Chart. Cr.	

TABLE A (Continued)

EXISTING SEWAGE TREATMENT PLANTS

Facility	Treatment Capacity (M.G.D.)		Treatment Capacity Utilized (%)	Population Served		Population Capacity Utilized (%)	Degree of Treatment		Receiving Stream		Effect of Industrial Waste on Treatment Process	Drainage Basin Served	Municipality Served
	Design Flow	Present Flow		Design	Present		Present	Required	Name	Classification			
South Park Township													
U. S. Bureau of Mines	0.0375			350			S		Unnamed Trib.			Lick Run	
Upper Allegheny Valley Sanitary Authority	6.00	4.00	67	60,000	42,000	70	I	S	Allegheny River	S	None	Allegheny River	Brackenridge, East Deer Township, Tarentum & Harrison Townships
West Deer Township M.S.S.													
Russmont	0.0067	0.0031	106	96	44	125	S	C	Unnamed Trib.	C	None	Pine Creek	
Victory Disp. Corp.	0.009			120			S	B	Little Pine Creek	B	None	Pine Creek	
Inwood Trailer Village	0.0031			63			S	B	Little Pine Creek	B	None	Pine Creek	
Russelton Elementary School	0.003			400			S	B	Little Pine Creek	B	None	Pine Creek	
St. Victor R. C. Church	0.0018			126 Stu. 2 Residents			S	C	Trib/ Dawson Run	C	None	Deer Cr.	West Deer Township
West Deer High School	0.014			1,254			S	C	Little Deer Creek	C	None	Deer Cr.	
Transdivination School	0.0072			400	70		S	C	Trib/ Dawson Run	C	None	Deer Cr.	
Northern Disp. (Fawn Haven)	0.12			1,200	70	167	S	C	W. Brush Deer Creek	C	None	Deer Cr.	
West Mifflin													
Kenmahr Manor	0.400	0.08	20	4,000	1,600	40	S	B	Unnamed Trib.	B	None	Mon. Rvr.	
New England	0.90	0.40	45	9,000	4,000	45	S	B	New Eng. Hollow	B	None	Mon. Rvr.	
Thompson Run	2.50	2.00	67	25,000	20,000	67	S	B	Thompson Run	B	None	Bull Run	
Kennywood Park	0.144			20,000			S	C	Unnamed Trib.	C	None	Mon. Rvr.	
Duquesne Slag Co.	Industrial Waste						S	B	Thompson Run	B		Bull Run	West Mifflin Borough
Westinghouse Corp.	0.10			2,000			S	B	Bull Run	B	None	Bull Run	
Trumball Const.	Industrial Waste						S	B	Thompson Run	B		Bull Run	
Linde Air — Union Carbide	Industrial Waste						S	B	Thompson Run	B		Bull Run	
Ford Motor Co.	0.0037			150			S	B	Unnamed Trib.	B	None	Peters Creek	

DEFINITIONS – TABLE A

I. The term "intermediate treatment," as here used, is such treatment of sewage as, in the opinion of the Commonwealth Sanitary Water Board, will remove practically all of the settleable solids; will remove at least fifty percent of the organic pollution load as measured by the biochemical oxygen demand test; will accomplish the removal of oils, greases, acids, alkalis, toxic, putrescible, taste and odor producing substances, and other substances inimical to the public interest in the receiving stream; will provide effective disinfection to control disease producing germs; will provide satisfactory disposal of sludge; and will produce a final effluent that is suitable for discharge into the receiving stream. Intermediate treatment of industrial wastes, as here used, is treatment, to a degree, equivalent to that set forth herein for sewage.

S. Secondary treatment is that treatment that will reduce the organic waste load as measured by the biochemical oxygen demand test by at least 85% during the period May 1 to October 31 and by at least 75% during the remainder of the year based on a five consecutive day average of values; will remove practically all of the suspended solids; will provide effective disinfection to control disease producing organisms; will provide satisfactory disposal of sludge; and will reduce the quantities of oil, greases, acids, alkalis, toxic, taste and odor producing substances, color and other substances inimical to the public interest to levels that will not pollute the receiving stream.

Effective disinfection to control disease producing organisms shall be the production of an effluent which will contain a concentration not greater than 200/100 ml of Fecal Coliform organisms as a geometric average value nor greater than 1,000/100 ml of these organisms in more than 10% of the samples tested.

Industrial wastes are to be given treatment equivalent to the secondary treatment of sewage. Appropriate in-plant reduction of wastes may be applied to these requirements.

A. Effluent Standard A:

Five-day biochemical oxygen demand – Not to exceed 5 mg/l as an average of 5 consecutive samples or 10 mg/l at any time.

Total Soluble Phosphorus – Not to exceed 0.50 mg/l as PO_4.

Suspended Solids – Not to exceed 25 mg/l total suspended solids or 10 mg/l volatile suspended solids at any time.

DEFINITIONS – TABLE A (Continued)

B. Effluent Standard B:

Five-day biochemical oxygen demand – Not to exceed 10 mg/l as an average of 5 consecutive samples or 20 mg/l at any time.

Suspended Solids – Not to exceed 25 mg/l total suspended solids or 10 mg/l volatile suspended solids at any time.

C. Effluent Standard C:

Five-day biochemical oxygen demand – Not to exceed 20 mg/l as an average of 5 consecutive samples or 40 mg/l at any time.

Suspended Solids – Not to exceed 50 mg/l total suspended solids or 20 mg/l volatile suspended solids at any time.

TABLE B

EXISTING INTERCEPTOR SEWERS

Facility	Type	Range in Size	Diversion Structures	Pump Station	Municipalities Served
ALCOSAN					
Allegheny River Interceptor					
North Shore (Junction with Mon. River Interceptor East to Bridge Street, Millvale)	San.	36"/60" Dia.	Yes	No	Pittsburgh (N.S.), Millvale, Girtys Run, Spring Gardens, City of Pittsburgh Nos. 17 and 18
North Shore (Fifth Street, Sharpsburg to Fairview Road, O'Hara Township)	San.	12"/30" Dia.	Yes	Yes	Aspinwall, Etna, Fox Chapel, Sharpsburg, Verona
South Shore (Point to Washington Blvd.)	San.	48"/72" Dia.	Yes	No	Part of Pittsburgh
Chartiers Creek Interceptor McKee Street, McKees Rocks Borough to Bridgeville Borough, South Fayette Township line	San.	24"/45" Dia. 2 Tunnels 54" Dia. at Scully Hill, Pittsburgh and Bridgeville	Yes	No	Bridgeville, Carnegie, Crafton, Greentree, Heidelberg, Ingram, McKees Rocks, Rosslyn Farms, Thornburg, Parts of Collier and Mt. Lebanon Townships, Scott Township, Upper St. Clair Township
Girtys Run Interceptor Intersection of Babcock Boulevard and Evergreen Road to tie in to Allegheny River Interceptor at Millvale	San.	8"/30" Dia.	Yes	No	West View, Reserve Township, Part of Ross and Shaler Townships
Lowries Run Interceptor From Brandt School Road and Ingomar Road, McCandless Township, South to tie in to Ohio River Interceptor at Emsworth Dam – Alcosan Interceptor	San.	8"/24" Dia.	No	No	Franklin Park, Kilbuck Township, Part of McCandless and Ross Townships

TABLE B (Continued)

EXISTING INTERCEPTOR SEWERS

Facility	Type	Range in Size	Diversion Structures	Pump Station	Municipalities Served
Monongahela River Interceptor	San.	54"/90" Dia.	Yes	No	
(Point to 11th Street, Braddock)					Pittsburgh (Point to 11th Street, Braddock, Baldwin, Part of Braddock Hills, Part of Brentwood, Part of Edgewood, Mt. Oliver, Munhall, Part of North Braddock, Rankin, Swissvale, Whitaker, Part of Whitehall
(Greenfield Avenue. Pgh. West to Homestead Borough line)	San.	24"/48" Dia.	Yes	No	Part of Pittsburgh, Homestead, West Homestead, Part of West Mifflin
Ohio River Interceptor	San.	114"/126" Dia.	Yes	No	
North Shore (Junction of Allegheny River and Monongahela River Interceptors West to Plant)					Pittsburgh (West of Point), Avalon, Bellvue, Ben Avon, Ben Avon Heights, Emsworth, Part of West View, Neville Township, Stowe Township
Plant to Emsworth	San.	30"/42" Dia.	Yes	No	
Pine Creek Interceptor	San.	8"/36" Dia.	Yes	No	
McCandless Township and Hampton Township boundary to tie in to Allegheny River Interceptor at Etna					Part of O'Hara Township and Shaler Township and Etna
Saw Mill Run Interceptor	Comb.	10"/48" Dia.	Yes	No	
From Route 51 in Brentwood Borough to connection to Interceptor at West End Bridge					Pittsburgh (Ohio River South to Dormont, Mt. Lebanon, Baldwin Lines), Part of Bethel Park and Baldwin Boroughs, Castle Shannon, Dormont, Part of Mt. Oliver and Whitehall Boroughs, Baldwin Township, Part of Mt. Lebanon Township

TABLE B (Continued)

EXISTING INTERCEPTOR SEWERS

Facility	Type	Range in Size	Diversion Structures	Pump Station	Municipalities Served
Turtle Creek Interceptor	San.	24"/54" Dia.	Yes	No	Braddock Hills (part), Chalfant, Churchill, East McKeesport, East Pittsburgh, Edgewood (Part), Forest Hills, Monroeville, Part of North Braddock and North Versailles, Pitcairn, Part of Trafford, Turtle Creek, Wall, Part of Wilkinsburg, Wilmerding, Wilkins Township
(From 11th Street, Braddock to Forbes Street, Trafford)					
Brush Creek Branch	San.	8"/10" Dia.			
Ohio River		1500'	No	No	
(South Shores)	San.	16"/24" Dia.	Yes	Yes - 2	
Corliss P.S. to Treatment Plant				Corliss and Ella Streets	
Fleming Park to Orchard Street (Stowe Township)	San.	8"/24" Dia.	Yes	No	
Allegheny Valley Joint Sanitary Authority	San.	12"/20" Dia.	No	Yes	Harmar Township, Cheswick, Springdale Township and Borough
Bethel Municipal Sanitary Authority	Comb.	8"/30" Dia.	Yes	Yes - 1	Bethel Park, Part of South Park Township
Clairton M.S.S.	Comb.	12"/18" Dia.	Yes	Yes - 1	Clairton
Coraopolis M.S.A.	Comb.	8"/30" Dia.	Yes	Yes - 1	Coraopolis
Crescent - South Heights M.A.	San.	10" Dia.	No	Yes - 3	Crescent
Dravosburg S.A. & M.S.S.	Comb.	10"/12" Dia.	Yes	Yes	Dravosburg
Duquesne M.S.S.	Comb.	12"/33" Dia.	Yes	No	Duquesne
Elizabeth S.A.	Comb.	14" C.I./16" C.I. Dia. 15" VCP/18" VCP	Yes	Yes	Elizabeth Borough, Forward Township, Lincoln Borough, Versailles Borough
Elizabeth Township M.S.A.	San.	12"/48" Dia.	No	Yes	Elizabeth Township, Forward Township, Lincoln Borough, Versailles Borough
Fawn Township	San.	8" Dia.	No	No	Fawn Township

TABLE B (Continued)

EXISTING INTERCEPTOR SEWERS

Facility	Type	Range in Size	Diversion Structures	Pump Station	Municipalities Served
Findlay Township	San.	8" Dia.	No	No	Findlay Township
Franklin Park	San.	Small units as listed on Sewage Treatment Plant Tile Drainage Field with short outfalls			Franklin Park
Glassport M.S.S.	San.	10"/21" Dia.	No	No	Glassport
Glenfield S.S.	San.	8"/12" Dia.	Yes	No	Glenfield
Indiana Township M.S.S.	San.	8"/10" Dia.	No	Yes	Indiana Township
Jefferson M.S.S.	San.	8" Dia.	No	Yes	Jefferson Borough
Pleasant Hills Plan					
Kennedy Township					
Clever Road Area	San.	8" Dia.	No	Yes	Kennedy Township
Diebold Road Area	San.	8" Dia.	No	Yes	
Leet Township	San.	12" Dia./24" Dia.	Yes	Yes	Leet Township
Leetsdale M.S.A.	Comb.	12" Dia./30" Dia.	Yes	Yes	Leetsdale
McCandless Township S.A.		8" Dia./15" Dia.			
A & B	San.	10" Dia.	No	Yes	McCandless Township
North Park (Skating Rink)	San.	18" Dia.	No	Yes	
McKeesport S.A.	San.	12"/54" Dia.	Yes	Yes	
Cliff Street	San.	18" Dia.	No	Yes	McKeesport, Port Vue Borough, Liberty Borough, Versailles Borough, Part of Elizabeth Township, White Oak Borough, North Versailles Township
Long Road	San.	8" Dia.	No	Yes	
28th Avenue	San.	18" Dia.	No	Yes	
Long Run Road	San.	8"/12" Dia.	No	Yes	
Youghiogheny	San.	21" Dia.	No	No	
Moon Township M.A.	San.	12" Dia.	No	Yes	Moon Township

TABLE B (Continued)

EXISTING INTERCEPTOR SEWERS

Facility	Type	Range in Size	Diversion Structures	Pump Station	Municipalities Served
Oakdale M.A.	San.	8"/20" Dia.	No	No	Oakdale
Oakmont M.S.S.	Comb.	12"/36" Dia.	Yes	No	Oakmont
O'Hara Township M.S.S.	Comb.	18"/24" Dia.	Yes	Yes	O'Hara Township
Penn Hills Township					Penn Hills Township
Plum Creek	San.	8"/27" Dia.	No	Yes	
Sandy Creek	San.	12"/24" Dia.	No	Yes	
Pleasant Hills M.A.	San.	21"/33" Dia.	No	Yes	Pleasant Hills Borough, Part of South Park Township
Plum M.S.S.	Comb.	12"/30" Dia.	Yes	No	Plum Borough
Reserve Township	San.	6"/12" Dia.	No	No	Reserve Township
Richland Township	San.	8"/12" Dia.	No	No	Richland Township
Robinson Township M.A.	San.	8"/10" Dia.	No	No	Robinson Township
Sewickley M.S.S.	Comb.	8"/18" Dia.	Yes	Yes	Sewickley Borough and Osborne Borough
South Fayette Township M.S.S.					
Mayview	Comb.	15" Dia.	Yes	Yes	South Fayette Township
South Park Township	San.	8"/15" Dia.	No	No	South Park Township
Springdale Township	San.	8::/10" Dia.	No	No	Springdale Township
U.A.J.S.A.	San.	12"/42" Dia.	No	Yes	Brackenridge, East Deer Township, Tarentum, Harrison Township

TABLE B (Continued)

EXISTING INTERCEPTOR SEWERS

Facility	Type	Range in Size	Diversion Structures	Pump Station	Municipalities Served
West Mifflin					West Mifflin Borough
Pleasant Hills Area	San.	10" Dia.	No	Yes	
Thompson Run	San.	12"/30" Dia.	No	Yes	
PAT Garage	San.	8" Dia.	No	Yes	
Fisher Body (GM)	San.	10"/12" Dia.	No	No	
Kenmahr	San.	8"/12" Dia.	No	No	
New England	San.	8"/12" Dia.	No	Yes	
Homeville	San.	24" Dia.	No	Yes	
Curry Hollow	San.	12" Dia.	No	Yes	
Homestead-DuKane Road	San.	12" Dia.	No	Yes	
Maryland Avenue	San.	12" Dia.	No	Yes	
Skyview Terrace	San.	8" Dia.	No	Yes	
Kenmore Place	San.	8"/12" Dia.	No	No	
Whitehall Borough	San.	8"/33" Dia.	No	Yes	Whitehall Borough
Wilkins Township	San.	8" Dia.	No	No	Wilkins Township
Wilkinsburg Borough	San.	12"/42" Dia.	No	Yes	Wilkinsburg Borough
North Versailles	San.	10"/18" Dia.	No	Yes	North Versailles

TABLE C

SEWAGE RATE SCHEDULE

Municipality	Tap-In Fees*		Assessments	Treatment Plant	Treatment Rates
	Residential	Commercial			
SECOND CLASS CITY					
Pittsburgh	Pittsburgh[2]	Pittsburgh[2]	Benefit	Alcosan	Alcosan[1]
THIRD CLASS CITIES					
Clairton	$5.00	$5.00	Benefit	Clairton	36¢/100 C.F. Water (Mon-Valley Water Corp.[3])
Duquesne	Meter Install.[4]	Meter Install.[4]	Benefit	Duquesne	Duquesne[4]
McKeesport	10.00	10.00	250/Unit in lieu of Front Foot Assessment	McKeesport	McKeesport[5]
BOROUGHS					
Aspinwall	35.00	35.00	None	Alcosan	Alcosan[1]
Avalon	None	None	Benefit	Alcosan	Alcosan[1]
Baldwin	50.00	50.00	Front Foot	Alcosan & Pleasant Hills S.A.	2.00/quarter + 50¢/1000 gal.
Bell Acres	———	———	———	———	No Municipal System
Bellevue	None	None	Benefit	Alcosan	Alcosan[1]
Ben Avon	None	None	Benefit	Alcosan	Alcosan[1]
Ben Avon Heights	None ($300 tap-in fee in lieu of FFA)	None	Benefit	Alcosan	Alcosan[1]
Bethel Park	100.00	100.00	Benefit	Bethel Park T.P. & Alcosan	Bethel Park T.P.[6] & Alcosan[1]
Blawnox	None	None	Front Foot	Alcosan	Alcosan[1]
Brackenridge	None	None	Front Foot	UAJSA	UAJSA[7]
Braddock	None	None	Front Foot	Alcosan	Alcosan[1]
Braddock Hills	60.00/unit	60.00/unit	Benefit	Alcosan	Alcosan[1]
Bradford Woods	———	———	Front Foot	———	No Municipal System
Brentwood	None	None	Benefit	Alcosan	Alcosan[1]
Bridgeville	5.00 ($150 Bond required if street is disturbed)	5.00	Front Foot	Alcosan	Alcosan[1]

TABLE C (Continued)

SEWAGE RATE SCHEDULE

Municipality	Tap-in Fees*		Assessments	Treatment Plant	Treatment Rates
	Residential	Commercial			
Boroughs (Continued)					
Carnegie	$25.00	$25.00	Benefit	Alcosan	Alcosan[1]
Castle Shannon	2.00 (Permit fee for Street Opening)	2.00	Benefit	Alcosan	Alcosan[1]
Chalfant	10.00	10.00	Front Foot	Alcosan	Alcosan[1]
Cheswick	None	None	Front Foot	Allegheny Valley Joint Sewage Auth.	AVJSA[8]
Churchill	8.00 $100 - Reflected Sewage Service Chgs.	100.00/25,000 C.F.	Front Foot	Alcosan	Alcosan[1] + 2.00 Delinquent Collection Fee
Coraopolis	15.00	15.00	Benefit	Coraopolis T.P.	Coraopolis[9]
Crafton	None	None	None	Alcosan	Alcosan[1]
Dormont	None	None	None	Alcosan	Alcosan[1]
Dravosburg	5.00	5.00	Benefit	Dravosburg	Dravosburg[10]
East McKeesport	475.00	475.00	None	Alcosan	Alcosan[1] + $.25/qtr. handling charge
East Pittsburgh	25.00	25.00	None	Alcosan	Alcosan[1]
Edgewood	None	None	Front Foot	Alcosan	Alcosan[1]
Edgeworth	100.00 ($500.00 on Camp Meeting)	100.00	Front Foot	Leetsdale M.A.	Leetsdale[11]
Elizabeth	$100/F.F.A.	$100/F.F.A.	None	Elizabeth T.P.	$11.15/qtr. for first 9000 – $0.683/1000 over 9000 gallon
Emsworth	None (300.00 tap-in-fee in lieu of F.F.A.)	None	Front Foot	Alcosan	Alcosan[1]
Etna	10.00 + $1/fixture ($100 tap-in-fee in lieu of F.F.A.)	10.00 + $1/fixture	Front Foot & Benefit	Alcosan	Alcosan[1]
Forest Hills	8.00	8.00	Benefit	Alcosan	Alcosan[1]
Fox Chapel	100.00	No. Comm. Establishment	Benefit	Alcosan Borough T.P.	Alcosan[1] Borough Plants[12] No. Sewage System
Franklin Park	---	---	---	---	No Municipal Sewage System

TABLE C (Continued)

SEWAGE RATE SCHEDULE

Municipality	Tap-in Fees*		Assessments	Treatment Plant	Treatment Rates
	Residential	Commercial			
Boroughs (Continued)					
Glassport	$25.00	$25.00	Benefit	Glassport	Glassport[13]
Glenfield	———	———	———	———	No Municipal System
Greentree	146.00	$146 + $5/Lav. or Urinal after 1st 2	None	Alcosan	Alcosan[1]
Haysville	———	———	———	———	No Municipal System
Heidelberg	None	None	Front Foot	Alcosan	Alcosan[1]
Homestead	20.00	20.00	Front Foot	Alcosan	Alcosan[1]
Ingram	None	None	Benefit	Alcosan	Alcosan[1]
Jefferson	50.00	50.00	Benefit	Pleasant Hills T.P. Jefferson Hills T.P.	$12/first 1000+60¢/1000 after 1000 (quarterly) $6.00/monthly
Leetsdale	None	None	Benefit	Leetsdale M.A.	Leetsdale[11]
Liberty	90.00	90.00	Benefit	McKeesport	6.60 Min. to 5000 gal.; 99¢/1000, next 10,000 gal.; 82.5¢/1000 next 10,000 gal.; 66¢/1000 over 25,000 gal.
Lincoln	No Sewer System — All Septic Tanks				
McKees Rocks	None	None	None	Alcosan	Alcosan[1]
Millvale	$10 + $1/fixture	$10 + $1/fixture	None	Alcosan	Alcosan[1]
Monroeville	626.00	Based on Water Consumption	None	Alcosan	Alcosan[1]
Mount Oliver	None	None	None	Alcosan	Alcosan[1]
Munhall	$100 Min. + $50/ living unit over 1	$150 + $50/ living unit equiv.	Benefit	Alcosan	Alcosan[1]
North Braddock	$1.00/F.F.	$1.00/F.F.	Benefit	Alcosan	Alcosan[1]
Oakdale	———	———	———	———	No Municipal System
Oakmont	75.00	75.00	Benefit	Oakmont Authority	80¢/1000 — Min. $5/qtr.
Osborne	None	None	Benefit	Sewickley S.T.P.	Paid by Borough Taxes

TABLE C (Continued)

SEWAGE RATE SCHEDULE

Municipality	Tap-in Fees*		Assessments	Treatment Plant	Treatment Rates
	Residential	Commercial			
Boroughs (Continued)					
Pitcairn	$650.00	$650.00	Benefit	Alcosan	Alcosan[1]+$1 Delinquent Collection Fee
Pleasant Hills	10.00	10.00	Benefit	Pleasant Hills S.A.	$50/yr. first 100,000 gallons $25/yr. each additional 50,000 gallons
Plum	450.00	450.00	None	4 Plants – Housing Developments	None
Port Vue Borough	None	None	Benefit	McKeesport	$5/qtr. Min. first 4,000 Over 4,000 gallons 70¢/1000
Rankin	$1/F.F.	$1/F.F.	None	Alcosan	Alcosan[1]
Rosslyn Farms	None	None	None	Alcosan	Alcosan[1]
Sewickley	50.00	50.00	Benefit	Sewickley S.T.P.	130% of water consumption rate
Sewickley Heights	———	———	———	———	No Municipal System
Sewickley Hills	———	———	———	———	No Municipal System
Sharpsburg	None	None	Benefit	Alcosan	Alcosan[1]
Springdale	150.00	150.00	Front Foot & Benefit	AVJSA	AVJSA[8]
Swissvale	5.00	5.00	Benefit	Alcosan	Alcosan[1]
Tarentum	20.00	20.00	Front Foot	UAJSA	UAJSA[7]
Thornburg	None	None	None	Alcosan	Alcosan[1]
Trafford	100.00	100.00	Benefit	Alcosan	Alcosan[1]
Turtle Creek	None	None	None	Alcosan	Alcosan[1]
Verona	None	None	None	Alcosan	Alcosan[1]
Versailles	$255 over 5 years or $216 lump sum	Based on water consumption	None	McKeesport	McKeesport[5]
Wall	None	None		Alcosan	Alcosan[1]
West Elizabeth	None (Sewage lines being financed through general taxation)	None	None	None	None – Plant being built in 1970
West Homestead	None (Sewage lines being financed through general taxation)	None	None	Alcosan	Alcosan[1]

TABLE C (Continued)

SEWAGE RATE SCHEDULE

Municipality	Tap-In Fees*		Assessments	Treatment Plant	Treatment Rates
	Residential	Commercial			
Boroughs (Continued)					
West Mifflin	$300.00	$300 first 2 outlets $50 each after 2 Westinghouse Bettis – Special Compromise Lump Sum	Benefit	Alcosan	Alcosan[1]
West View	None	None	Benefit	Alcosan	Alcosan[1]
Whitaker	5.00	5.00	Benefit	Alcosan	Alcosan[1]
Whitehall Borough	225.00 fee in lieu of front foot assess.	225.00 fee in lieu of front foot assess.	None	Alcosan & Pleasant Hills	Alcosan[1], Pleasant Hills
White Oak	200.00	200.00	Benefit	McKeesport	Min. 7.36 to 6,000 gal/qtr. 96¢ 1000 all over 6,000 (Based on water consumption) Flat rate of 17.10 for well users
Wilkinsburg	25.00	25.00	None	Alcosan	Alcosan[1]
Wilmerding	None	None	None	Alcosan	Alcosan[1]
FIRST CLASS TOWNSHIPS					
Aleppo	---	---	---	---	No Municipal System
Baldwin	None	300.00	None	Alcosan	Alcosan[1]
Collier	25.00	25.00	Benefit	Alcosan	$0.80/1000 or 5.00/quarter Minimum
Crescent	100.00	100.00	Front Foot	Crescent	$23.00/quarter
East Deer	75.00	75.00	Front Foot	UAJSA	UAJSA[7]
Elizabeth	81.00	$75 1st unit; $50 each additional unit. Max. $225	Benefit	McKeesport, Elizabeth Borough, Elizabeth Township	$24.95 Min/qtr. for first 9,000 over 9,000 gal. $.60/1000
Harrison	$2.00 permit ($50 fee in lieu of F.F.A.)	$2.00 permit	None	UAJSA	UAJSA[7]
Kennedy	160.00	160.00	Front Foot based on Contract Cost	Herbst Manor (Frank Zappola) Alcosan (Part)	$7.00 per month $.40/1000 or 4.00/qtr. Minimum
Leet	100.00	100.00	Benefit	Leetsdale M.A.	Leet[14]
McCandless	125.00	$100 + $25/unit 1 unit = 25,000 gal/qtr.	Benefit	McCandless S.A.	McCandless[15]

TABLE C (Continued)

SEWAGE RATE SCHEDULE

Municipality	Tap-in Fees*		Assessments	Treatment Plant	Treatment Rates
	Residential	Commercial			
First Class Townships (Continued)					
Mt. Lebanon	$5.00	$5.00	None	Alcosan	Alcosan[1]
Neville	Neville[21]	Neville[21]	Benefit	Alcosan	Neville[18]
North Versailles	$100.00	$200/unit	Front Foot	McKeesport Alcosan	McKeesport – 8.80 Min. & 1.10/1000 over 7,000 gal; 4.66 Min. / .60/1000 over 7,000 gallons. 8.32 Min. & $1/1000 gal. over 8,000 gallons; 4.17 Min. & .50/1000 gal. over 8,000 gallons
O'Hara	75.00	$75/unit (5 Emp. = 1 unit)	Benefit	Alcosan	O'Hara Rates[19]
Penn Hills	10.00	10.80	Front Foot	Alcosan Township Plants	Alcosan[1] Penn Hills[20]
Reserve	None	None	Benefit	Alcosan	Alcosan[1]
Robinson	75.00	75.00	Benefit	Coraopolis T.P.	11.75/qtr. for first 5000 gallons; $2.35/1000 after first cost
Ross	5.00 ($200 + $20/fixture over 10 – tap-in fee in lieu of a B.A.)	5.00	Benefit	Alcosan	Alcosan[1]
Scott	None	None	None	Alcosan	Alcosan[1]
Shaler	None	None	Benefit	Alcosan	Alcosan[1]
South Fayette	———	———	———	———	No Municipal System
South Versailles	None	None	None	None	None
Springdale	55.00	55.00	Front Foot	AVJSA	AVJSA[8]
Stowe	None	None	Benefit	Alcosan	Alcosan[1]
Upper St. Clair	82.50	82.50	Benefit	Alcosan	Alcosan[1] + $1/account to cover Administrative costs
Wilkins	$100/unit (1 unit = 25,000 C.F.)	$100/unit	Benefit	Alcosan	Alcosan[1]

TABLE C (Continued)

SEWAGE RATE SCHEDULE

Municipality	Tap-in Fees*		Assessments	Treatment Plant	Treatment Rates
	Residential	Commercial			
SECOND CLASS TOWNSHIPS					
Fawn	———	———	———	———	No Sewerage System
Findlay	———	———	———	———	No Municipal System
Forward	$75.00	$75.00	Front Foot	Elizabeth Borough	Double Water Bill + $5/qtr. (Mon. Valley Water Corp.[3] applies)
Frazer	———	———	———	———	No Municipal System
Hampton	300.00	No Comm. in Township systems	Benefit	22 Treatment Plants	Hampton[16]
Harmar	$100 Harmar Heights Area $150 Guys Run Area		Front Foot	AVJSA	AVJSA[8]
Indiana	175.00	175.00	None	Indiana Township T. P.	$11/year
Kilbuck	———	———	———	———	No Municipal System
Marshall	———	———	———	———	No Municipal System
Moon	100.00	$100/unit	Benefit	Moon Township Municipal Authority	Moon[17]
North Fayette	650.00	650.00	None	Glen Gormley T.P. Hankey Farms T.P.	12.75 flat rate — both plants
Ohio	———	———	———	———	No Municipal System
Pine	———	———	———	———	No Municipal System
Richland	$300 minimum	$300 minimum	Benefit	Richland Twp. S.A.	Richland[21]
South Park	30.00	30.00	Benefit	Pleasant Hills & Bethel Borough S.A. Bethel Borough S.A.	$4/qtr. Min. first 1000 gallons; next 1000 gallons $2.15 2000-5000 — $1.45/1000; over 5000 — $0.80/1000
West Deer	None	None	Benefit	Russmont Plan	Flat Rate $3.00/month

GENERAL NOTES AND RATES (Table C)

* The Tap-In-Fees include the Plumbing Inspectors Fees in all cases.

** Benefit Assessments are handled by the Allegheny County Board of Viewers; Front-Footage Assessments are handled by Municipal Officials. Either one of these assessments can be charged a property owner, but not both.

*** Unless otherwise indicated, the volume of sewage treated is taken as being equal to 100% of metered water consumption.

1. Allegheny County Sanitary Authority Treatment Rates

(A) General Rates – For Sewage Service to sewered premises within the Sanitary Authority's Primary Service Area.

Water Used – 1/4 Year		Sewage Charge
For First	100,000 Gal.	30 cents per 1000 Gal.
For Next	1,000,000 Gal.	25 cents per 1000 Gal.
For Next	2,500,000 Gal.	20 cents per 1000 Gal.
For Excess Over	3,600,000 Gal.	15 cents per 1000 Gal.

Add: Extra Rate for Garbage Grinders

Household Garbage Grinders	$1.50/1/4 Year
Commercial Garbage Grinders	$25.00/1/4 Year

Minimum Charge – $2.50/1/4 Year

(B) Upper Allegheny Zone 1 Rates

(Allegheny County Workhouse, Blawnox Borough, and the Squaw Run Drainage Area of O'Hara Township)

Water Used – 1/4 Year		Sewage Charge
For First	100,000 Gal.	70 cents per 1000 Gal.
For Next	1,000,000 Gal.	60 cents per 1000 Gal.
For Next	2,500,000 Gal.	50 cents per 1000 Gal.
For Excess Over	3,600,000 Gal.	35 cents per 1000 Gal.

Minimum Charge – $5.00/1/4 Year

(C) Upper Allegheny Zone 2 Rates

(Powers Run Drainage Area of O'Hara Township)

Lump Sum Charge – $18.00/1/4 Year

(D) Upper Allegheny Zone 3 Rates

(Verona Borough and the adjacent portion of Penn Hills Borough)

Water Used – 1/4 Year		Sewage Charge
For First	100,000 Gal.	80 cents per 1000 Gal.
For Next	1,000,000 Gal.	65 cents per 1000 Gal.
For Next	2,500,000 Gal.	50 cents per 1000 Gal.
For Excess Over	3,600,000 Gal.	40 cents per 1000 Gal.

Minimum Charge – $5.00/1/4 Year

(E) Special Surcharges to Commercial and Industrial Users – Based on ALCOSAN Formulae, Special Surcharges are assessed Commercial and Industrial Water users whose wastes have an unusually high concentration of suspended solids or biochemical oxygen demand or an unusually high chlorine demand.

2. Pittsburgh Tap-In Fees

	Residential	Commercial
3/4"	$15.00	$30 to $250 Depending on size of Tee connection to water main.
1"	20.00	

3. Monongahela Valley Water Corporation Rate Schedule

Meter Rates – (Meters to be read monthly or quarterly at the option of the company)

Minimum Charge – (Based on 9000 Gal./Qtr.)

For 1/2" or 5/8" Meter	$ 2.05/Mo.	$ 6.15/Qtr.
For 3/4" Meter	4.60/Mo.	13.80/Qtr.
For 1" Meter	8.20/Mo.	24.60/Qtr.
For 1-1/2" Meter	18.47/Mo.	55.41/Qtr.
For 2" Meter	32.84 Mo.	98.52/Qtr.
For 3" Meter	73.89/Mo.	221.67/Qtr.
For 4" Meter	131.35/Mo.	394.05/Qtr.
For 6" Meter	295.56/Mo.	886.68/Qtr.

Minimum Charge to 1 fixture through 1/2" or 5/8" meter is $1.53/Mo. or $4.59/Qtr.

Consumption Charges – Based on above minimum charges

For First	150,000 Gal./Qtr.	$0.683/1000 Gal.
For Next	150,000 Gal./Qtr.	0.60 /1000 Gal.
For Next	150,000 Gal./Qtr.	0.47 /1000 Gal.

3. Continued

For Next	450,000 Gal./Qtr.	0.34 /1000 Gal.
For Next	600,000 Gal./Qtr.	0.255/1000 Gal.
For Next	1,500,000 Gal./Qtr.	0.213/1000 Gal.
For in excess of	3,000,000 Gal./Qtr.	0.171/1000 Gal.

4. Duquesne (Water and Sewage figured on one (1) bill)

Minimum (Monthly Rate Only)

$0.75 for Water + $1.80 for Sewage for first 1000 Gal.
$0.60 for Water + 1.80 for Sewage for next 1000 Gal.
$0.60 for Water + 0.60 for Sewage for all over 2000 Gal.

Meter Installation Rates

Outside Meter – $65.50 to $78.00 (Based on width and composition of street)
Inside Meter – 5/8" to 3/4" connection – $7.50
Boxes - 3/4" – $40.00
1" – $50.00
Street Permit (Opening and Repairs) – $21.00

5. McKeesport

$3.00/Qtr. – Minimum for residential establishments. Covers Treatment Costs for first 900 Cu. Ft.
Next 99,100 Cu. Ft. – $0.32/100 Cu. Ft.
Over 100,000 Cu. Ft. – 0.27/100 Cu. Ft.
Unmetered Rate – (Water Supply from wells) – $6.25/Qtr.

6. Bethel Borough Sewage Treatment Rates

Water Used – 1/4 Year	Rate – 1000 Gal./1/4 Year
0 – 1000 Gal.	$10.50
1000 – 100,000 Gal.	0.30
All over – 100,000 Gal.	0.28

Rental Charges (Monthly Rate Based on Quarterly Estimate)

Water Used – 1/4 Year	Monthly Payment
0 – 1000	$ 4.50
1001 – 2000	4.75
2001 – 6000	5.00
6001 – 10,000	5.50
10,001 – 20,000	7.00
20,001 – 30,000	8.00
30,001 – 40,000	9.00

6. Continued

40,001 – 60,000	11.00
60,001 – 80,000	13.00
80,001 – 100,000	15.00
Over 100,000	Computed on each Consumers' average monthly usage.

7. Upper Allegheny Joint Sanitary Authority (Paid Quarterly – No Minimum)

Residential		Commercial	
0 – 9,000	$9.45	0 – 18,000	$18.90
9000 – 30,000	.45/1000	18,000 – 60,000	.90/1000
30,000 – 60,000	.41/1000	60,000 – 120,000	.82/1000
60,000 – 90,000	.36/1000	120,000 – 180,000	.72/1000
90,000 – 300,000	.32/1000	180,000 – 600,000	.64/1000

8. Allegheny Valley Joint Sewage Authority

Minimum – $9.00/Qtr. for first 6000 Gal. (Quarterly)

6,000 – 15,000	$1.30/1000
15,000 – 50,000	1.05/1000
50,000 – 150,000	0.85/1000
Over 150,000 Gal.	0.65/1000

9. Coraopolis

Minimum – $14.40/Qtr./Dwelling Unit
Minimum – 3.12/Annum/Employee in manufacturing and commercial
Minimum – 1.55/Annum/Pupil and Staff in Schools

10. Dravosburg (Based on water usage/Qtr.)

0 – 700	Cu. Ft.	$1.40/Cu. Ft.
701 – 1000	Cu. Ft.	1.10/Cu. Ft.
1001 – 1500	Cu. Ft.	1.00/Cu. Ft.
1501 – 2000	Cu. Ft.	.95/Cu. Ft.
2001 – 2500	Cu. Ft.	.90/Cu. Ft.
2501 – 3000	Cu. Ft.	.85/Cu. Ft.
3001 – 4000	Cu. Ft.	.82/Cu. Ft.
4001 – 5000	Cu. Ft.	.79/Cu. Ft.
5001 – 7000	Cu. Ft.	.76/Cu. Ft.
7001 – 10,000	Cu. Ft.	.72/Cu. Ft.
10,001 – 15,000	Cu. Ft.	.68/Cu. Ft.
15,001 – 30,000	Cu. Ft.	.66/Cu. Ft.
All over 30,000	Cu. Ft.	.60/Cu. Ft.

11. Leetsdale

Edgeworth — Quarterly Rate (40% paid by customer and 60% paid by taxes)

Minimum — $13.60 for First 9000 Gal.

9,000 — 39,000 Gal.	— $0.60/1000
39,000 — 150,000 Gal.	— 0.55/1000
150,000 and over	— 0.50/1000

Leetsdale — Quarterly

Minimum — $11.90 for first 9000 Gal.

9,000 — 39,000 Gal.	— $0.60/1000
39,000 — 150,000 Gal.	— 0.55/1000
Over 150,000 Gallons	— 0.50/1000

12. Fox Chapel (Quarterly)

First 100,000 Gallons	$0.42/1000
Next 1,000,000 Gallons	0.37/1000
Next 2,500,000 Gallons	0.32/1000
Over 3,600,000 Gallons	0.27/1000

13. Glassport

Rate/Qtr. — $12.00

Residential

3 Toilets
2 Sinks
2 Shower Stalls
1 Waste Drain
1 Automatic Washer

Rate/Qtr. — $16.50

Commercial "B"

2 Toilets
2 Sinks
2 Drinking Fountains
3 Waste Drains

Garbage Grinder — $2.00/Qtr.

14. Leet Township (Quarterly)

First 15,000 Gal. $16.50

Commercial "A"

1 Toilet
1 Sink
1 Drinking Fountain
2 Waste Drains

Churches and Schools

12 Toilets
12 Sinks
12 Urinals
6 Drinking Fountains
6 Slop Sinks
6 Waste Drains

14. Continued

15,000 — 18,000 Gal.	1.00/1000
18,000 — 50,000 Gal.	.75/1000
50,000 — 100,000 Gal.	.65/1000
100,000 — 200,000 Gal.	.50/1000

15. McCandless Township

Quarterly Rates for Customers with Public Water

0 — 12,000 Gal.	$18.60 Min.
12,000 — 15,000 Gal.	.90/1000
15,000 — 50,000 Gal.	.63/1000
50,000 — 100,000 Gal.	.54/1000
Over 100,000 Gallons	.45/1000

Monthly Rates for Customers with Well Water Supply (Rates based on fixture assessment)

Minimum — $6.20/Month

Assessment Scale

1 Kitchen Sink 1 Bath Tub 1 Water Closet 1 Wash Basin 1 Washer 1 Laundry Tub	$0.90 for First Fixture 0.45 for Additional Fixture
Floor Drains	$0.60 for First; $0.30 Ea. Add'l.
Shower Head	0.54 for First; 0.27 Ea. Add'l.
Urinal	0.54 for First; 0.27 Ea. Add'l.
Dish Washer	0.54 for First; 0.27 Ea. Add'l.
Garbage Grinder	1.60 Each

16. Hampton (Quarterly)

First 10,000 Gal.	$0.75/1000
10,000 — 18,000 Gal.	0.40/1000
Over 18,000 Gal.	0.30/1000

17. Moon Township (Quarterly)

Residential

First 12,000 Gal.	$14.10
Next 12,000 Gal.	.47/1000
Over 24,000 Gal.	.29/1000

17. Continued

Commercial (Monthly)

First 4,000 Gal.	$4.70
Next 4,000 Gal.	1.24/1000
Next 8,000 Gal.	1.08/1000
Next 16,000 Gal.	.94/1000
Over 32,000 Gal.	.855/1000

18. Neville

Residents – (Quarterly)

0 – 7,000	$3.50 Minimum
7,000 – 40,000	.50/1000
40,000 – 100,000	.45/1000
Over 100,000 Gal.	.40/1000

Commercial – (Quarterly)

0 – 8,000	$4.00 Minimum
8,000 – 35,000	.45/1000
35,000 – 100,000	.37/1000
100,000 – 1,000,000	.29/1000
Over 1,000,000	.28/1000

Tap-In Fees

4" to 6" Sewer	$50.00
8" to 10" Sewer	75.00
Over 10" Sewer	100.00

19. O'Hara Township (Quarterly)

Minimum $5.75 for first 5000 Gal.
Over 5000 Gal. – $0.65/1000 Gal.

Commercial Garbage Grinder – $45.00/Qtr.
Residential Garbage Grinder – 2.00/Qtr.

20. Penn Hills Township

Those tied into Alcosan Treatment Plant pay Alcosan Treatment Rates (2).
All others:
Residential – One time payment of $200
Commercial – $200 + $17.50/fixture over minimum number of fixtures as established for a residence by Plumbing Code.

Wash Racks at Service Stations – $100 Additional

21. Richland (Monthly)

Residential	First Fixture	Ea. Additional
Toilet	$1.00	$ .50
Lavatory	1.00	.25
Bathtub (with or without shower)	1.00	.25
Separate Shower	1.00	.25
Kitchen Sink (Single or Double)	1.00	.25
Each Bedroom	.50	
Garbage Disposer	3.00	3.00
Dishwasher	.50	.50
Floor Drain	.25	.25
Laundry Tub (Single or Double)	.50	.50
Urinal	.50	.25
Bidet	.50	.25
Footbath	.50	.25
Slop, Janitor's or Miscellaneous	.50	.25

Basic Living Unit – $4.00 (includes one toilet, one lavatory, one bathtub as above or one shower stall, and one kitchen sink)

Converted Residence shall pay the basic rate for each family living therein.

House Trailers shall pay the basic rate plus $.25/Mo./Person.

Commercial

	Rate/Mo./Fixture
Toilet	$2.00
Toilet in Restaurant or Automobile Service Station	4.00
Lavatory	2.00
Lavatory in Restaurant or Automobile Service Station	4.00
Urinal	2.00
Shower	2.00
Drinking Fountain	.50
Floor Drain	1.00
Floor Drain in Garage or Service Station (must have grease trap)	3.00
Car Washing Drain (must have sand trap followed by grease trap)	4.00
Shampoo Basin	2.00
Soda Fountain	3.00
Refrigerated Cabinets with Defrosting Connection	1.00
Refrigerated Cabinets or Coolers with Water-cooled Compressors	4.00
Air Conditioner with Water Cooled Compressor	4.00
Utility or Janitor Sink	$1.00
Dental Chair	2.00
Whirlpool Equipment	1.00

21. Continued

Colonic Irrigation Equipment	2.00
Photographer's Darkroom	3.00
Beer Cooler	1.00
Under Bar Sink	3.00
Beer Drain	1.00
Kitchen Sink	4.00
Dishwasher	4.00
Steam Table	1.00
Garbage Grinder	20.00

Hotels and Motels

Per Sleeping Room (Kitchens, Bars, and public toilet rooms as above)	3.00

Schools

(Per each Pupil, Teacher, or Other Employee)	.20

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

August 23, 2016

Ms. Monica Glowinski, President
Elizabeth Borough Council
206 Third Avenue
Elizabeth, PA 15037

Re: Approval Letter – Official Plan Update Revision
Act 537 Planning
EBMA Pump Station Improvements
DEP Code No. 0281716-100
Elizabeth Borough
Allegheny County

Dear Ms. Glowinski:

The Department of Environmental Protection (DEP) has reviewed the proposed Official Plan Update, dated February 26, 2016 with revisions submitted July 18, 2016, prepared by Senate Engineers, and entitled Act 537 Special Study for Pump Station Improvements. The submission is consistent with the planning requirements in Chapter 71 of DEP's regulations.

The plan provides for relocation of the existing Elizabeth Borough pump station and tributary interceptors. The existing pump station, constructed in 1958, is in need of critical repairs and is prone to flooding. Concurrent with this Act 537 Special Study, the Borough is also preparing a Long Term Control Plan to address the combined sewer overflows (CSO) in the system. This Act 537 Special Study provides for replacement of the pump station at the same capacity as the existing station but with provisions for increasing the pumping capacity once future flows are established in the pending Long Term Control Plan (LTCP). Since flow evaluations are completed for the LTCP, some aspects of the station not easily modified would be sized for the anticipated flows. Once the LTCP is approved, the Borough will submit an Act 537 Plan to complement the LTCP and address the other issues in the system.

The plan is approved with the following comments:

1. The approved project will require a Water Quality Management (Part II) permit for the construction and operation of the proposed sewage facilities. The permit application must be submitted in the name of the municipality or authority, as appropriate. Issuance of a Part II permit will be based upon a technical evaluation of the permit application and supporting documentation. Starting construction prior to obtaining a Part II permit is a violation of the Pennsylvania Clean Streams Law (CSL). The Part II permit application can be obtained from DEP's Clean Water Program at 412.442.4038 or downloaded from the Internet at www.elibrary.dep.state.pa.us/dsweb/HomePage

2. Other DEP permits may be required for construction if encroachment to streams or wetlands will result. Information regarding the requirements for such permits or approvals can be obtained from DEP's Waterways and Wetlands Program at 412.442.4315

As required by regulation, 25 Pa Code 71.41, the Department will administer grants to municipalities, counties and authorities for preparing update revisions and special studies to the **extent of the appropriations made by the General Assembly for that purpose**. Over the past few years, each budget that was passed cut the amount of the appropriations for this program. As required by regulation, 25 Pa Code 71.43(b), the Department will pay grants to applicants on administratively complete applications in the order in which the application was received. Grant amounts are based on 50% of eligible sewage facilities planning costs. You are reminded that reimbursement applications must show detailed cost breakdowns of tasks completed or you will place your reimbursement in jeopardy.

Please be advised the approval of this scope of work is not a guarantee of eligibility of planning costs for reimbursement by the Commonwealth pursuant to Section 6 (a) of Act 537 and 25 Pa Code Chapter 71 of the Department's regulations.

In addition, Act 13 of 2012 established the Marcellus Legacy Fund that allocates funds to the Commonwealth Financing Authority (CFA). Because funding for Act 537 planning grants has been severely reduced, you are encouraged to apply for a grant thru the CFA for planning costs associated with Act 537, Pennsylvania Sewage Facilities Act. Grants awarded to applicants from CFA funding may reimburse up to 50 percent of eligible costs, not to exceed $100,000. To be eligible for this funding, work related to these planning activities must have occurred after February 14, 2012. Information regarding the CFA funding program and how to apply is available at: http://www.newpa.com/find-and-apply-for-funding/funding-and-program-finder/sewage-facilities-program

Any person aggrieved by this action may appeal, pursuant to Section 4 of the Environmental Hearing Board Act, 35 P.S. Section 7514, and the Administrative Agency Law, 2 Pa. C.S. Chapter 5A, to the Environmental Hearing Board, Second Floor, Rachel Carson State Office Building, 400 Market Street, P.O. Box 8457, Harrisburg, PA 17105-8457, 717.787.3483. TDD users may contact the Board through the Pennsylvania Relay Service, 800.654.5984. Appeals must be filed with the Environmental Hearing Board within 30 days of receipt of written notice of this action unless the appropriate statute provides a different time period. Copies of the appeal form and the Board's rules of practice and procedure may be obtained from the Board. The appeal form and the Board's rules of practice and procedure are also available in braille or on

audiotape from the Secretary to the Board at 717.787.3483. This paragraph does not, in and of itself, create any right of appeal beyond that permitted by applicable statutes and decisional law.

IF YOU WANT TO CHALLENGE THIS ACTION, YOUR APPEAL MUST REACH THE BOARD WITHIN 30 DAYS. YOU DO NOT NEED A LAWYER TO FILE AN APPEAL WITH THE BOARD.

IMPORTANT LEGAL RIGHTS ARE AT STAKE, HOWEVER, SO YOU SHOULD SHOW THIS DOCUMENT TO A LAWYER AT ONCE. IF YOU CANNOT AFFORD A LAWYER, YOU MAY QUALIFY FOR FREE PRO BONO REPRESENTATION. CALL THE SECRETARY TO THE BOARD (717.787.3483) FOR MORE INFORMATION.

If you have any questions or concerns, please contact Emily Shade of my staff at 724.769.1055 or eshade@pa.gov.

Sincerely,

Donald Leone
Planning Chief
Clean Water Program

cc: Senate Engineering Company
Allegheny County Health Department
Elizabeth Borough Municipal Authority

bcc: Emily Shade
Regional Files
537 Files

Senate Engineering Company
Mr. Rick Barnett, P.E.
U PARC
420 William Pitt Way
Pittsburgh, PA 15238-1330

Allegheny County Health Department
Mr. Mike Scherer
Frank B. Clack Health Center, Bldg #5
3901 Penn Avenue
Pittsburgh, PA 15224-1347

Elizabeth Borough Municipal Authority
1 Locust Street
Elizabeth, PA 15037

ELIZABETH BOROUGH MUNICIPAL AUTHORITY

ACT 537 SEWAGE FACILITIES PLAN UPDATE
SPECIAL STUDY
FOR
EBMA PUMP STATION IMPROVEMENTS

November 2015

Prepared by:

Senate Engineering
420 William Pitt Way
Pittsburgh, PA 15238

ELIZABETH BOROUGH MUNICIPAL AUTHORITY
ACT 537 SEWAGE FACILITIES PLAN UPDATE
SPECIAL STUDY
FOR
EBMA PUMP STATION IMPROVEMENTS

TABLE OF CONTENTS

Executive Summary i
1.0 Background 1
2.0 Previous Wastewater Planning 2
3.0 Existing Sewage Facilities 2
4.0 Existing and Projected Flows 4
5.0 Alternatives 4
6.0 Economic Evaluation 9
7.0 Institutional Evaluation 10
8.0 Conclusions and Recommendations 11
9.0 Consistency Determination 11
10.0 PENNVEST Requirements 13

Tables
Table 6.1 – Cost Estimate Summary
Table 6.2 – Funding Options

Appendices
Appendix A – EBMA Collection System Map
Appendix B – Existing Pump Station As-Built Drawings
Appendix C – FEMA Flood Plain Map
Appendix D – Pump Station Flows
Appendix E – Alternative Site Plans
Appendix F – Economic Analysis
Appendix G – Soil and Zoning Maps
Appendix H – Wetland Determination
Appendix I – PNDI Receipt
Appendix J – Record of Disturbance Form
Appendix K – Public Comment and Response

Attachment A – Environmental Report

Executive Summary

The Elizabeth Borough Municipal Authority (EBMA) owns and operates a combined sewer system and wastewater treatment plant that provides service to approximately 2,200 customers in Elizabeth Borough, Forward Township, Elizabeth Township, and Lincoln Borough. The EBMA pump station, located in the Borough at the junction of Fallen Timber Creek and the Monongahela River was constructed in the 1950s as part of the original sewage collection system and WWTP. The pump station has reached its useful service life and must either be replaced or upgraded to provide reliable operations and comply with codes and safety standards.

Currently, EBMA is working with the Department of Environmental Protection and the Allegheny County Health Department to develop and implement a Long Term Control Plan (LTCP) to address combined sewer overflows in the EBMA collection system. Having completed flow evaluation studies and hydraulic modeling, it is expected that significant collection system and WWTP improvements will be needed. Under normal circumstances, the pump station replacement would occur as part of the LTCP implementation however, the ongoing maintenance requirements, unreliable operation and deterioration of the existing pump station requires that action be taken as soon as possible.

This Act 537 Special Study is intended to plan for the upgrade of the existing pump station or replacement with a new facility having the same pumping capacity as the existing pump station, but with provisions for increasing the pumping capacity once future flows are estimated and approved under the LTCP.

Several alternatives were considered including upgrading/reconstructing the existing pump station at the current location, constructing a new pump station at 2 alternative locations, and the no-action alternative. The no action alternative was not deemed feasible because it did not meet the project goals of accessibility and providing improved solids and grit removal.

The Act 537 Special Study recommended a project that would construct a new pump station on a property several hundred feet east of the existing pump station on property currently owned by Consol Energy. The proposed pump station would include a headworks to provide screening and grit removal before flow is pumped to the existing WWTP. The new pump station would maintain the same pumping

capacity as the existing pump station however, several components of the pump station that effect the hydraulic capacity that cannot be easily modified, such as the headworks channel dimensions and wet well capacity would be sized to handle the anticipated wet weather flow as required by the LTCP.

The proposed alternative has an estimated construction cost of $5,070,000. EBMA currently has approximately $2,500,000 in available bond revenue that would be applied to the project and it is expected that additional bonds would be used to finance the remaining $2,570,000 of the proposed project. The additional debt service from the project is expected to require a $6 user fee increase resulting in a 15% increase of the average monthly user fee. The average monthly user fee after the project is in service would be approximately $45.

1.0 Background

The Elizabeth Borough Municipal Authority (EBMA) owns and operates a combined sewer system and a 1.2 MGD wastewater treatment plant (WWTP) that provides service to a total of approximately 2,200 customers in Elizabeth Borough, Forward Township, Elizabeth Township, and Lincoln Borough. The sewage collection systems in Forward Township, Elizabeth Township, and Lincoln Borough are separate sanitary sewer systems. Flow enters the WWTP influent channel by way of either the Wiley Pump Station force main or the EBMA Pump Station force main. The Wiley pump station is owned and operated by the Elizabeth Township Authority. No flow is conveyed directly to the WWTP by gravity.

The focus of this study will be the EBMA pump station which accepts gravity flow from Elizabeth Borough, Forward Township, and portions of the Elizabeth Township collection systems. See Appendix A for a map of the EBMA collection system and pump station location.

The existing EBMA pump station was constructed and placed into operation in 1958. The pump station was upgraded in 1990 with new pumps and controls and again in 2002 with the installation of a comminutor. The facility has reached its useful service life and is in need of significant repairs or replacement to provide reliable service. The pump station has limited grit removal equipment but no screening. The electrical and controls systems are outdated, difficult to find replacement components and may not meet safety and code requirements. In addition, the area around the pump station during heavy wet weather events is prone to flooding and access to the pump station is limited to boat access during those times.

The EBMA is currently in the process of developing a Long Term Control Plan (LTCP) to reduce combined sewer overflows (CSOs) within the combined portions of the collection system. It is expected that significant collection system and WWTP modifications will be required within the next ten years as part of the LTCP. The poor and unreliable condition of the pump station however requires that, within the next few years, either costly repairs must be made to extend the life of the existing pump station or a new structure needs to be constructed. Since the EBMA pump station is a critical component of the regional sewer infrastructure time is of the essence to provide significant improvements to or replacement of the facility.

2.0 Previous Wastewater Planning

Previous Act 537 planning for the area is limited. No official sewage facility plan was identified exclusively for the Elizabeth Borough area. Though other Act 537 Plans may have been completed by the contributing municipalities, only two studies impact the planning area considered in this Special Study.

Forward Township completed a Wastewater Feasibility Study in the early 1990s which identified two planning areas. The first area includes the Route 51 corridor and the second was located near the center of the Township. The Feasibility Study concluded that sewage from the route 51 Corridor Area should flow into the EBMA WWTP and the area in the center of Forward Township should utilize a new package treatment plant.

An Act 537 Plan Update completed by Elizabeth Township in 1995 proposed the Fallen Timber sewer extension to collect flow from the area identified in the Forward Township Feasibility Study and portions of Elizabeth Township also located along the Route 51 Corridor. This line was constructed in 1997.

Another Act 537 Plan Update completed by the former Elizabeth Township Sanitary Authority had considered a project to construct a new interceptor line along Wylie Run (Lovedale Road) to eliminate the Lovedale Pump Station and convey sewage by gravity to the Wylie Run pump station. This proposal received planning approval in 2005 from PA DEP but has not been constructed. While this project could convey additional flow to the EBMA WWTP it would not be conveyed through the EBMA pump station.

3.0 Existing Sewage Facilities

The EBMA pump station, located at the junction of the Monongahela River and Fallen Timber Creek, receives gravity flow from Elizabeth Borough, Forward Township, and portions of Elizabeth Township. Three sewer lines enter the pump station: the 18-inch dia Borough Interceptor; the 10-inch dia Fallen Timber line; and a combined sewer gravity line from Sewershed 3. Both the Interceptor and Sewershed 3 collect flow from combined sewer systems while the Fallen Timber line is a separate sanitary sewer system.

In the early 1990s several modifications and additions were made to the pump station including the installation of a grit removal system, the replacement of the existing pumps and several structural modifications including the addition of a top level metal enclosure. To complete this work a temporary wet well chamber and dry well were constructed. The temporary wet well chamber was constructed just upstream of the pump station wet well and consisted of a 16X10X16X10 ductile iron cross fitting that connects all incoming lines. Flows from the 10-inch Fallen Timber line and the 12-inch Sewershed 3 line

combine in a manhole just upstream of the wet well chamber. A 10-inch line exits the manhole, enters the wet well chamber and is piped directly into the cross fitting.

The Borough interceptor runs under Fallen Timber creek as a 16-inch vitrified clay pipe installed c. 1950 and is also hard piped into the cross fitting. In 2013, while conducting an inspection of the EBMA collection system, crews were unable to access the Interceptor line under Fallen Timber creek due to the poor condition of the line. A 16-inch line then exits the cross fitting and connects to the EBMA pump station normal operation wet well. The remaining side of the cross fitting is a knife gate that allows the chamber to be flooded and used as a temporary wet well. A 6-inch line on the bottom of the chamber connects the temporary wet well with the temporary dry well pit.

The temporary dry well, consisting of a rectangular chamber measuring approximately 5.5 feet by 11 feet, was constructed immediately adjacent to the existing wet well and housed 2 dry pit submersible pumps. The dry well was made inactive after the project was completed.

The pump station is currently equipped with 3 each 20 Hp centrifugal pumps manufactured by A-C Pumps. Currently the pumps operate at a constant speed in a lead, lag, and stand-by configuration. A single pump is capable of handling the average daily sanitary flows though 2 pumps in parallel currently have insufficient capacity to handle wet weather flows. As the pump station reaches capacity CSO 3, located several hundred feet upstream, acts as a relief. See Appendix B for as-built drawings of the existing pump station.

The existing pump station is fitted with a grit removal pump and grit classifier though the performance of the unit is inadequate. The mechanical screen installed as part of the previous upgrade project has been removed and replaced with a sewage grinder. The pumps discharge into the original 1958 8-inch transite force main. The force main is considered to be in fair condition and no issues have been reported with its operation. The pump station receives both primary and backup power from the WWTP.

The existing pump station is located within the 100 year flood plain. According to the FEMA flood maps, as shown in Appendix C, the 100 year flood plain elevation for the pump station location is approximately 749.3 ft. The top floor elevation of the existing pump station sits at approximately 747 feet and the access road sits at an approximate elevation of 742 ft. In the past, operators have reported that boats have been required to access the site during flooding conditions. In 2015, during elevated river conditions, the pump station had to be shut down due to flooding on the dry well side. It is reported that water entered through an underground electrical service connect box and through the electrical conduit into the dry well side, causing the sump pumps to fail.

The temporary wet well pad sits at an elevation of 732 and is directly adjacent to Fallen Timber. Inspection of the concrete pad on top of the temporary wet well shows that regular flooding has begun to undermine the soils under the pad.

4.0 Existing and Projected Flows

Since the new pump station is being proposed as a replacement for the existing facility the initial pumping capacity in the new pump station will be equal to the existing pump station capacity. Future flows, including combined and sanitary sewer flows, are being evaluated under the EBMA LTCP and will be addressed in a future area-wide Act 537 Plan update.

To determine the actual existing pump station capacity a Telog data recorder was installed in the blower building adjacent to the headworks in April 2014 and flow data was logged in five minute intervals. One year of data was analyzed to determine the average and maximum output of the existing pump station. Based on the collected data, the average flow rate is 400 gpm (0.58 mgd) and the maximum flow rate (when two pumps are running in parallel) is approximately 900 gpm (1.30 mgd). The existing pumps are rated for 460 gpm each. The existing pump station discharges into the WWTP where a magnetic flow meter records the influent flow rate. Reference Appendix D for a summary of the pump station flow.

In the near future EBMA will be required to make significant collection system and WWTP upgrades as part of the LTCP currently under development. Based on collected flow data and hydraulic modeling, the future wet weather capacity is estimated to be approximately 10 mgd. This number will be finalized during the LTCP approval process.

For the purpose of this Special Study, the pump station will be designed with an initial pumping capacity of 1.3 mgd, equal to that of the existing pump station. Components of the pump station that directly affect the future hydraulic capacity and cannot be easily modified, such as the wet well and headworks channels, will be designed for the anticipated peak wet weather flow as required by the LTCP.

5.0 Alternatives

Two general approaches to meeting the goals of this project are construction of a new facility and upgrade of the existing pump station. Alternatives 1 and 2 below describe options that include construction of a new pump station and Alternative 3 consists of rehabilitation and upgrade of the existing facility.

The primary goals of the new pump station are to provide a more reliable and safe pumping facility that can be accessed during high water conditions. Other features that should be included in a new facility

include improved solids handling and future wet weather flow capabilities. A number of options were considered and the following concept-level configuration was selected:

- Access and operating floor levels above the 100 year floodplain
- A wetwell/drywell layout for ease of access and maintenance for the pumping equipment
- Mechanical screen with a washer/compacter for large solids removal
- Vortex grit unit with a washer/classifier for grit removal and protection of downstream equipment
- Solids handling area with vehicular access for removal/storage/disposal of screenings and grit
- A 3-pump configuration sized for current capacity but with the manifold piping, valves, etc sized for future wet weather flows
- Two screw pumps to lift flows from the collection system to the pump station inlet channel
- Operating floor and wetwell space available for 2 additional future wet weather pumps
- Wetwell and channels sized to accommodate future wet weather flows
- A new force main to connect with the existing 8-inch force main to the WWTP

In addition, separate inlet pipes/channels will be provided for combined and separated sewer flows. Both the EBMA interceptor and Sewershed 3 line convey flow from combined portions of the collection system while the Fallen Timber line conveys only sanitary flows. Bringing combined flow and sanitary flow into the pump station through separate conduits will help reduce the likelihood that sanitary flow is discharged through CSO 3 during wet weather events. Several of the viable LTCP alternatives would require that combined and sanitary flows remain separated.

Several alternative locations were considered for a new pump station meeting these goals.

Alternative 1

The first alternative consists of constructing a new pump station on property currently owned by Consol located approximately 200 feet to the east of the existing pump station, as shown on Figure 5.1 in Appendix E. The Borough interceptor will be bored under Fallen Timber creek approximate 200 feet upstream of the current interceptor crossing. The line is expected to be 24-inch PVC with a 32 inch steel casing for the bored section. A new 24-inch line from Sewershed 3 will be installed from CSO #3 to a manhole upstream of the proposed pump station. Flows from the interceptor and Sewershed 3 line will combine in a manhole before entering the screw pump chamber as a 30-inch line. The existing Fallen Timber line will

enter the screw pump chamber as a minimum 12-inch line. Due to the proximity to the railroad, the east side of the excavation will have to be shored or sheet piled. It is also expected that portions of the screw pump excavation will require shoring or sheet piling. The operating floor of the pump station will be set at elevation 751, approximately one foot above the 100 year flood plain. The location of Alternative 1 would place the new pump station adjacent to and east of the existing pump station, allowing for easy and convenient access for WWTP operators. Immediately to the north of the new pump station is a small unpaved alley that crosses under the railroad. The undercrossing provides an emergency evacuation route for personnel on the west side of the railroad tracks if a train were to become disabled in that area. The site will also provide easy access to large vehicles required to haul solids from the headworks to a landfill. To bring the driveway to the required grade, a retaining wall will be constructed.

Alternative 2

Located to the south of the existing pump station, on the opposite side of Fallen Timber creek, is a boat club and marina. Alternative 2 would involve constructing a new pump station on a portion of the boat club property as shown on Figure 5.2 in Appendix E. As with Alternative 1, flows from both the Borough interceptor and the Sewershed 3 line would combine upstream of the pump station into a 24-inch line and enter the screw pump chamber as a 30-inch line. The Fallen Timber line will enter the screw pump chamber as a separate line. This alternative would involve three separate crossings of Fallen Timber creek. Both the Sewershed 3 and Fallen Timber lines would have a dedicated crossing in order to keep the sanitary and combined flows separate. The force main would also require a stream crossing before being connected to the existing force main. The proposed location on the boat club property would still require sheet piling on the east side of the excavation to protect the railroad. Similar to Alternative 1, retaining walls would be used to bring the driveway and parking lot to the required grade. Since the new pump station will also include a headworks for solids removal the operators will be required to visit the facility more frequently each day. The location of Alternative 2 would require operators to travel over 1 mile and cross active railroad tracks 4 times for each round trip visit from the WWTP to the pump station, as opposed to less than one quarter mile roundtrip and no railroad crossings for Alternative 1. Since trains use the tracks often, approximately once per hour, the operators would experience delays in trips to and from the pump station.

Alternative 3

Alternative 3 includes rehabilitation and upgrade of the existing pump station with its current pumping capacity. Wet weather capacity increases would be delayed until the LTCP and a future regional Act 537 Plan Update are approved. Alternative 3 is proposed in two phases. The first phase to be completed under this Act 537 update involves upgrading the existing pump station. The second phase includes the future capacity expansion as required by the LTCP. To complete the first phase and to ensure that the pump station is capable of reliable operation, several immediate modifications are required:

- Replace the three existing pumps with the same pumping capacity
- Modify the pump discharge piping including replacement of all pipe, valves, and fittings.
- Upgrade all electrical components including pump controls, motor starters, wet well level sensors, controls lighting, and electrical conduit to use modern technology for which replacement parts are available and meet current code requirements.
- Raise the top level of the pump station to an elevation of 750.5 feet so that the station can remain operational during the 100 year flood.
- Construct an elevated walkway from the adjacent property to provide access during flooding events.
- Elevate the temporary wet well pad above the 100 year flood plain.
- Replace and upsize the Borough interceptor line under Fallen Timber creek
- Create an area on the dry well side of the pump station that would not be considered a Class 1 Division 1 hazardous space to house electrical components.

After these upgrades are made the pump station would still be undersized and insufficient to handle the expected future wet weather flow required by the LTCP. To provide the required wet weather capacity, either a new pump station would be constructed or the existing pump station expanded. The construction of a new pump station, after the renovation of the existing pump station, is unlikely to be cost effective. One concept level plan of a new layout is shown in Figure 5.3.

To provide the proper wet well capacity and to improve the pump station hydraulics at the current location, a new wet well would be constructed. The wet weather pumps and all required valves, fittings, and piping, would be reconstructed in the existing temporary dry well which would need to be significantly expanded. This would require excavation around the perimeter of the existing temporary dry well, the demolition of two dry well walls, and the construction of a new dry well foundation, walls, and superstructure.

To keep the pump station operational during the construction of a new wet well it is likely that several bypass pumping operations would be required including crossing Fallen Timber creek with a discharge line and the construction of a temporary wet well to collect sewershed 3 and the Fallen Timber lines.

As stated earlier, one of the main goals of the proposed project is to provide better pretreatment to the raw influent by constructing a headworks facility that would include a mechanical screen and vortex grit removal system. The sewage grinder and grit removal systems currently in place are inadequate in removing large solids, gravel, sediment and other debris from a combined sewer system.

Construction of a well-designed headworks or future wet weather wetwell capacity at the location of the existing pump station is not feasible due to the space limitations and proximity to Fallen Timber creek. A structure sized to handle the expected flow required by the LTCP would encroach on the normal flow channel of the creek. Design issues, such as scour and foundation integrity, increase the cost of any work in this area. Constructability issues of working adjacent to the Monongahela River and below the river level will require cofferdams, pumping and other dewatering practices, as well as special considerations for flooding during construction. All of these considerations increase the cost of construction of new or expanded facilities in this location.

When the future required wet weather pumping capacity increases, the headworks facility would need to be located near the force main discharge on the WWTP property, since the current site is inadequate. This would require the construction of a new building on the property, which for reasons outside the scope of this study would present technical difficulties and would reduce the number of viable LTCP alternatives available for wet weather flow consideration. Without the addition of headworks at the pump station, sewage grinders (potentially several to handle wet weather flows) would be required. The lifespan of the raw sewage pumps would likely be reduced from wear due to solids.

Alternative 4

Alternative 4 is the no action alternative. The existing pump station is considered to be in poor and unreliable condition, and does not provide adequate pretreatment of flows. If no action is taken to replace the aging equipment it is likely that pump station failures would occur resulting in dry weather SSOs. The no action alternative is not viable.

6.0 Economic Evaluation

The following provides a brief overview of the cost effectiveness analysis and user impact fee assessment completed for the above outlined alternatives. The itemized breakdown of all cost and calculations referenced in this section can be found in Appendix F.

The estimated construction and operation and maintenance cost for each alternative is summarized in Table 6.1. Estimates of the operation cost do not include the cost of operating the raw sewage pumps. All alternatives consist of the same pumps operating at the same flow and approximate head conditions. Therefore, the electrical cost associated with raw sewage pump is the same for all alternatives and will not impact the uniform annual cost analysis.

Table 6.1 Estimated Cost Summary

	Alternative 1	**Alternative 2**	**Alternative 3**
Estimated Construction Cost			
Phase 1	$ 5,070,000	$ 5,720,000	$ 950,000
Phase 2			$ 4,440,000
Total	$ 5,070,000	$ 5,720,000	$ 5,390,000
Estimated Annual O&M Cost			
Phase 1	$ 22,000	$ 26,000	$ 13,000
Phase 2			$ 28,000
Uniform Annual Cost			
	$ 366,000	$ 414,000	$ 389,000

The Uniform Annual Cost analysis follows the method outlined in Exhibit E of the Handbook for PENNVEST Wastewater Projects. A discount rate of 3.1% was obtained from Appendix C of Circular A-94 published by the White House Office of Management and Budget. Alternative 1, at $366,000, has the lowest uniform annual cost of the considered alternatives making it the most cost effective option.

A funding and user fee impact evaluation was completed based on the estimated construction cost of Alternative 1. Potential sources of funding included PENNVEST and municipal bonds. Historically, EBMA has utilized bonds to finance projects. While the loan terms for a bond are generally less favorable than PENNVEST, bonds can be secured and used more readily and allow more flexibility in the utilization of the funds. Table 6.2 summarizes the two most likely funding scenarios considered.

Table 6.2 Funding Options

	Interest Rate (%)	Loan Term (yr.)	Monthly Payment	Cost per EDU
PENNVEST	1.94%	20	$ 13,000	$ 5.93
Municipal Bond	4.25%	30	$ 12,800	$ 5.84

Based on data provided by the Authority the average monthly residential user rate over the entire service area is approximately $39 per EDU. Assuming a financing plan that includes the use of municipal bonds to finance the construction cost, the average user fee can be expected to raise by approximately $6 per month to $45 per month, or a 15% increase.

7.0 Institutional Evaluation

The Elizabeth Borough Municipal Authority is an Authority as described in the Municipality Authorities Act. The Authority was incorporated in 1950 and operates under the direction of a seven-member Board. The Board is fully seated and each Board member serves a five-year term. Five board members are appointed by the Elizabeth Borough Council and two are appointed by Elizabeth Township. As an authority EBMA has the legal authority to:

- Implement wastewater planning recommendations
- Implement system-wide operation and maintenance activities
- Set user fees and take purchasing actions
- Take enforcement actions against ordinance violators
- Negotiate agreements with other parties
- Raise capital for operation and maintenance of the facilities.

The Authority currently employs a full-time manager, 2 full-time operators and a part-time secretary. Billings and collections are performed by a third party. The Authority appoints a solicitor, a consulting engineer and an auditor each year for professional services.

The cost of administration of the Authority's affairs is included each year in the annual budget. In 2014 the annual operating budget projected $1,127,000 in revenues and $1,055,000 in expenses with a projected surplus of $72,000.

The Authority currently has approximately $6,900,000 in outstanding bond debt. The debt has been issued to build the proposed pump station and perform collection system repairs. The annual debt service is approximately $417,000 and is included in the annual budget.

Inter-municipal agreements exist with Elizabeth Township, Forward Township, and Lincoln Borough. EBMA has implemented the ordinances and Rules and Regulations necessary for operation and maintenance of the sewer system. Easements and rights of way are in place and maintained for existing sewer lines. New easements and rights of way are acquired as the new lines are constructed.

The proposed institutional alternative is to continue ownership and operation of the sewer system under the EBMA. EBMA has the legal authority, and the administrative, operations, and maintenance ability to implement the selected technical alternative.

8.0 Conclusions and Recommendations

The existing EBMA pump station is beyond its useful service life and requires significant and costly repairs and renovations in order to comply with sound safety standards and an acceptable degree of reliability. In addition, access to the site is not possible during flood conditions in the adjacent Monongahela River. The most cost effective solution is Alternative 1 which includes the construction of a new pump station on the Consol property to ensure EBMA can provide efficient and reliable wastewater services to the region. The rapid deterioration of the existing pump station requires that the new pump station be constructed as soon as permitting and funding acquisition will allow. To that end, EBMA plans to utilize bonds to supplement existing monies available to fund the proposed alternative.

9.0 Consistency Determination

Technically feasible alternatives must be evaluated for consistency with the requirements of Pennsylvania Code Title 25, §71.21.a.5. These are discussed in the following sections.

Sections 4 and 5 of the Clean Streams Law or Section 208 of the Clean Water Act

The proposed alternative will be an integral part of the regional solution for sewage collection, treatment and disposal and is consistent with Sections 4 and 5 of the Clean Streams Law or Section 208 of the Clean Water Act.

PA Code Title 25, Chapter 94

According to the 2015 Chapter 94 Wasteload Management Report (WMR), for operating year 2014 the average daily flow at the WWTP was 1.108 mgd. The maximum monthly flow at the sewage treatment plant in 2014 was 1.495 mgd. The WWTP was hydraulically overloaded in 2014 with average monthly flows exceeding the permit level in February, April, May, and June. No Discharge Monitoring Reports water quality violations were reported during the periods of hydraulic overload at the WWTP. The WMR projects the WWTP to be hydraulically overloaded for

the next five years. The WMR reports the average organic loading at the WWTP for 2014 was 592 lbs/day BOD. No organic overload occurred during 2014 and none are projected within the next five years.

The relocation and construction of a new pump station would not involve an increase in pumping capacity before the completion of the LTCP and without addition Act 537 planning to address the hydraulic overload at the WWTP. While the proposed alternative would not alleviate the WWTP hydraulic overload it would not actively contribute to the issue. Capacity issues at the existing pump station occur only during wet weather conditions and no dry weather capacity issues have been recorded. It is expected that the proposed alternative would not experience dry weather SSOs.

Title II of the Clean Water Act or Titles II and VI of the Water Quality Act

The proposed alternative will improve the operation and reliability of the EBMA collection and conveyance system and is consistent with Title II of the Clean Water Act or Titles II and VI of the Water Quality Act.

Local and County Comprehensive Plans

The proposed alternative aims to provide more reliable service allowing EBMA and their facilities to remain an integral provider of sewage collection, conveyance, and treatment for the planning area.

PA Code Title 25 Chapters 93, 95 and 102 Antidegradation Requirements

The proposed alternative is limited to the construction of a new pump station. The proposed alternative will have a capacity equal to that of the existing pump station and will therefore not impact the capacity if the WWTP. The existing WWTP currently operates under NPDES Permit Number PA-0028436 and is in compliance with all effluent limitations.

State Water Plans

The proposed alternative will improve the operation and reliability of the EBMA collection and conveyance system and will help maintain water quality along Fallen Timber Creek and the Monongahela River.

PA Prime Agricultural Land Policy

The proposed alternative is located within a significant urban area and there are no anticipated effects to PA Prime Agricultural Land. The National Resources Conservation Service Web Soil Survey Map indicates that the soil in the area is Urban Land-Rainsboro complex. The area is

zoned by the Borough as heavy industrial. Reference Appendix G for the NRCS Soils Map and Elizabeth Borough Zoning Map.

County and Local Stormwater Management Plans

During design and construction of the proposed alternative, stormwater controls will be designed in accordance with the Allegheny County Stormwater Management Provisions. Elizabeth Borough has not adopted a stormwater management plan and as thus defers to the County.

Wetland Protection

A wetland determination study was completed by Ecotune Environmental Consultants. No wetlands were identified during the course of their investigation. Reference Appendix H for the full Ecotune Report.

Protection of Rare, Endangered or Threatened Plant and Animal Species

A PNDI review was completed for the project area in May of 2015. The PNDI records indicated no known impact to threatened and endangered species and/or special concern species and resources within the project area. Reference Appendix I for a copy of the PNDI Environmental Review Receipt.

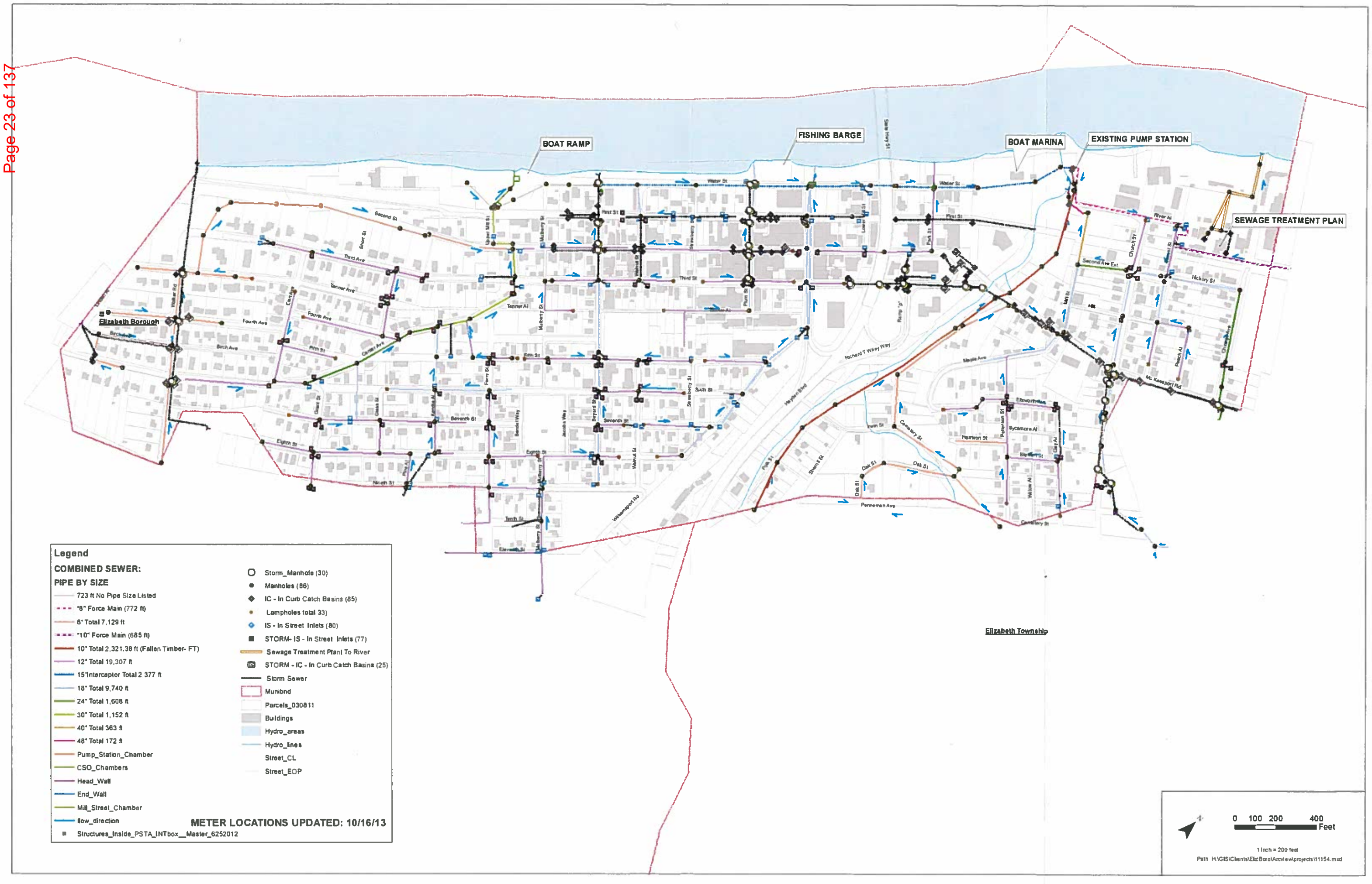
Historical and Archaeological Resource Protection

A Record of Disturbance Form was completed by Christine Davis Consultants in 2012 and reviewed again in 2015. The report determined that the proposed project had no potential impact on historical resources. A complete copy of the report can be found in Appendix J.

10.0 PENNVEST Requirements

Bonds have been used to fund the project work to date and at this time it is anticipated that bonds will be the funding source(s) used to complete the project. The additional requirements for Environmental Impact Assessment and Cost Effectiveness are included in Attachment A to this Special Study.

APPENDIX A


BOAT RAMP
FISHING BARGE
BOAT MARINA
EXISTING PUMP STATION
SEWAGE TREATMENT PLAN
Elizabeth Borough
Elizabeth Township
Water St
First St
Second St
Third St
Fourth Ave
Tanner Ave
Tanner Al
Birch Ave
Firm St
Seventh St
Eighth St
Ninth St
Tenth St
Eleventh St
Sixth St
Maple Ave
Hickory St
Mc Keesport Rd
Penneman Ave
Oak St
Hamilton St
Sycamore Al
Cemetery St
Richard T Wiley Hwy
Walnut St
Mulberry St
Ferry St
Peach Al
Church St
River Al
Second Ave Ext
Legend
COMBINED SEWER:
PIPE BY SIZE
723 ft No Pipe Size Listed
*6" Force Main (772 ft)
6" Total 7,129 ft
*10" Force Main (685 ft)
10" Total 2,321.38 ft (Fallen Timber- FT)
12" Total 19,307 ft
15"Interceptor Total 2,377 ft
18" Total 9,740 ft
24" Total 1,608 ft
30" Total 1,152 ft
40" Total 363 ft
48" Total 172 ft
Pump_Station_Chamber
CSO_Chambers
Head_Wall
End_Wall
Mill_Street_Chamber
flow_direction
Structures_Inside_PSTA_INTbox__Master_6252012
Storm_Manhole (30)
Manholes (86)
IC - In Curb Catch Basins (85)
Lampholes total 33)
IS - In Street Inlets (80)
STORM- IS - In Street Inlets (77)
Sewage Treatment Plant To River
STORM - IC - In Curb Catch Basins (25)
Storm Sewer
Munibnd
Parcels_030811
Buildings
Hydro_areas
Hydro_lines
Street_CL
Street_EOP
METER LOCATIONS UPDATED: 10/16/13
0 100 200 400
Feet
1 Inch = 200 feet
Path: H:\GIS\Clients\ElizBoro\Arcview\projects\11154.mxd

APPENDIX B

APPROXIMATE AREA OF ACCESS ROAD BASE TO BE INSTALLED (2A AGGREGATE AT 6" MIN. DEPTH)

PROPOSED CONTOURS (TYPICAL)

CONSTRUCTION WITHIN DEPICTED LIMITS TO BE PART OF CONTRACT ONE. CONSTRUCTION OUTSIDE OF DEPICTED AREA TO BE PART OF CONTRACT THREE.

PROPOSED PERMANENT STEEL SHEET PILING TOP = 742.0

PROPOSED CONCRETE SLAB TOP = 747.0

PROPOSED STEPS

PROPOSED 6" DUCTILE IRON PIPE

PROPOSED WET WELL TOP=730.5± INV=713.00

PROPOSED EROSION & SEDIMENTATION CONTROL DEVICE

NOTE 1

REGULATOR PAD

PUMP STATION

EXISTING 16" C.I. INTERCEPTOR

EXISTING 42" RCP ALLEY CONDUIT BELOW

EXISTING ACCESS ROAD

EXISTING ACCESS ROAD

EXISTING 42" RCP ALLEY CONDUIT BELOW

STREAM

FENCE

50' AT 0.5%

50' AT 0.5% ELEV. 730.0

2:1 CUT SLOPE

SITE PLAN – PUMP STATION AND EMERGENCY WET WELL CONSTRUCTION

SCALE: 1" = 5'

NOTE 1: THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE PROTECTION OF THE REGULATOR PAD, MILL ALLEY OUTFALL, OTHER UTILITIES OR STRUCTURES FROM DAMAGE DUE TO THE CONTRACTOR'S CONSTRUCTION OPERATIONS. SEE SPECIFICATIONS FOR FURTHER REQUIREMENTS.

CHICAGO STREET

HICKORY AVENUE

STREET

LOCUST

CHURCH

STREET

SECOND AVENUE

ALLEY

MILL

EXISTING 10" FORCE MAIN

P & L E RAILROAD

TREATMENT PLANT

NEW HEADWORKS STRUCTURE

CHLORINE CONTACT TANK

CHLORINE BUILDING

PULL BOX

RIVER

PROPOSED 3" ELECTRIC CONDUIT ENCASED IN CONCRETE (4' BELOW GRADE) (CONTRACT NO. 4)

ALLEY

EXISTING 8" FORCE MAIN & 2" ELECTRIC CONDUIT

EXISTING FORCE MAIN & ELECTRICAL CONDUIT LOCATION PLAN

SCALE: 1" = 50'

PUMP STATION (SEE PLAN THIS SHEET)

EXISTING CONDEMNATION BENEPS

HARBOR LINE

MONONGAHELA RIVER

EXISTING 10" PIPE FROM REGULATOR (MAY NEED ADJUSTMENT)

FERNCO COUPLING

6" D.I. PIPE TO PUMP

10" 1/8 BEND

10" D.I. PIPE

3'0" x 3'0" ALUMINUM HATCH W/SEAL BILCO @JD STYLE W/ NEOPRENE SEALANT OR APPROVED EQUAL

16" KNIFE GATE VALVE

SPOOL PIECE

CONCRETE WET WELL

M.H. STEPS @ 12" VERT C-C

FERNCO COUPLING

EXISTING 16" C.I. PIPE TO WET WELL

EXISTING 16" C.I. PIPE

16" D.I. PIPE

16x10x8x10 CROSS

10" KNIFE GATE VALVE

A

A

12"

8'-0"

12"

8'-0"

PLAN: PROPOSED WET WELL

SCALE: 1/4" = 1'-0"

ELEV AT EX. GRADE 730.5 ±

SHIPS LADDER MODEL SL 198± (VERIFY LENGTH) BY PRECISION STAIRS CORP OR APPROVED EQUAL

EXISTING 16" PIPE INV=718.5±

10"

713.00

6"

6"

ELEV. 713.00

18"

KEY AND WATERSTOP TYP

SECTION A–A: THRU WET WELL

SCALE: 1/4" = 1'-0"

FORCE MAIN & CONDUIT PLAN / PUMP STA. SITE PLAN

REVISIONS	BY	DATE
ADD PULL BOXES	R.A.M.	04/17 91
BID SET	J.E.B.	03/22 91

SEAL

ELIZABETH BOROUGH
SEWAGE TREATMENT PLANT EXPANSION

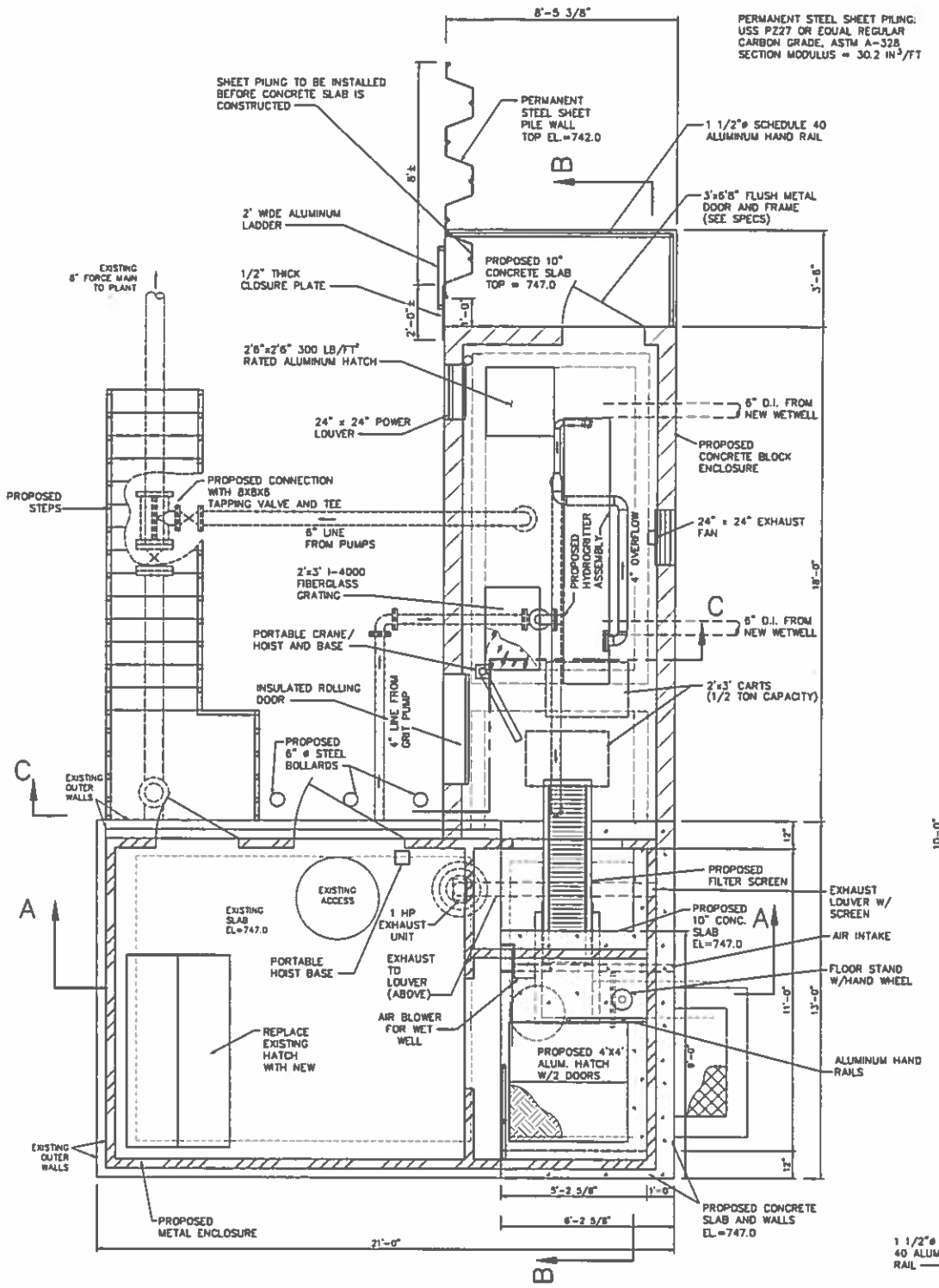
SITUATE IN: ELIZABETH BOROUGH, ALLEGHENY COUNTY, PA.

PREPARED FOR: ELIZABETH BOROUGH MUNICIPAL AUTHORITY

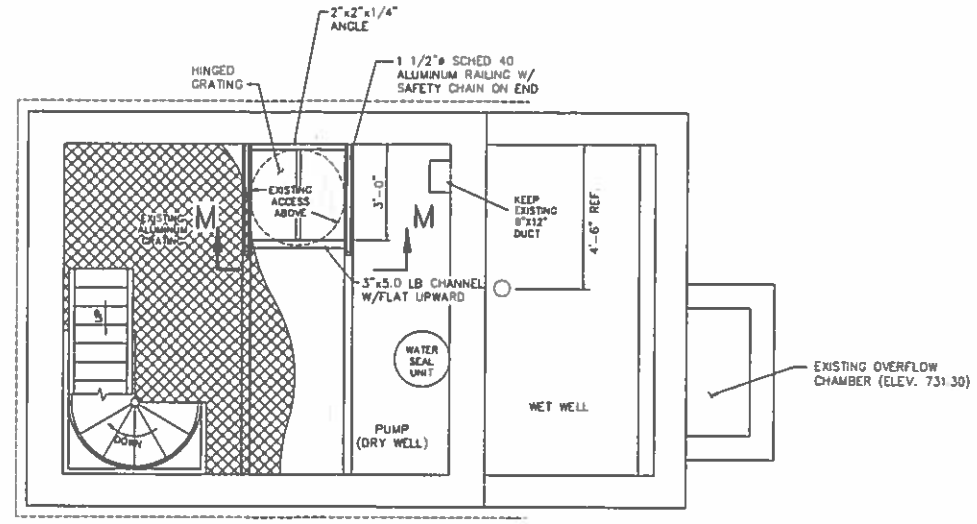
SENATE ENGINEERING COMPANY
ENGINEERS – PLANNERS – SURVEYORS
UNIVERSITY OF PITTSBURGH
APPLIED RESEARCH CENTER
420 WILLIAM PITT WAY, PITTSBURGH, PA. 15238
PHONE (412) 826-5454

DRAWN BY	CHECKED BY	DATE	SCALE
M.A.M.	V.V.D.	8/02/90	AS NOTED
JOB NUMBER 1804	DRAWING NUMBER D 2180 05		

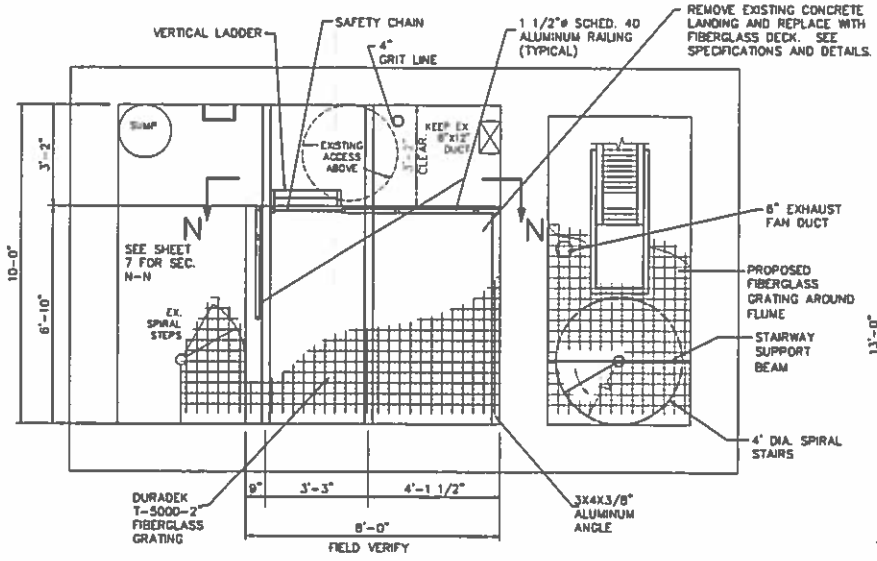
H:\SEN\PW063\3443\GIS_02180D5.DWG, 3/30/2015 9:20:08 PM



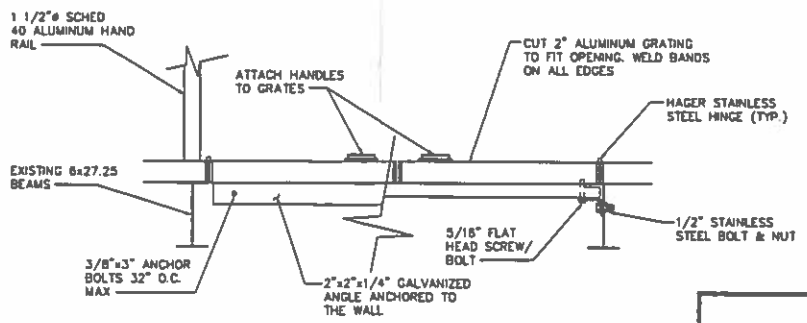
SECTION E–E
PLAN VIEW – PUMP STATION
@ ELEV. 751 ±
SCALE: 3/8" = 1'-0"



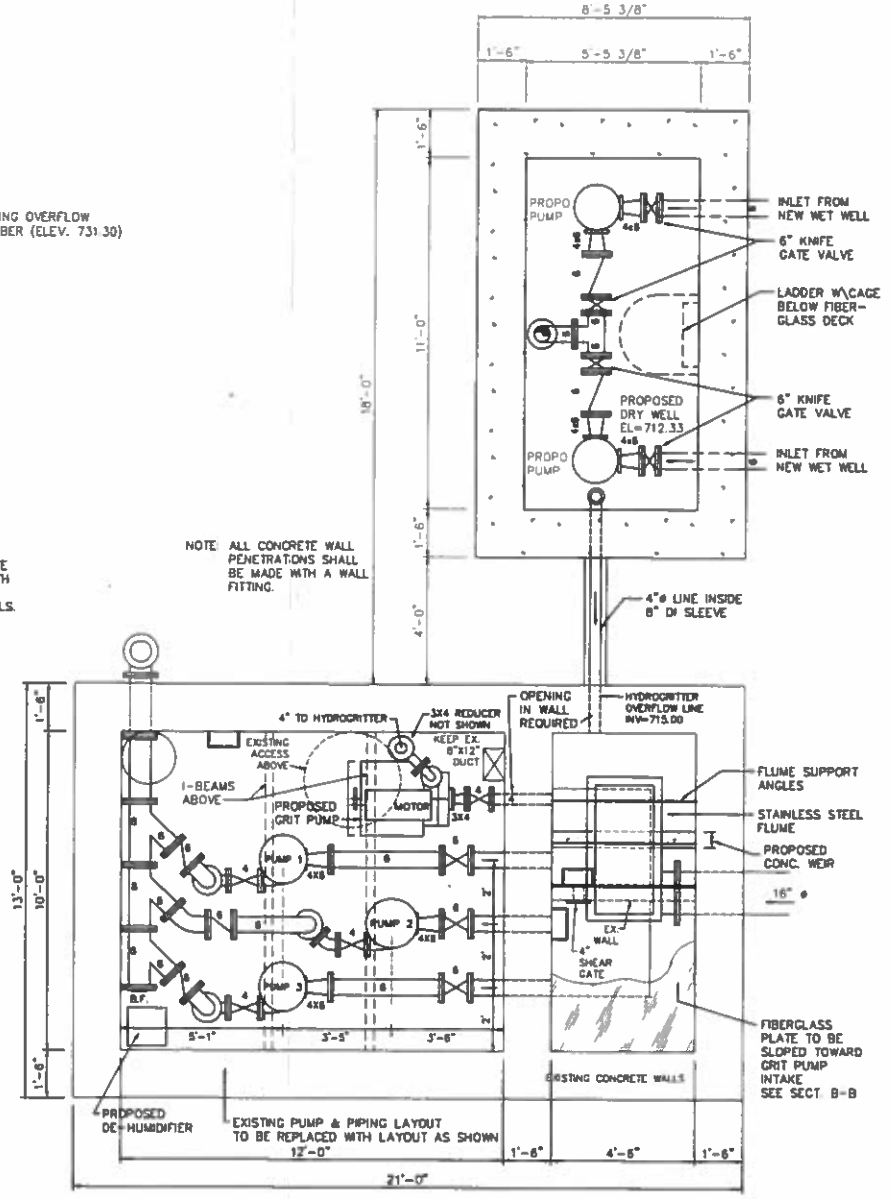
SECTION H–H
PLAN VIEW – PUMP STATION
@ ELEV. 744 ±
SCALE: 3/8" = 1'-0"



SECTION F–F
PLAN VIEW – PUMP STATION
@ ELEV. 724 ±
SCALE: 3/8" = 1'-0"



SECTION M–M
SCALE: 1 1/2" = 1'-0"



SECTION G–G
PLAN VIEW – PUMP STATION
@ ELEV. 721 ±
SCALE: 3/8" = 1'-0"

NOTE: FOR REINFORCEMENT NOT SHOWN, SEE DRAWINGS S–2 AND S–4

PUMP STATION – PLAN VIEWS

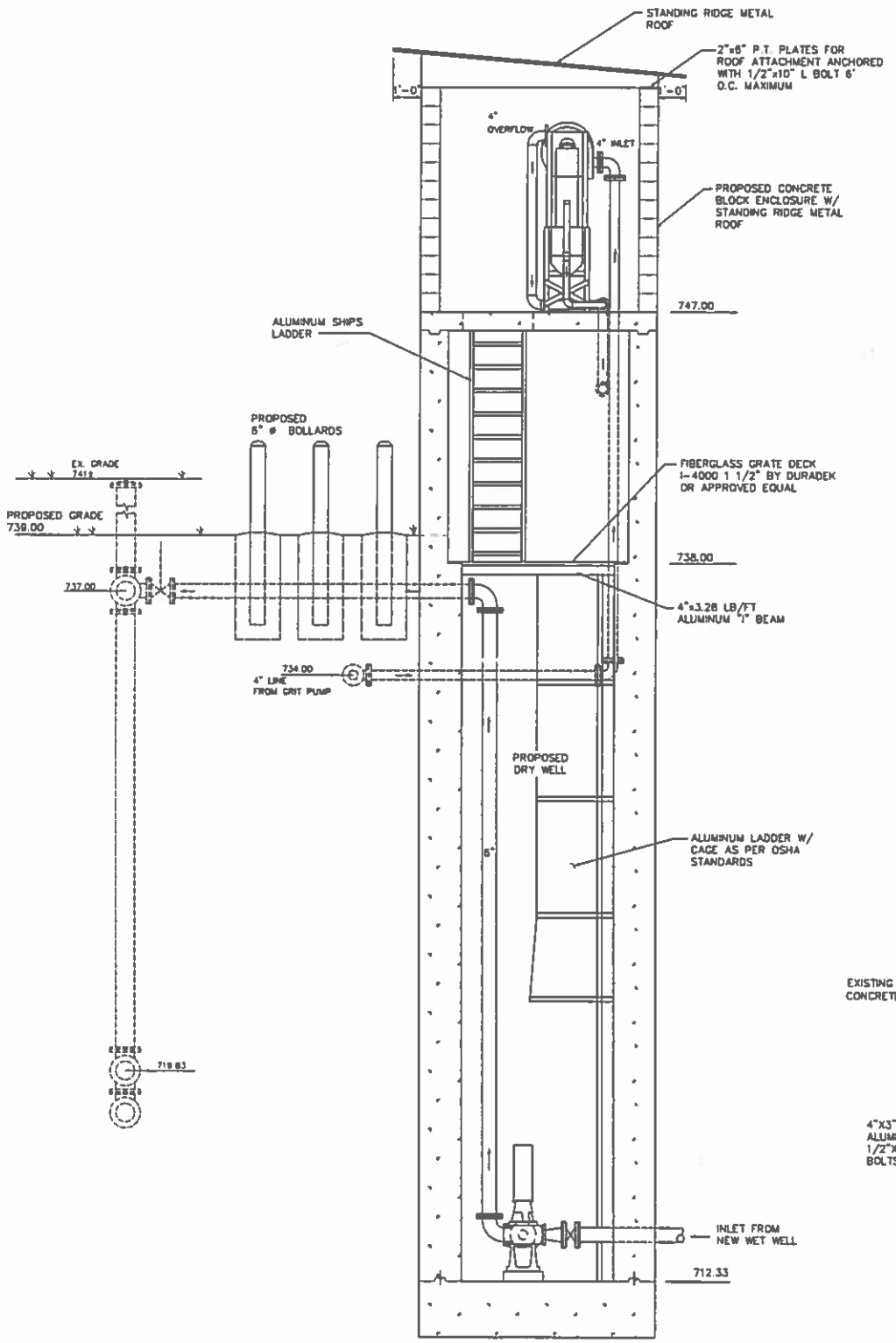
REVISIONS	BY	DATE
ADDED FIBERGLASS GRATING (SECTION F–F)	R.A.M.	04/05 91
BID SET	J.E.B.	03/22 91

SEAL

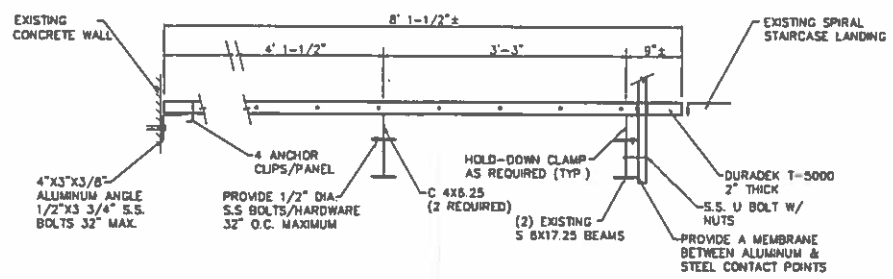
ELIZABETH BOROUGH
SEWAGE TREATMENT PLANT EXPANSION
SITUATE IN: ELIZABETH BOROUGH, ALLEGHENY COUNTY, PA.
PREPARED FOR: ELIZABETH BOROUGH MUNICIPAL AUTHORITY

SENATE ENGINEERING COMPANY
ENGINEERS – PLANNERS – SURVEYORS
UNIVERSITY OF PITTSBURGH
APPLIED RESEARCH CENTER
420 WILLIAM PITT WAY, PITTSBURGH, PA. 15238
PHONE (412) 826-5454

DRAWN BY	CHECKED BY	DATE	SCALE
M.A.M.	V.V.D.	8/22/90	AS SHOWN
JOB NUMBER 1804	DRAWING NUMBER D 2180 11		

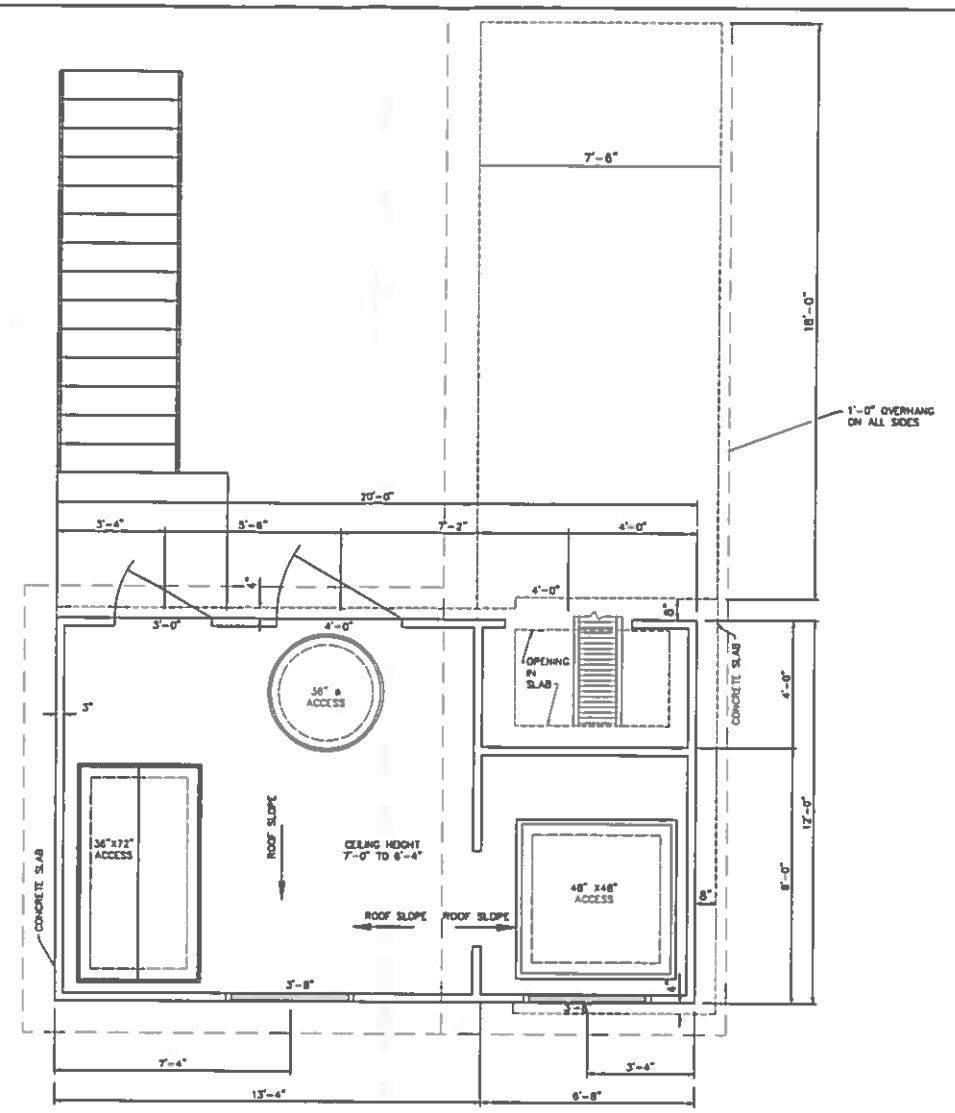


SECTION C–C



SECTION N–N

SEE SHEET 5 FOR PLAN
SCALE: 3/4" = 1'-0"



PLAN VIEW – METAL ENCLOSURE

PUMP STATION – PLAN & SECTION

NOTE: FOR REINFORCEMENT, SEE DRAWINGS S-2 AND S-4

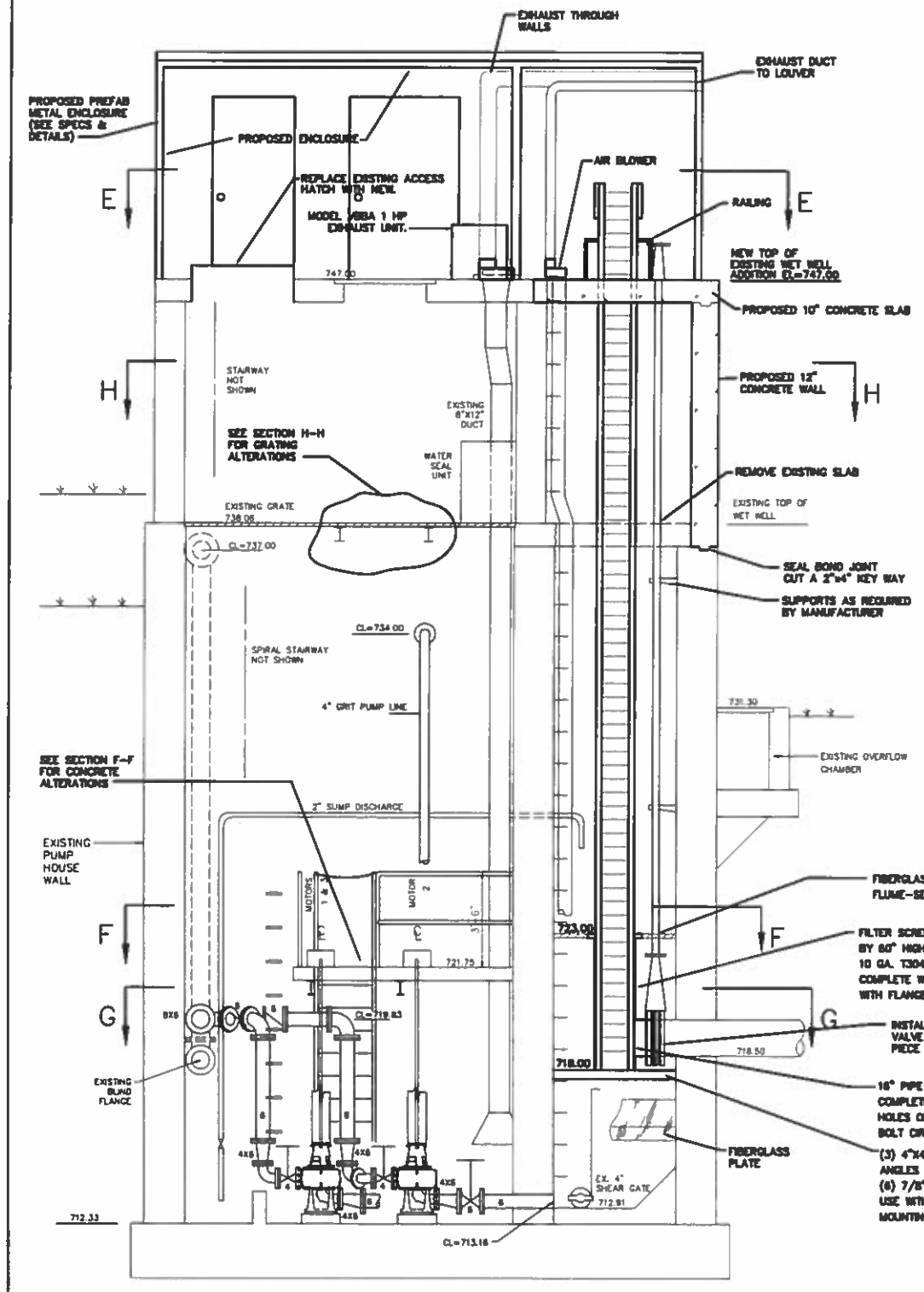
REVISIONS	BY	DATE
REMOVED CONC. & ADDED GRATING (SECTION N-N)	R.A.M.	04/05 91
BID SET	J.E.B	03/22 91

SEAL

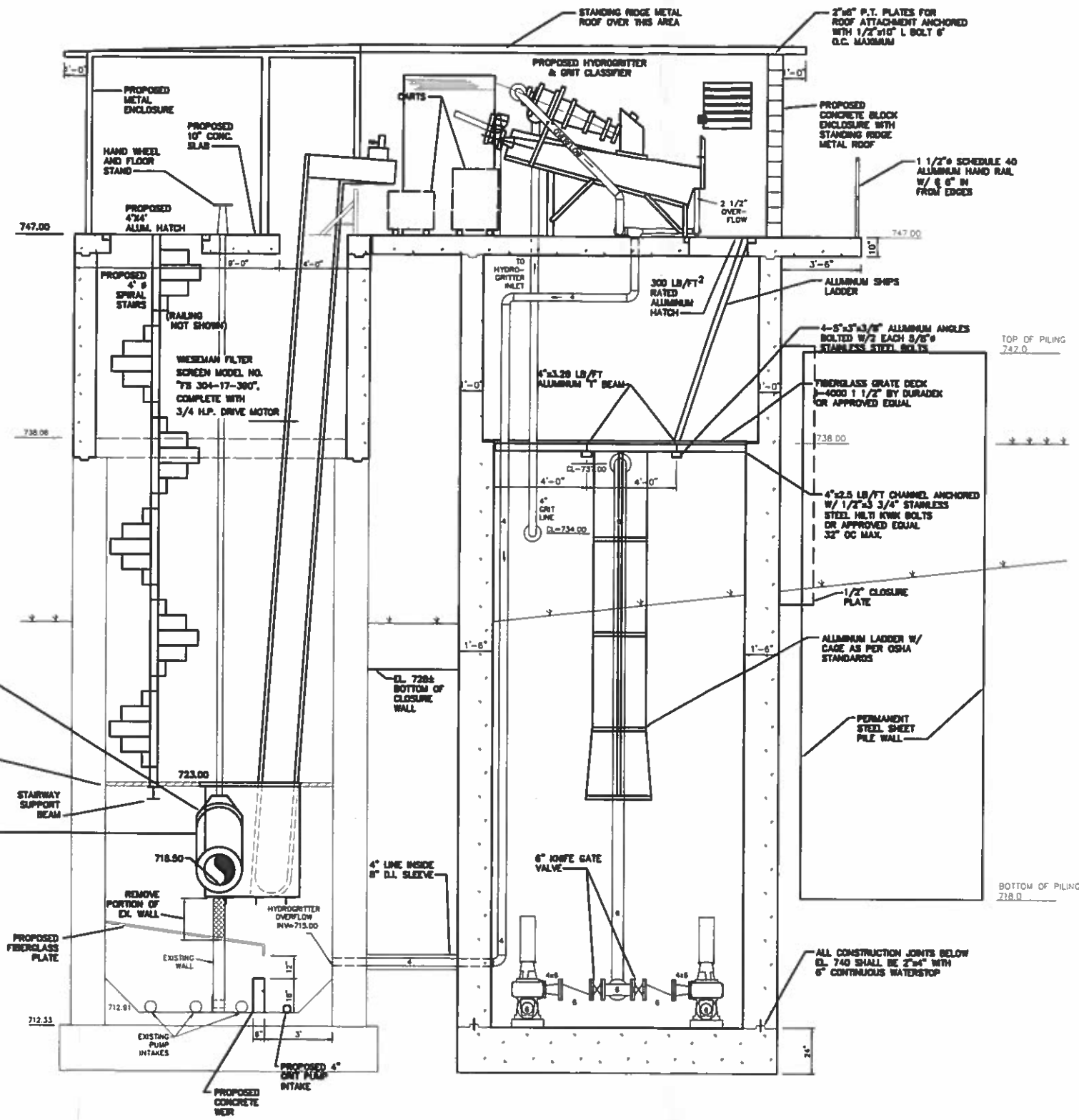
ELIZABETH BOROUGH
SEWAGE TREATMENT PLANT EXPANSION
SITUATE IN: ELIZABETH BOROUGH, ALLEGHENY COUNTY, PA.
PREPARED FOR: ELIZABETH BOROUGH MUNICIPAL AUTHORITY

SENATE ENGINEERING COMPANY
ENGINEERS – PLANNERS – SURVEYORS
UNIVERSITY OF PITTSBURGH
APPLIED RESEARCH CENTER
420 WILLIAM PITT WAY, PITTSBURGH, PA. 15238
PHONE (412) 826-5454

DESIGN BY	DRAWN BY	DATE	SCALE
M.A.M	V.V.D	8/02/90	3/8" = 1'-0"
JOB NUMBER: 1804	DRAWING NUMBER: D 2180 07		SHEET OF



SECTION
A-A



SECTION
B-B

NOTE: FOR REINFORCEMENT, SEE DRAWINGS S-2 AND S-4

PUMP STATION - SECTIONS

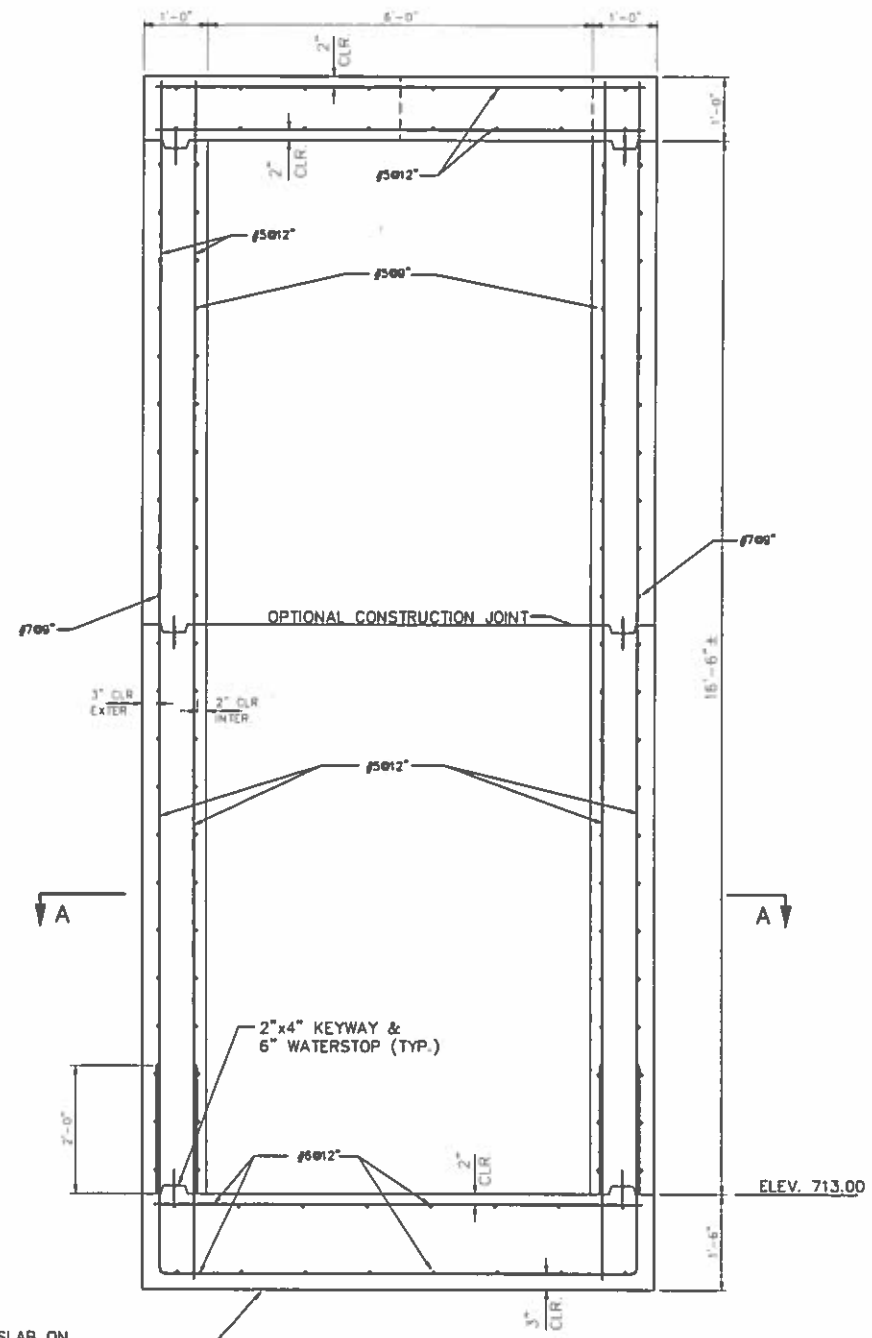
REVISIONS	BY	DATE
BID SET	J.E.B.	03/22 91

SEAL

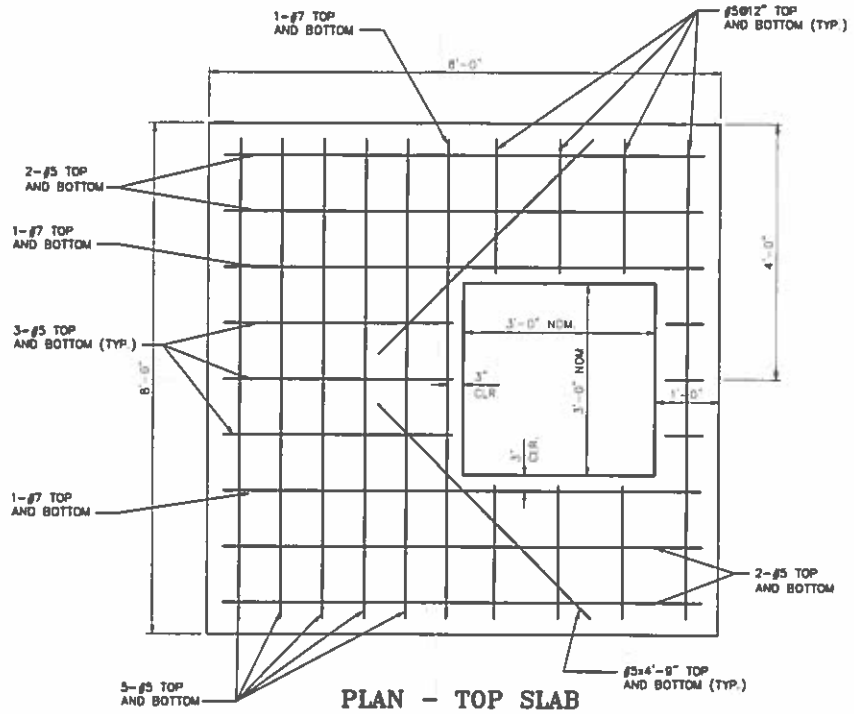
ELIZABETH BOROUGH
SEWAGE TREATMENT PLANT EXPANSION
SITUATE IN: ELIZABETH BOROUGH, ALLEGHENY COUNTY, PA.
PREPARED FOR: ELIZABETH BOROUGH MUNICIPAL AUTHORITY

SENATE ENGINEERING COMPANY
ENGINEERS - PLANNERS - SURVEYORS
UNIVERSITY OF PITTSBURGH
APPLIED RESEARCH CENTER
420 WILLIAM PITT WAY, PITTSBURGH, PA. 15238
PHONE (412) 826-5454

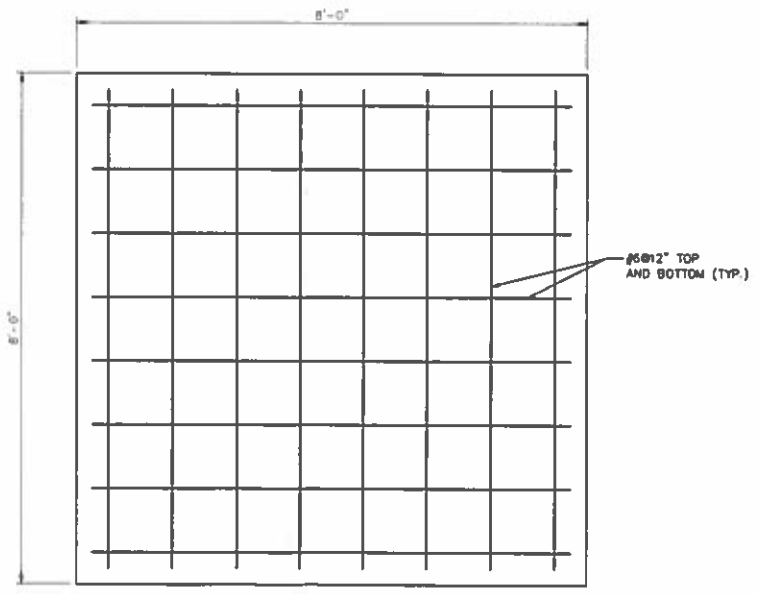
DRAWN BY	CHECKED BY	DATE	SCALE
M.A.M	V.V.D	8/02/90	3/8" = 1'-0"
JOB NUMBER 1804	DRAWING NUMBER D 2180 04		



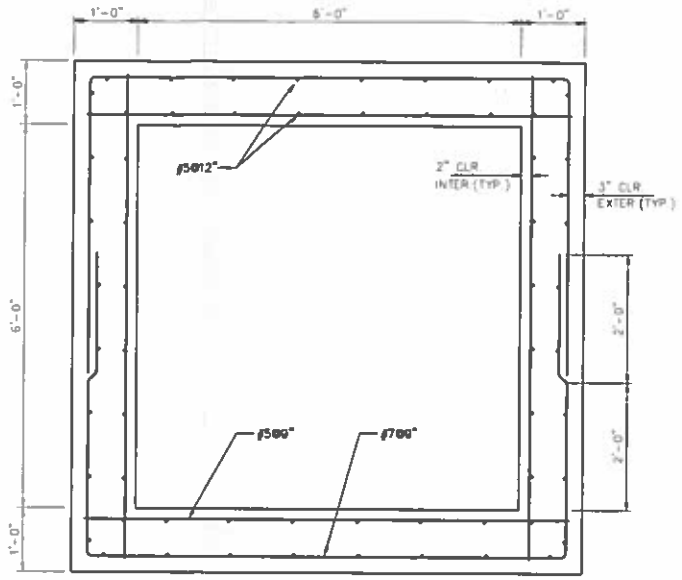
SECTION – ELEVATION
REBAR LAYOUT



PLAN – TOP SLAB
REBAR LAYOUT



PLAN – BOTTOM SLAB
REBAR LAYOUT



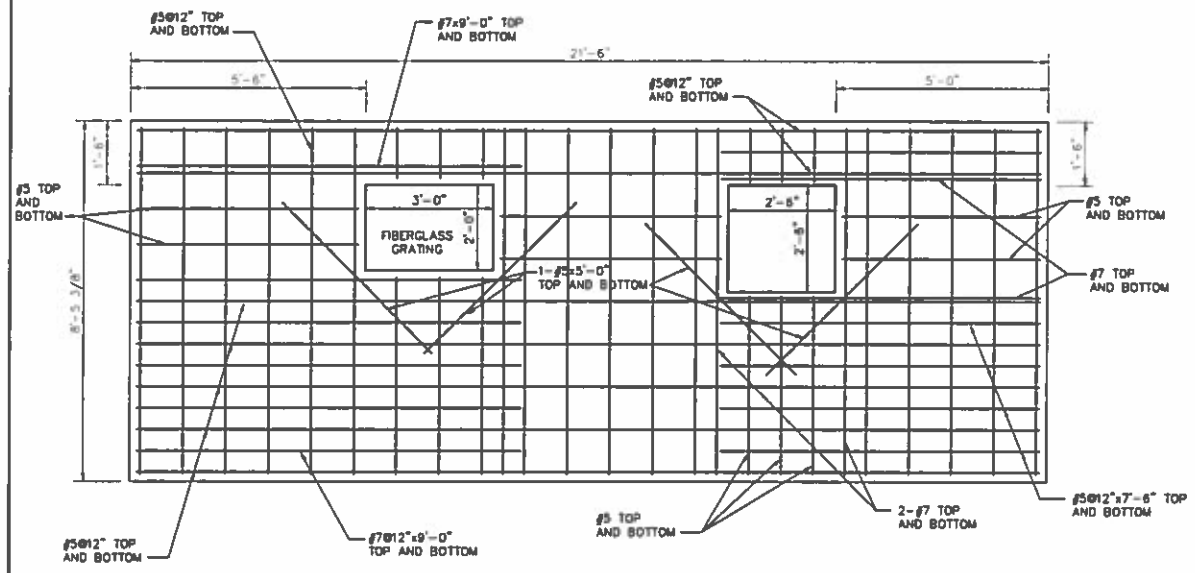
SECTION A–A
WALL REBAR LAYOUT

NOTES:

1. EMBEDDED ITEMS SUCH AS MANHOLE RUNGS AND HATCH ANCHORS SHALL BE FURNISHED AS PER SHEET 4 AND THE SPECIFICATIONS.
2. PIPE SLEEVES AND DETAILS SHALL PROVIDE A WATERTIGHT SEAL AT ALL PENETRATIONS OF THE CONCRETE WALLS

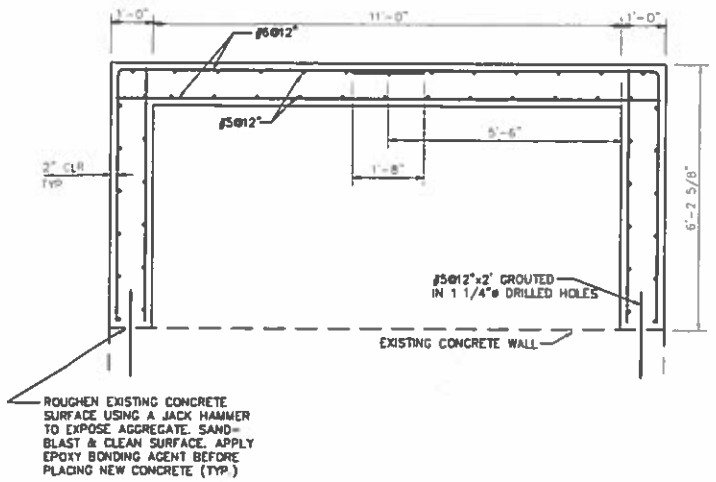
STRUCTURAL DETAILS – WET WELL

BID SET	J.E.B.	03/22 91	ELIZABETH BOROUGH SEWAGE TREATMENT PLANT EXPANSION	SENATE ENGINEERING COMPANY ENGINEERS – PLANNERS – SURVEYORS
REVISIONS	BY	DATE	SITUATE IN: ELIZABETH BOROUGH, ALLEGHENY COUNTY, PA.	UNIVERSITY OF PITTSBURGH APPLIED RESEARCH CENTER 420 WILLIAM PITT WAY, PITTSBURGH, PA. 15238 PHONE (412) 826-5454
			PREPARED FOR: ELIZABETH BOROUGH MUNICIPAL AUTHORITY	DRAWN BY J.E.B. · CHECKED BY R.R. · DATE 02/25/91 · SCALE 3/4" = 1'-0" · JOB NUMBER 1804 · DRAWING NUMBER D 2180 19 · S-2

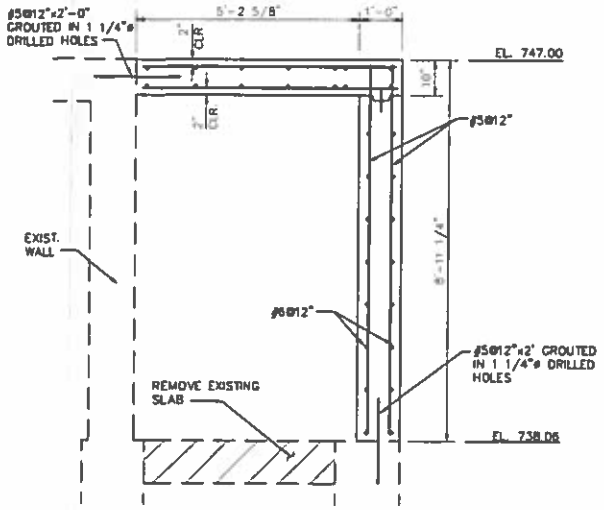


NOTE: EMBEDDED ITEMS, ANCHOR BOLTS, PIPE SLEEVES, ETC. ARE NOT SHOWN. CONTRACTOR SHALL PROVIDE THESE ITEMS AS REQUIRED.

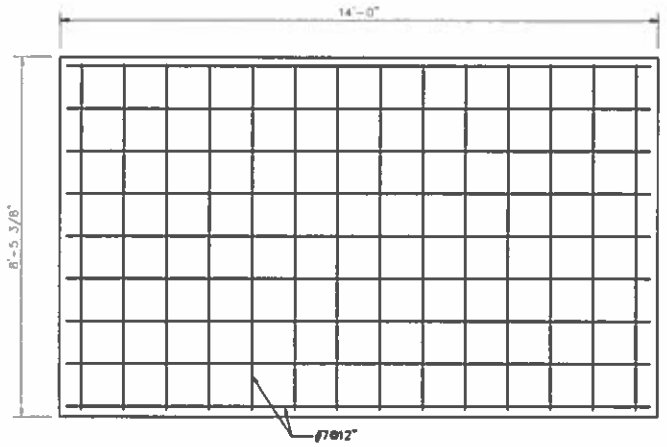
DRY WELL
PLAN – TOP SLAB
REBAR LAYOUT



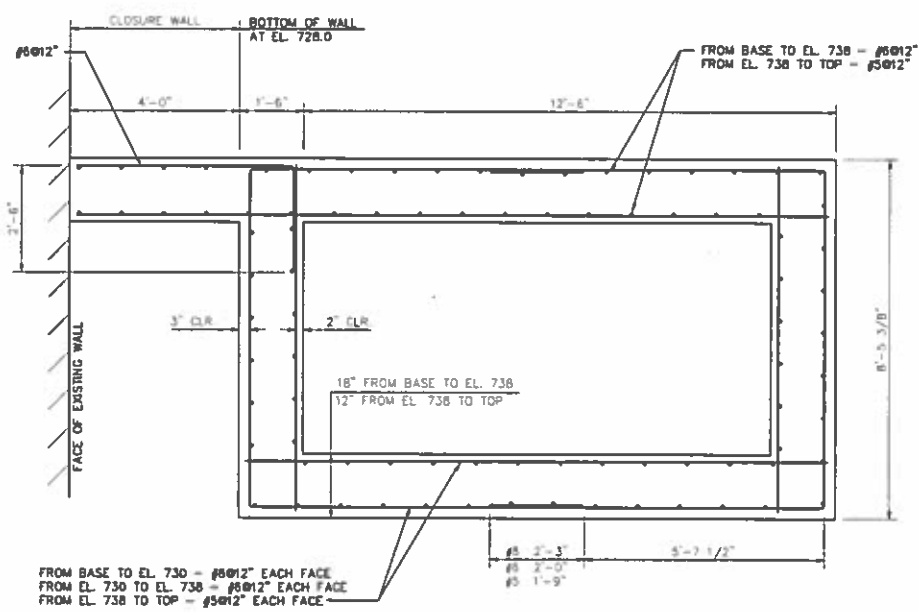
EXISTING WET WELL ADDITION
PLAN
REBAR LAYOUT



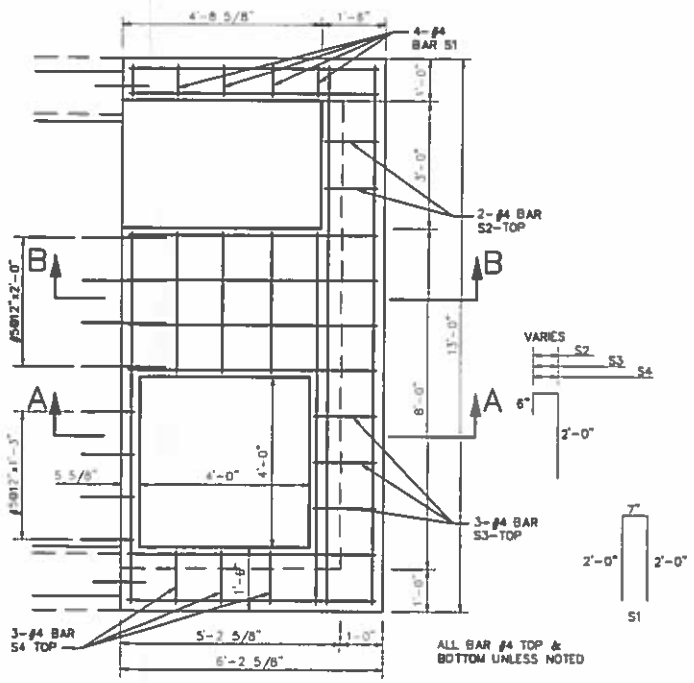
EXISTING WET WELL ADDITION
SECTION B–B
REBAR LAYOUT



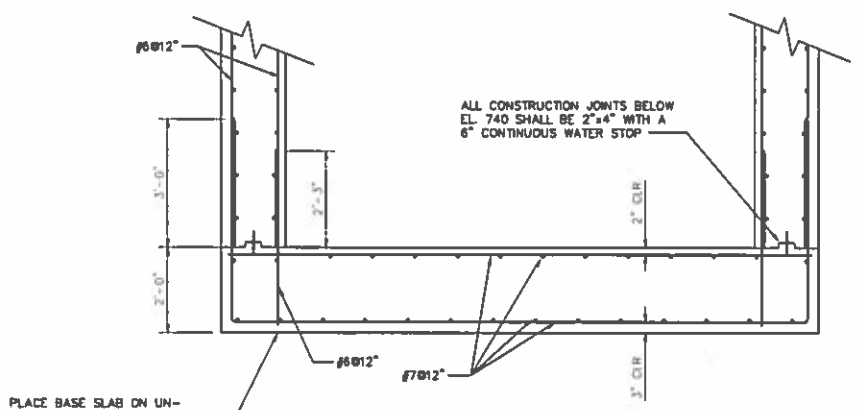
DRY WELL
PLAN – BOTTOM SLAB
REBAR LAYOUT



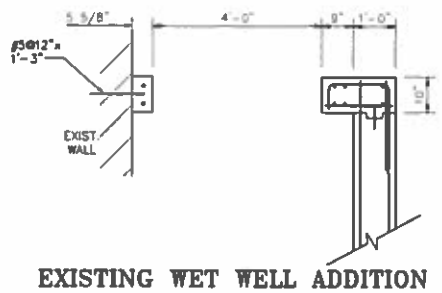
DRY WELL
PLAN – WALL
REBAR LAYOUT



EXISTING WET WELL ADDITION
PLAN – SLAB
REBAR LAYOUT



DRY WELL
SECTION – BOTTOM SLAB
REBAR LAYOUT



EXISTING WET WELL ADDITION
SECTION A–A
REBAR LAYOUT

MISCELLANEOUS STRUCTURAL DETAILS

				ELIZABETH BOROUGH SEWAGE TREATMENT PLANT EXPANSION	SENATE ENGINEERING COMPANY ENGINEERS – PLANNERS – SURVEYORS	
				SITUATE IN: ELIZABETH BOROUGH, ALLEGHENY COUNTY, PA.	UNIVERSITY OF PITTSBURGH APPLIED RESEARCH CENTER 420 WILLIAM PITT WAY, PITTSBURGH, PA. 15238 PHONE (412) 828-5454	
BID SET	J.E.B.	03/22 91	SEAL	PREPARED FOR: ELIZABETH BOROUGH MUNICIPAL AUTHORITY	DRAWN BY: J.E.B. / CHECKED BY: C.C. / DATE: 02/28/91	SCALE: 1/2" = 1'-0"
REVISIONS	BY	DATE			JOB NUMBER: 1804 / DRAWING NUMBER: D 2180 20	S-4

APPENDIX C

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0° North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The projection used in the preparation of this map was State Plane Pennsylvania south zone (FIPSZONE 3702). The horizontal datum was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on the FIRM was provided in digital format by the Allegheny County Geographic Information Systems Group. This information was photogrammetrically compiled at a scale of 1:2,400 from aerial photography dated 2004.

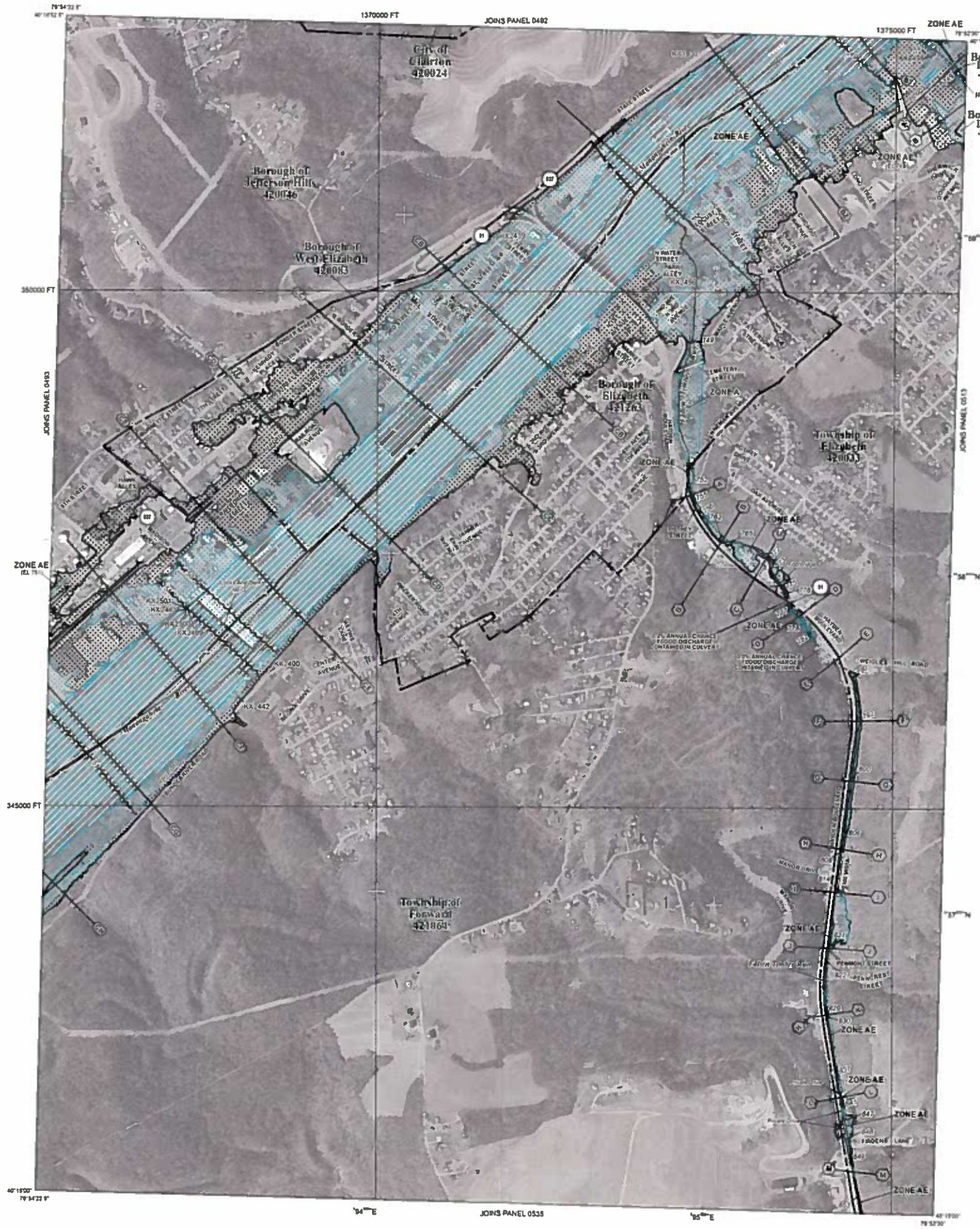
This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed Map Index for an overview map of the county showing the layout of map panels, community map repository addresses, and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information on available products associated with the FIRM visit the Map Service Center (MSC) website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have questions about this map, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange (FMIX) at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A — No Base Flood Elevations determined.
- ZONE AE — Base Flood Elevations determined.
- ZONE AH — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR — Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99 — Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Limit of Moderate Wave Action
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL. 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- Cross section line
- Transect line
- 87°07'45", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4276000 mN — 1000-meter Universal Transverse Mercator grid values, zone 17N
- 600000 FT — 5000-foot grid values: Pennsylvania State Plane coordinate system, South zone (FIPSZONE 3702), Lambert Conformal Conic projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
October 4, 1989

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
See Notice To Users page in FIS Report

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 800'

250 0 500 1000 FEET
150 0 150 300 METERS

PANEL 0494H

FIRM
FLOOD INSURANCE RATE MAP

ALLEGHENY COUNTY, PENNSYLVANIA
(ALL JURISDICTIONS)

PANEL 494 OF 558

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS

COMMUNITY	NUMBER	PANEL	SUFFIX
CLAIRTON CITY OF	420024	0494	H
ELIZABETH BOROUGH OF	421263	0494	H
ELIZABETH TOWNSHIP OF	1000010	0494	H
FORWARD TOWNSHIP OF	421064	0494	H
JEFFERSON HILLS BOROUGH OF	420046	0494	H
LINCOLN BOROUGH OF	420049	0494	H
WEST ELIZABETH BOROUGH OF	420083	0494	H

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
42003C0494H

MAP REVISED
SEPTEMBER 26, 2014

Federal Emergency Management Agency

NATIONAL FLOOD INSURANCE PROGRAM

APPENDIX D

EBMA Pump Station Flow Data

Date	2014								2015			
	May	June	July	August	September	October	November	December	January	February	March	April
1	600	442	253	315	366	176	241	463	343	578	569	398
2	487	400	254	379	287	179	209	375	327	839	476	395
3	461	404*	234	507	255	222	196	362	648	671	542	456
4	402	481	221	389	249	262	188	318	752	602	843	452
5	365	437	215	337	268	191	199	513	506	552	452	382
6	349	337	219	367	271	213	722	806	440	492	840	383
7	389	315	218	303	264	264	437	841	398	479	808	541
8	326	359	278	268	252	222	356	637	377	521	729	535
9	302	303	217	245	230	222	338	438	374	574	835	667
10	463	290	208	234	218	221	350	408	356	471	786	837
11	451	399	208	288	241	253	343	379	358	438	831	835
12	499	784	205	534	200	229	353	357	615	426	840	785
13	646	835	357	380	236	227	298	335	429	395	840	511
14	497	826	511	323	215	221	286	336	406	401	847	527
15	587	605	363	293	195	508	276	324	400	384	841	509
16	718	504	303	275	198	274	306	554	390	381	836	490
17	726	416	285	250	193	223	619	415	388	390	775	393
18	554	419	298	232	185	210	327	365	396	366	605	368
19	481	605	710	217	186	210	301	344	397	359	521	428
20	447	444	357	579	187	219	289	338	386	367	639	598
21	413	529	305	396	316	305	277	339	445	459	512	420
22	387	411	299	335	213	325	290	330	393	482	473	622
23	346	366	321	312	225	234	320	380	374	400	461	485
24	295	389	273	313	220	204	378	486	450	394	490	403
25	270	467	262	284	224	195	281	441	463	399	501	374
26	275	343	305	266	210	202	338	392	566	367	547	356
27	469	307	636	297	184	194	314	378	447	350	486	345
28	779	312	701	245	193	204	306	517	412	359	432	333
29	775	330	449	214	184	192	331	399	518		417	321
30	660	280	391	210	166	183	326	374	543		423	399
31	509		330	607		242		366	493		420	
Average	482	446	329	329	228	233	327	429	445	460	633	485
Peak	779	835	710	607	366	508	722	841	752	839	847	837

Total Average
402
720

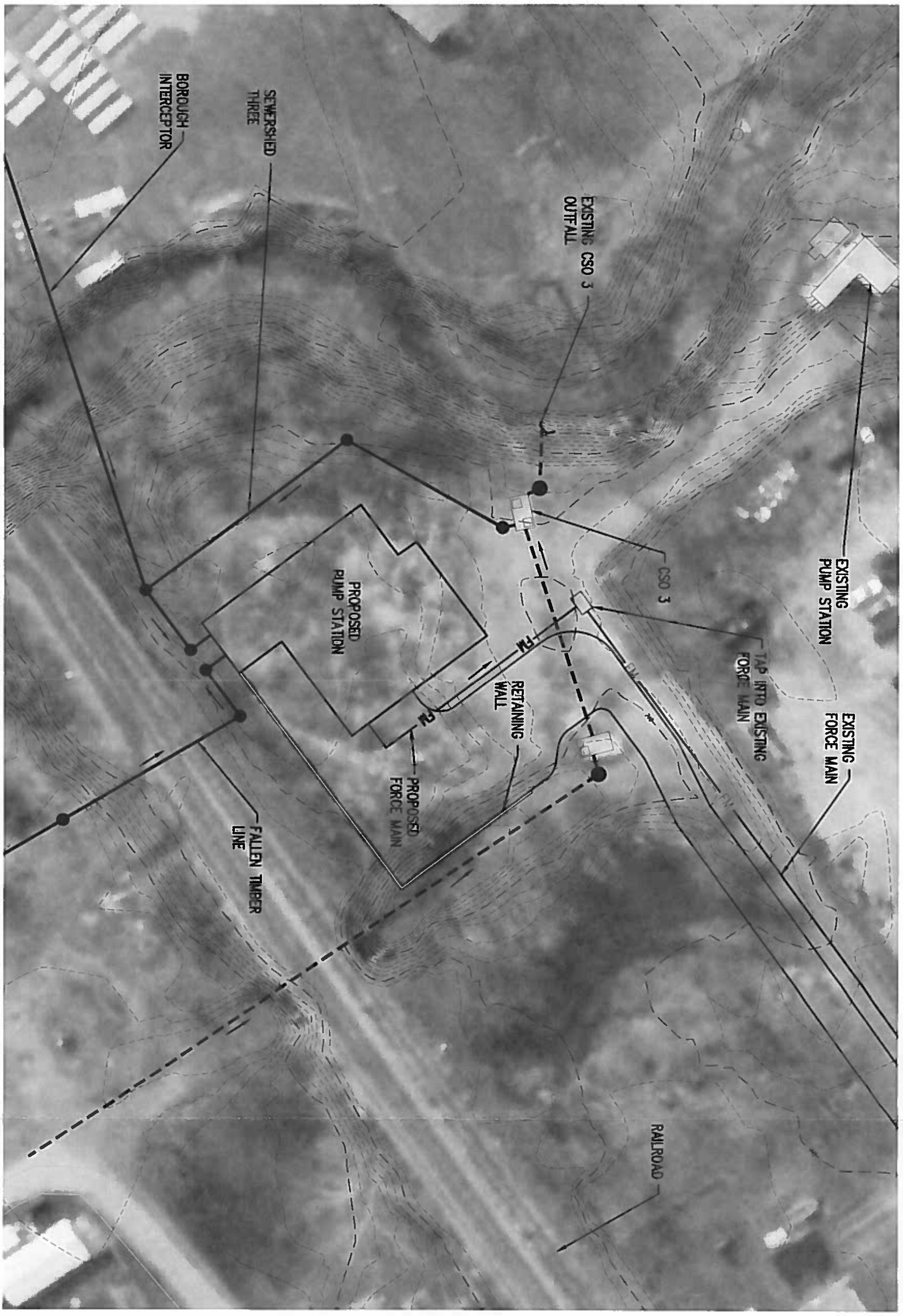
* The highest peak instantaneous flow rate of 920 gpm was recorded on June 3, 2014

APPENDIX E

H:\SEN\P\011\11154\dwg\PS-ALT-1.dwg, 8/18/2015 2:51:43 PM

MAGNETIC

GRAPHIC SCALE
(IN FEET)
0 10 20 40 80



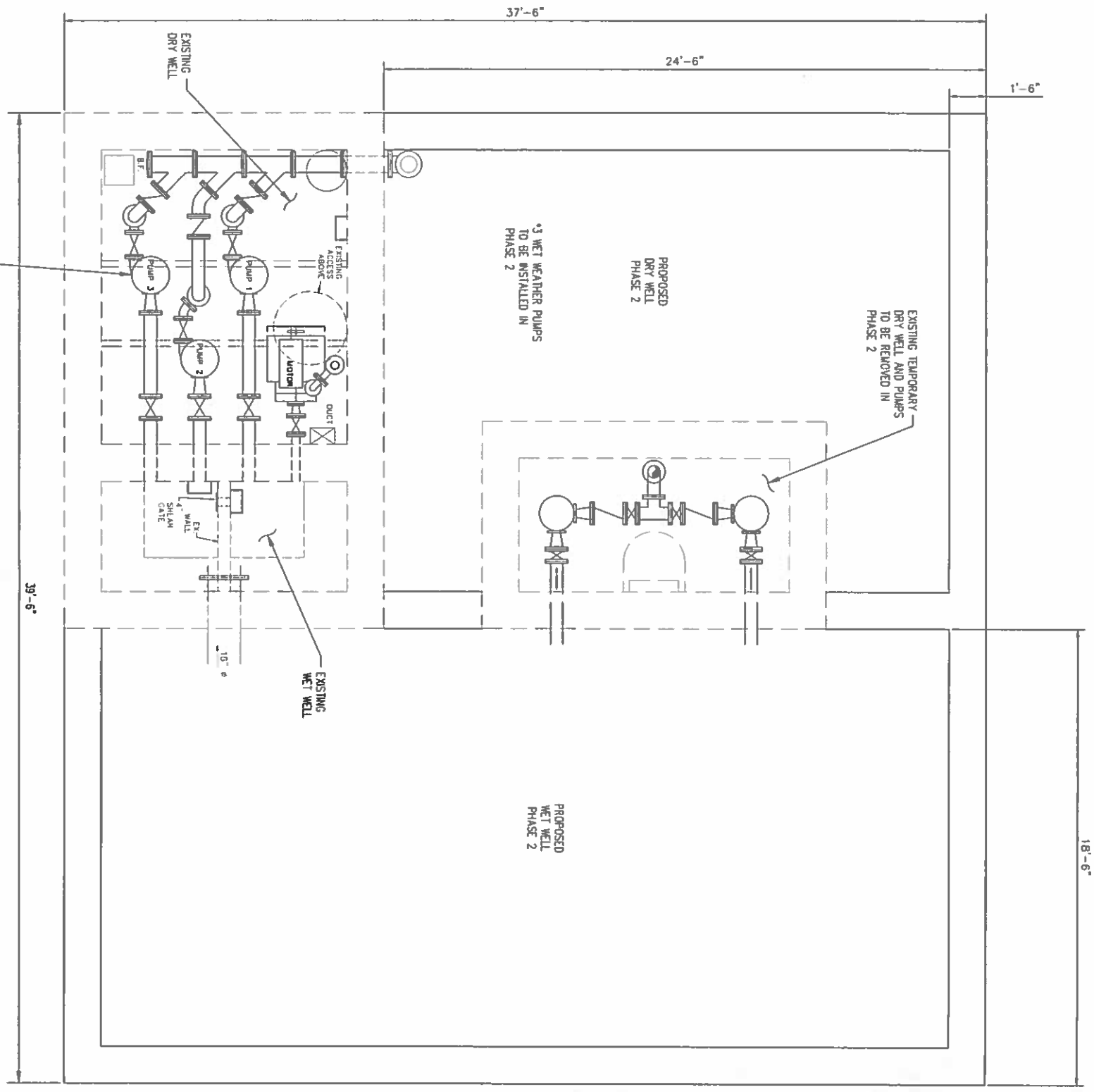
SENATE ENGINEERING COMPANY
U-PARC
420 WILLIAM PITT WAY
PITTSBURGH, PA. 15238-1330
PHONE (412) 828-5434
FAX (412) 828-5438

ELIZABETH BOROUGH MUNICIPAL AUTHORITY
#1 LOCUST STREET
ELIZABETH, PA 15037

PUMP STATION
ACT 537 SPECIAL STUDY
ALTERNATIVE 1

FIGURE 5.1

H:\SEN\P\011\11154\dwg\PS-ALT-3.dwg, 8/18/2015 2:53:52 PM



SENATE ENGINEERING COMPANY
U-PARC
420 WILLIAM PITT WAY
PITTSBURGH, PA. 15238-1330
PHONE (412) 826-5454
FAX (412) 826-5458

ELIZABETH BOROUGH MUNICIPAL AUTHORITY
#1 LOCUST STREET
ELIZABETH, PA 15037

PUMP STATION
ACT 537 SPECIAL STUDY
ALTERNATIVE 3

FIGURE 5.3

APPENDIX F

ELIZABETH BOROUGH MUNICIPAL AUTHORITY
MAY 2015

ALTERNATIVE 1 CONSOL PROPERTY

CONCEPT-LEVEL COST ESTIMATE [1]

DESCRIPTION	QTY	UNITS	EQUIPMENT/ MATERIAL/ITEM UNIT COST	EQUIPMENT/ MATERIAL/ ITEM PURCHASE	INSTALL. FACTOR	INSTALLED COST
MECHANICAL SCREEN W/ ENCL, WASHER, COMPACTER	1	EA	$ 250,000	$ 250,000	1.20	$ 300,000
BAR RACK	1	EA	$ 4,000	$ 4,000	1.20	$ 4,800
GRIT REMOVAL CHAMBER/PUMP/DEWATER SCREW	1	EA	$ 136,800	$ 136,800	1.40	$ 191,520
CONVEYOR/DUMPSTER	1	EA	$ 10,000	$ 10,000	1.40	$ 14,000
SLIDE AND SLUICE GATES	1	LS	$ 41,000	$ 41,000	1.20	$ 49,200
SCREW PUMP	1	LS	$ 130,000	$ 130,000	1.20	$ 156,000
RAW SEWAGE PUMPS	2	EA	$ 13,000	$ 26,000	1.20	$ 31,200
PIPING	1	LS	$ 80,000	$ 80,000	1.50	$ 120,000
SUMP PUMPS	2	EA	$ 3,000	$ 6,000	1.50	$ 9,000
HVAC	1	LS	$ 75,000	$ 75,000	1.40	$ 105,000
ELECTRICAL	1	LS	$ 300,000	$ 300,000	1.50	$ 450,000
CONTROLS	1	LS	$ 75,000	$ 75,000	1.50	$ 112,500
FLOW METER	1	EA	$ 3,000	$ 3,000	1.20	$ 3,600
PROPERTY ACQUISITION	30400	SF	$ 3.00	$ 91,200	1.00	$ 91,200
EXCAVATION	6900	CY	$ 30	$ 207,000	1.00	$ 207,000
FILL	2900	CY	$ 5	$ 14,500	1.00	$ 14,500
EXCESS EXCAVATION REMOVAL	4000	CY	$ 10	$ 40,000	1.00	$ 40,000
RETAINING WALL	1320	CY	$ 50	$ 66,000	1.00	$ 66,000
PAVEMENT	1	LS	$ 50,000	$ 50,000	1.00	$ 50,000
UTILITIES	1	LS	$ 15,000	$ 15,000	1.00	$ 15,000
PROCESS WATER	600	LF	$ 12	$ 7,200	1.00	$ 7,200
PLUMBING	1	LS	$ 30,000	$ 30,000	1.00	$ 30,000
SHEET PILING	3670	SF	$ 85	$ 311,950	1.00	$ 311,950
TOP LEVEL STRUCTURE (ASSUME 50 X 60 BLOCK BLDG.)	3000	SF	$ 120	$ 360,000	1.00	$ 360,000
GRAVEL	1740	CY	$ 35	$ 60,900	1.00	$ 60,900
CONCRETE BELOW GRADE STRUCTURE	1120	CY	$ 850	$ 952,000	1.00	$ 952,000
15" GRAVITY SEWER	35	LF	$ 150	$ 5,250	1.00	$ 5,250
24" GRAVITY SEWER	470	LF	$ 200	$ 94,000	1.00	$ 94,000
30" GRAVITY SEWER	40	LF	$ 300	$ 12,000	1.00	$ 12,000
5' MANHOLE	5	EA	$ 12,000	$ 60,000	1.00	$ 60,000
6' MANHOLE	2	EA	$ 14,500	$ 29,000	1.00	$ 29,000
BORE AND JACK 24" DIA	150	LF	$ 600	$ 90,000	1.00	$ 90,000
CAP EXISTING PIPES	1	LS	$ 5,000	$ 5,000	1.00	$ 5,000
FORCE MAIN TAP IN	1	LS	$ 5,000	$ 5,000	1.00	$ 5,000
CONSTRUCTION SUBTOTAL						$ 4,052,820
PROJECT COSTS [2] @	25%					$ 1,013,205
TOTAL						**$ 5,070,000**

1. Cost estimates are based on a concept-level understanding of the project and require adjustment as the project scope, layout, sizing and other issues are developed

2. Project costs include budget-level allowances for construction contingencies, administration, engineering, legal, permit and other typical project costs.

ELIZABETH BOROUGH MUNICIPAL AUTHORITY
MAY 2015

ALTERNATIVE 2 BOAT CLUB PROPERTY

CONCEPT-LEVEL COST ESTIMATE [1]

DESCRIPTION	QTY	UNITS	EQUIPMENT/ MATERIAL/ITEM UNIT COST	EQUIPMENT/ MATERIAL/ ITEM PURCHASE	INSTALL. FACTOR	INSTALLED COST
MECHANICAL SCREEN W/ ENCL, WASHER, COMPACTER	1	EA	$ 250,000	$ 250,000	1.20	$ 300,000
BAR RACK	1	EA	$ 4,000	$ 4,000	1.20	$ 4,800
GRIT REMOVAL CHAMBER/PUMP/DEWATER SCREW	1	EA	$ 136,800	$ 136,800	1.40	$ 191,520
CONVEYOR/DUMPSTER	1	EA	$ 10,000	$ 10,000	1.40	$ 14,000
SLIDE AND SLUICE GATES	1	LS	$ 41,000	$ 41,000	1.20	$ 49,200
SCREW PUMP	1	LS	$ 130,000	$ 130,000	1.20	$ 156,000
RAW SEWAGE PUMPS	2	EA	$ 13,000	$ 26,000	1.20	$ 31,200
PIPING	1	LS	$ 80,000	$ 80,000	1.50	$ 120,000
SUMP PUMPS	2	EA	$ 3,000	$ 6,000	1.50	$ 9,000
HVAC	1	LS	$ 75,000	$ 75,000	1.40	$ 105,000
ELECTRICAL	1	LS	$ 300,000	$ 300,000	1.50	$ 450,000
CONTROLS	1	LS	$ 75,000	$ 75,000	1.50	$ 112,500
FLOW METER	1	EA	$ 3,000	$ 3,000	1.20	$ 3,600
PROPERTY ACQUISITION	30000	SF	$ 6.00	$ 180,000	1.00	$ 180,000
EXCAVATION	3430	CY	$ 30	$ 102,900	1.00	$ 102,900
FILL	9000	CY	$ 35	$ 315,000	1.00	$ 315,000
EXCESS EXCAVATION REMOVAL	0	CY	$ 10	$ -	1.00	$ -
RETAINING WALL	7000	SF	$ 50	$ 350,000	1.00	$ 350,000
PAVEMENT	1	LS	$ 50,000	$ 50,000	1.00	$ 50,000
UTILITIES	1	LS	$ 15,000	$ 15,000	1.00	$ 15,000
PROCESS WATER	600	LF	$ 12	$ 7,200	1.00	$ 7,200
PLUMBING	1	LS	$ 30,000	$ 30,000	1.00	$ 30,000
SHEET PILING	1475	SF	$ 85	$ 125,375	1.00	$ 125,375
TOP LEVEL STRUCTURE (ASSUME 50 X 60 BLOCK BLDG.)	3000	SF	$ 120	$ 360,000	1.00	$ 360,000
GRAVEL	1740	CY	$ 35	$ 60,900	1.00	$ 60,900
CONCRETE BELOW GRADE STRUCTURE	1120	CY	$ 850	$ 952,000	1.00	$ 952,000
12" GRAVITY SEWER	120	LF	$ 150	$ 18,000	1.00	$ 18,000
24" GRAVITY SEWER	230	LF	$ 200	$ 46,000	1.00	$ 46,000
30" GRAVITY SEWER	15	LF	$ 300	$ 4,500	1.00	$ 4,500
5' MANHOLE	3	EA	$ 12,000	$ 36,000	1.00	$ 36,000
6' MANHOLE	4	EA	$ 14,500	$ 58,000	1.00	$ 58,000
BORE AND JACK 24" DIA	200	LF	$ 600	$ 120,000	1.00	$ 120,000
BORE AND JACK 12" DIA	200	LF	$ 550	$ 110,000	1.00	$ 110,000
BORE AND JACK 8" DIA	200	LF	$ 400	$ 80,000	1.00	$ 80,000
CAP EXISTING PIPES	1	LS	$ 5,000	$ 5,000	1.00	$ 5,000
FORCE MAIN TAP IN	1	LS	$ 5,000	$ 5,000	1.00	$ 5,000
CONSTRUCTION SUBTOTAL						$ 4,577,695
PROJECT COSTS [2] @	25%					$ 1,144,424
TOTAL						**$ 5,720,000**

1. Cost estimates are based on a concept-level understanding of the project and require adjustment as the project scope, layout, sizing and other issues are developed

2. Project costs include budget-level allowances for construction contingencies, administration, engineering, legal, permit and other typical project costs.

ELIZABETH BOROUGH MUNICIPAL AUTHORITY
MAY 2015

ALTERNATIVE 3 EXISTING PUMP STATION UPGRADES

CONCEPT-LEVEL COST ESTIMATE [1]

DESCRIPTION	QTY	UNITS	EQUIPMENT/ MATERIAL/ITEM UNIT COST	EQUIPMENT/ MATERIAL/ ITEM PURCHASE	INSTALL. FACTOR	INSTALLED COST
PHASE 1 PUMP STATION REPAIR						
REPLACE EXISTING PUMPS	3	EA	$ 13,000	$ 39,000	1.5	$ 58,500
PIPING AND VALVING MODIFICATIONS	1	LS	$ 20,000	$ 20,000	1.75	$ 35,000
ELECTRICAL UPGRADES	1	LS	$ 80,000	$ 80,000	1.00	$ 80,000
BYPASS PUMPING	1	LS	$ 10,000	$ 10,000	1.00	$ 10,000
ACCESS ROAD FILL	1500	CY	$ 35	$ 52,500	1.00	$ 52,500
CONCRETE WORK	33	CY	$ 850	$ 28,050	1.00	$ 28,050
STAIRS	3	EA	$ 7,000	$ 21,000	1.20	$ 25,200
FLOOD ACCESS	1	LS	$ 55,000	$ 55,000	1.40	$ 77,000
HATCHES	1	LS	$ 5,500	$ 5,500	1.40	$ 7,700
TOP LEVEL STRUCTURE	450	SF	$ 75	$ 33,750	1.00	$ 33,750
TEMP. WET WELL MODIFICATIONS	1	LS	$ 22,000	$ 22,000	1.00	$ 22,000
BORE AND JACK 24"	90	LF	$ 600	$ 54,000	1.00	$ 54,000
5' MANHOLE	2	EA	$ 12,000	$ 24,000	1.00	$ 24,000
24" GRAVITY SEWER	460	LF	$ 200	$ 92,000	1.00	$ 92,000
PROPERTY ACQUISITION	22000	SF	$ 6.00	$ 132,000	1.00	$ 132,000
ENVIRONMENTAL CONSIDERATIONS	1	LS	$ 30,000.00	$ 30,000	1.00	$ 30,000
PHASE 1 SUBTOTAL (WITH CONTINGENCY)						$ 950,000
PHASE 2 CAPACITY EXPANSION						
HEADWORKS						
STRUCTURE	1	LS	$ 400,000.0	$ 400,000	1.00	$ 400,000
MECHANICAL SCREEN W/ ENCL, WASHER, COMPACTER	1	EA	$ 250,000	$ 250,000	1.20	$ 300,000
BAR RACK	1	EA	$ 4,000	$ 4,000	1.20	$ 4,800
GRIT REMOVAL CHAMBER/PUMP/DEWATER SCREW	1	EA	$ 136,800	$ 136,800	1.40	$ 191,520
CONVEYOR/DUMPSTER	1	EA	$ 10,000	$ 10,000	1.40	$ 14,000
SLIDE AND SLUICE GATES	1	LS	$ 41,000	$ 41,000	1.20	$ 49,200
HVAC	1	LS	$ 75,000	$ 75,000	1.40	$ 105,000
ELECTRICAL	1	LS	$ 300,000	$ 300,000	1.50	$ 450,000
CONTROLS	1	LS	$ 75,000	$ 75,000	1.50	$ 112,500
DRY WELL MODIFICATIONS	1	LS	$ 558,000	$ 558,000	1.00	$ 558,000
WET WELL						
CONCRETE WORK	230	CY	$ 850	$ 195,500	1.00	$ 195,500
EXCAVATION	1750	CY	$ 30	$ 52,500	1.00	$ 52,500
SHEET PILE	4440	SF	$ 85	$ 377,400	1.00	$ 377,400
ELECTRICAL	1	LS	$ 100,000	$ 100,000	1.00	$ 100,000
LADDERS/GRATING	1	LS	$ 4,000	$ 4,000	1.40	$ 5,600
SEWAGE GRINDERS	3	EA	$ 50,000	$ 150,000	1.40	$ 210,000
SLIDE AND SLUICE GATES	1	LS	$ 10,000	$ 10,000	1.40	$ 14,000
15" GRAVITY SEWER	100	LF	$ 150	$ 15,000	1.00	$ 15,000
30" GRAVITY SEWER	150	LF	$ 300	$ 45,000	1.00	$ 45,000
6' MANHOLE	1	EA	$ 14,500	$ 14,500	1.00	$ 14,500
TOP LEVEL STRUCTURE	670	SF	$ 75	$ 50,250	1.00	$ 50,250
PIPING AND VALVING MODIFICATIONS	1	LS	$ 80,000	$ 80,000	1.00	$ 80,000
BYPASS PUMPING	1	LS	$ 150,000	$ 150,000	1.00	$ 150,000
DEWATERING	1	LS	$ 60,000	$ 60,000	1.00	$ 60,000
PHASE 2 SUBTOTAL (WITH CONTINGENCY)						$ 4,440,000
TOTAL						$ 5,390,000

1. Cost estimates are based on a concept-level understanding of the project and require adjustment as the project scope, layout, sizing and other issues are developed

2. Project costs include budget-level allowances for construction contingencies, administration, engineering, legal, permit and other typical project costs

Operation and Maintenance Cost

Electricity Cost ($/kwhr)	$ 0.05

Alternative 1	
Screen Motor ($/mo.)	$ 54
Power (HP)	5
Motor Efficiency	90%
Run Time (Hours per day)	8
Grit Pump ($/mo.)	$ 91
Power (HP)	10
Motor Efficiency	90%
Pump Efficiency	60%
Run Time (Hours per day)	4
Screening/Grit Disposal ($/mo.)	$ 300
Lights and Heating	$ 400
Maintenance ($/mo.)	$ 990
Man-hours (per day)	1.5
Salary (dollars per hour)	$ 22
Total Yearly O&M	$ 22,000

Alternative 2	
Screen Motor ($/mo.)	$ 54
Power (HP)	5
Motor Efficiency	90%
Run Time (Hours per day)	8
Grit Pump ($/mo.)	$ 91
Power (HP)	10
Motor Efficiency	90%
Pump Efficiency	60%
Run Time (Hours per day)	4
Screening/Grit Disposal ($/mo.)	$ 300
Lights and Heating	$ 400
Maintenance ($/mo.)	$ 1,320
Man-hours (per day)	2
Salary (dollars per hour)	$ 22
Total Yearly O&M	$ 26,000

Alternative 3	
Phase 1	
Grit Pump ($/mo.)	$ 91
Power (HP)	10
Motor Efficiency	90%
Pump Efficiency	60%
Run Time (Hours per day)	4
Sewage Grinder	$ 163
Power (HP)	5
Motor Efficiency	90%
Run Time (Hours per day)	24
Lights and Heating	$ 200
Maintenance ($/mo.)	$ 660
Man-hours (per day)	1
Salary (dollars per hour)	$ 22.00
Total Yearly O&M	$ 13,000

Phase 2	
Screen Motor ($/mo.)	$ 54
Power (HP)	5
Motor Efficiency	90%
Run Time (Hours per day)	8
Grit Pump ($/mo.)	$ 91
Power (HP)	10
Motor Efficiency	90%
Pump Efficiency	60%
Run Time (Hours per day)	4
Maintenance ($/mo.)	$ 1,320
Man-hours (per day)	2
Salary (dollars per hour)	$ 22.00
Screening/Grit Disposal ($/mo.)	$ 300.00
Sewage Grinder (X3)	$ 489
Power (HP)	5
Motor Efficiency	90%
Run Time (Hours per day)	24
Lights and Heating	$ 400
Total Yearly O&M	$ 28,000

Uniform Annual Cost Analysis

Federal Discount Rate	**3.10%**
Design Life (years)	20
Phase 2 Implementation	5

	Alternative 1	Alternative 2	Alternative 3
Estimated Construction Cost			
Phase 1	$ 5,070,000	$ 5,720,000	$ 950,000
Phase 2			$ 4,440,000
Estimated Annual O&M Cost			
Phase 1	$ 22,000	$ 26,000	$ 13,000
Phase 2			$ 28,000
Estimated Salvage			
Phase 1	$ -	$ -	$ -
Phase 2			$ -

Present Worth Calculations			
Construction			
Phase 1	$ 5,070,000	$ 5,720,000	$ 950,000
Phase 2			$ 4,440,000
Construction Present Worth	**$ 5,070,000**	**$ 5,720,000**	**$ 5,390,000**
O&M			
Phase 1	$ 324,000	$ 383,000	$ 59,000
Phase 2			$ 332,000
O&M Present Worth	**$ 324,000**	**$ 383,000**	**$ 344,000**
Salvage			
Phase 1	$ -	$ -	$ -
Phase 2			$ -
O&M Present Worth	**$ -**	**$ -**	**$ -**

Total Present Worth	**$ 5,394,000**	**$ 6,103,000**	**$ 5,734,000**
Uniform Annual Cost	**$ 366,000**	**$ 414,000**	**$ 389,000**

1 $PW_C = C_{CON}$

2 $$PW_{O\&M} = C_{O\&M}\left(\frac{(1+i)^n - 1}{i(1+i)^n}\right)$$

3 $PW_S = S(1+i)^{-n}$

4 $$PW_T = PW_C + PW_{O\&M} + PW_S$$

5 $$UAC = PW_T\left(\frac{i(1+i)^n}{(1+i)^n - 1}\right)$$

PW_C	Construction Cost Present Worth
$PW_{O\&M}$	Operation and Maintenance Cost Present Worth
PW_S	Salvage Value Present Worth
PW_T	Total Present Worth
C_{CON}	Construction Cost
$C_{O\&M}$	Operation and Maintenance Cost
S	Salvage Value
i	Interest Rate
n	Number of Periods
UAC	Uniform Annual Cost

APPENDIX G


79° 53' 11" W
79° 52' 55" W
40° 16' 36" N
40° 16' 29" N
594690
594720
594750
594780
594810
594840
594870
594900
594930
594960
594990
595020
4459070
4459040
4459010
4458980
4458950
4458920
4458890
4458860
URB
Church St
Pea Ave
Fallen Timber Run
Hill
Map Scale: 1:1,650 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0 20 40 80 120
Feet
0 50 100 200 300
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Allegheny County, Pennsylvania
Survey Area Data: Version 7, Sep 15, 2014

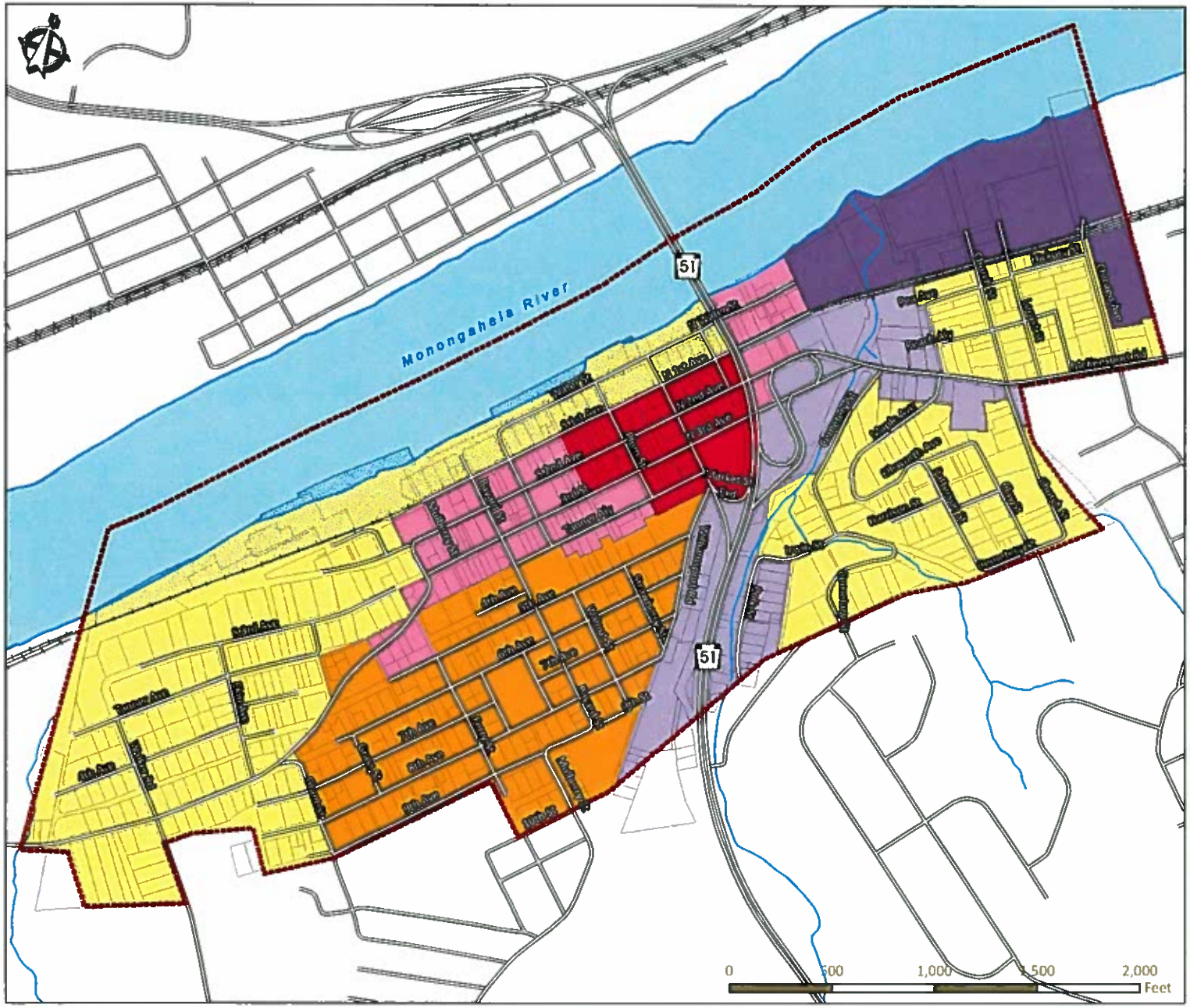
Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 5, 2014—Aug 28, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Allegheny County, Pennsylvania (PA003)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
URB	Urban land-Rainsboro complex, gently sloping	5.3	100.0%
Totals for Area of Interest		5.3	100.0%



Elizabeth Borough Official Zoning Map

Legend

- Borough Boundary
- Property Lines
- River
- Road
- Railroad
- Stream

Zoning Districts

- R-1 Low-Density Residential
- R2 Medium-Density Residential
- CBD Central Business District
- MU Mixed Use
- I/C Flex Industrial Commercial
- I-2 Heavy Industrial
- Riverfront Overlay District

Enacted this 30th day of April, 2013 by the Borough Council of Elizabeth, Ordinance No. 2013-002

Mackin

Source: Data used is courtesy of Allegheny County and PASDA.

Appendix A-22-b.2
Page 48 of 137

APPENDIX H



Ecotune

ENVIRONMENTAL CONSULTANTS

215 EXECUTIVE DRIVE, SUITE 204
CRANBERRY TOWNSHIP, PA 16066
VOICE (724) 779-9010
FAX (724) 779-9011

Wetland Delineation and Watercourse Identification Report
Elizabeth Borough Municipal Area
Storm Separation Project Area
Elizabeth Borough, Allegheny County, PA

Prepared For:
Senate Engineering Company
420 William Pitt Way
Pittsburgh, PA 15238

May 2015

1.0 PROJECT LOCATION AND DESCRIPTION

Elizabeth Borough is proposing to conduct a sewer separation project on a 7 +/- acre parcel of land located in the Pea Avenue / Church Street area of Elizabeth Borough, Allegheny Country, PA.

The Site consists of land dominated by a mix of residential and commercial development, open fields, and undisturbed forest with several maintain trails.

According to the Glassport, PA USGS Map, Fallen Timber Run transects the Site and the Monongahela River is located on along the Site's northern border.

The Site is depicted in Figure 1 (Location Map, Glassport, PA, USGS Map), Figure 2 (2012 Google Aerial Image), Figures 3 and 3A, (Existing Conditions Plan and Photo Locations Map), Figures 4 and 4A (USDA Soils Map and Legend), and Figure 5 (National Wetland Inventory Map).

This Report identifies and delineates all jurisdictional watercourses and wetlands within the limits of the Site.

2.0 WETLAND DELINEATION METHODOLOGY

The methodology used to determine the existence and extent of jurisdictional wetlands is set forth in the 1987 Corps of Engineers Wetland Delineation Manual. This manual has been supplemented by a number of regional supplements to more accurately delineate wetland in the United States. Because of its location, the Site was delineated using the *U. S. Army Corps of Engineers. 2012 Regional Supplement to the Corps of Engineers Wetland delineation Manual: Eastern Mountain and Piedmont Region.*

No recent development or earthmoving has occurred within the Site. Therefore, the Routine Onsite Determination Method was invoked due to the undisturbed nature of the Site (the soils, hydrology and/or vegetation have not been recently or significantly disturbed).

According to the Routine Methodology cited above, three criteria must be evaluated and must meet specific standards in order for an area to be considered a jurisdictional wetland. These criteria are as follows:

Hydrophytic Vegetation Indicators- The Corps Manual originally defined hydrophytic vegetation as the community of macrophytes that occurs in areas where inundation or soil saturation is either permanent or of sufficient frequency and duration to influence plant occurrence. The Manual used a plant-community approach to evaluate vegetation, and decisions on hydrophytic vegetation are based on the assemblage of plant species rather than the presence or absence of particular indicator species. Hydrophytic vegetation in the Region is now identified by using one of four indicators.

If the plant community passes any one of the four hydrophytic vegetation indicator tests, the vegetation is considered to be hydrophytic.
The indicators are as follows:

Indicator 1 – Rapid Test for Hydrophytic Vegetation – all dominant species across all starta are rated OBL or FACW, or a combination of these two categories based on a visual estimation.

Indicator 2 – Dominance Test – More than 50% of the dominant plant species (using the 50/20 rule) across all strata are rated OBL, FACW, or FAC.

Indicator 3 – Prevalence Test – the Prevalence Index is 3.0 or less.

Indicator 4 – Morphological Adaptations – the plant community passes either the Dominance Test or the Prevalence Test after reconsideration of the indicator status of certain plant species that exhibit morphological adaptations for life in wetlands.

Hydric Soil Indicators
The Supplement presents indicators that are designed to help identify hydric soils in the Region. Indicators are not designed to replace or relive the requirements contained in the definition of hydric soils. Therefore, a soil that meets the definition of a hydric soil is hydric whether or not it exhibits indicators. Hydric soil indicators are formed predominantly by the accumulation or loss of iron, manganese, sulfur or carbon compounds in a saturated, anaerobic environment. To observe an document a hydric soil, loose leaves, needles and bark are removed from the ground surface and a hole is dug to the depth needed to document an indicator or to confirm the absence of indicators. For most soils, a hole 20

inches in depth from the ground surface is sufficient, however for soils with deep, dark surface layers, an excavation of greater than 20 inches was used.

Hydric soil indicators are presented in three groups. Indicators of 'All Soils' are used in any soil regardless of texture. Indicators for "Sandy Soils' are used in soil layers with USDA textures of loamy fine sand or courser. Indicators for 'Loamy or Clayey Soils' are used with soil layers of very fine sand or finer.

If one or more of the following hydric soil indicators is present, then the soil is hydric.

Indicators for all soils are as follows:
Indicator A1 – Histosol – classifies as a histosol with 16 inches or more of the upper 32 inches of soil is organic soil material.

Indicator A2 – Histic Epipedon – a histic epipedon with an underlying mineral soil layer with a chroma of 2 or less.

Indicator A3 – Black Histic – a layer of peat, mucky peat or muck 8 inches or more thick that starts within 6 inches of the soil surface; has a hue of 10YR or yellower, value of 3 or less, and a chroma of 1 or less; and is underlain by a mineral soil material with a chroma of 2 or less.

Indicator A4 – Hydrogen Sulfide – a hydrogen sulfide odor within 12 inches of the soil surface.

Indicator A5 – Stratified Layers – several stratified layers starting within 6 inches of the soil surface. At least one of the layers has a value of 3 or less with a chroma value of 1 or less or is a muck, mucky peat or mucky modified mineral texture. The remaining layers have chromas of 2 or less. Any sandy material that constitutes a layer with a value of 3 or less and a chroma of 1 of less, when viewed with a hand lens, must have at least 70% of the visual soil particles masked with organic material. When viewed without a hand lens, nearly 100% of the soil particles appear to be masked.

Indicator A10 – 2cm of Muck – a layer of muck 0.75 inches (2 cm) thick with a value of 3 or less and chroma of 1 or less starting within 6 inches of the soil surface.

Indicator A11 - Depleted below the surface – a layer with a depleted or gleyed matrix that has 60% of chroma of 2 or less, starting within 12 inches of the soil surface, and having a minimum thickness of: 6 inches or 2 inches if the 2 inches consists of fragmented soil material. Loamy/clayey layers above the depleted or gleyed matrix must have a value of 3 or less and a chroma of 2 or less. Any sandy material above the depleted or gleyed matrix must have a value of 3 or less and a chroma of 1 or less and, when viewed with a hand lens, must have at least 70% of the visual soil particles masked with organic material. When viewed without a hand lens, nearly 100% of the soil particles appear to be masked.

Indicator A12 – Thick Dark Surface - a layer at least 6 inched thick with a depleted or gleyed matrix that has 60% or more chroma of 2 or less and is at least 12 inched below the soil surface. The layers above the depleted or gleyed matrix must have a value of 2.5 or less with a chroma of 1 or less to a depth of at least 12 inches and a value of 3 or less and chroma of 1 or less in any remaining layers above the depleted or gleyed matrix, when viewed with a hand lens, must have at least 70% of the visual soil particles masked with organic material. When viewed without a hand lens, nearly 100% of the soil particles appear to be masked.

Indicators for Sandy Soils are as follows:
Indicator S1 – Sandy Muck Mineral – a layer of mucky modified sandy soil material 2 inches or more thick, starting within 6 inches of the soil surface,

Indicator S4 – Sandy Gleyed Matrix – a gleyed matrix that occupies 60% or more of a layer starting within 6 inches of the soil surface.

Indicator S5 – Sandy Redox – a layer starting within 6 inches of the soils surface that is at least 4 inches thick and has a matrix with 60% or more chroma of 2 or less with 2% or more distinct and prominent redox concentrations occurring as soft masses and/or pore linings.

Indicator S6 – Stripped Matrix – A layer starting within 6 inches of the soil surface in which iron/manganese oxides and/or organic matter have been stripped from the matrix and the primary base color of the soil material has been exposed. The stripped areas and translocated oxides and/or organic matter form a faintly contrasting pattern of two or more colors with diffuse boundaries. The striped zones are 10% or more of the volume and are rounded.

Indicator S7 – Dark Surface – a layer 4 inches thick starting within 6 inches of the soils surface with a matrix value of 3 or less and a chroma of 1 or less. When viewed with a hand lens, must have at least 70% of the visual soil particles masked with organic material. When viewed without a hand lens, nearly 100% of the soil particles appear to be masked with organic material. The matrix color of the layer immediately below the dark layer must have the same colors as those described above or any color that has a chroma of 2 or less.

Indicator S8 – Polyvalue Below Surface – a layer with a value of 3 or less and a chroma of 1 or less starting within 6 inches of the soil surface. When viewed with a hand lens, must have at least 70% of the visual soil particles masked with organic material. When viewed without a hand lens, nearly 100% of the soil particles appear to be masked with organic material. Immediately below this layer 5% or more of the soil volume has a value of 3 or less and a chroma of 1 or less and the remainder of the soil volume has a value of 4 or more and chroma of 1 or less to a depth of 12 inches or more or to a spodic horizon, whichever is less.

Indicator S9 – Thin Dark Surface – a layer 2 inches or more thick starting within the upper 6 inches of the soil, with a value of 3 or less and a chroma of 1 of less. When viewed with a hand lens, must have at least 70% of the visual soil particles masked with organic material. When viewed without a hand lens, nearly 100% of the soil particles appear to be masked with organic material. This layer is underlain by a layer(s) with a chroma value of 4 or less and a chroma of 1 or less to a depth of 12 inches or to the spodic horizon, whichever is less.

Indicators for Loamy and Clayey Soils are as follows:
Indicator F2 – Loamy Gleyed Matrix – a gleyed matrix that occupies 60% or more of a layer starting within 12 inches of the soil surface.

Indicator F3 – Depleted Matrix – a layer that has a depleted matrix with 60% or more of a chroma of 2 or less and that has a minimum thickness of either: 2 inches if the 2 inches is entirely within the upper 6 inches of the soil, or 6 inches starting within 10 inches of the soil surface.

Indicator F6 – Redox Dark Surface – a layer that is at least 4 inches thick, is entirely within the upper 12 inches of the mineral soil, and has a: matrix value of 3 or less and chroma of 1 or less and 2% or more distinct or prominent mredox concentrations occurring as soft masses or pore linings, or a matrix value of 3 or less and chroma value of 2 or less and 5% or more distinct or prominent mredox concentrations occurring as soft masses or pore linings.

Indicator F7 – Depleted Dark Surface – redox depletions with a value of 5 or more and a chroma of 2 or less in a layer that is at last 4 inches thick, entirely within the upper 12 inches of the mineral soil and has a: matrix value of 3 or less and a chroma of 1 or less and 10% or more redox depletions, or a matrix value of 3 or less and a chroma of 2 or less and 20% or more redox depletions.

Indicator F8 – Redox Depressions – in closed depressions subject to ponding, 5% or more distinct or prominent redox concentration occurring as soft masses or pore linings in a layer that is 2 inches or more thick and is entirely within the upper 6 inches of the soil.

Indicator F12 – Iron-Manganese Masses – on floodplains, a layer 4 inches or more thick with 40% or more chroma of 2 or less and 2% or more distinct or prominent redox concentration occurring as soft iron-manganese masses with diffuse boundaries. The layer occurs entirely within 12 inches of the soil surface. Iron-manganese masses have a value and chroma of 3 or less. Most commonly, they are black.

Indicator F13 – Umbric Surface – In depressions and other concave landforms, a layer 10 inches or more thick staring within 6 inches of the soil surface in which the upper 6 inches has a value of 3 or less and a chroma of 1 or less in which the lower 4 inches has the same colors as those described above or any other color that has a chroma of 2 of less.

Indicator F 19 – Piedment Floodplain Soils – on active floodplains, amineral soil as least 6 inches thick starting within 10 inches of the soil surface with a matrix (60% or more of the volume) chroma less than 4 and 20% or more distinct or prominent redox concentrations occurring as soft masses or pore linings.

Wetland Hydrology Indicators

Wetland hydrology indicators are used in conjunction with indicators of hydric soil and hydrophytic vegetation to determine if an area is wetland under the Corps Manual. Hydrology indicators are often the most transitory of the wetland indicators.

Wetland hydrology indicators are presented in four groups. Indicators in group A are based on direct observation of surface water or groundwater during a visit. Group B consists of evidence that the site is subject to flooding or ponding, although it may not be inundated currently. Group C consists of other evidence that the soil is saturated or was saturated recently. Group D consists of landscape, vegetation and soil features that indicate contemporary rather than historical wet conditions. Within each group, indicators are categorized into one of two groups – primary and secondary indicators, based on their reliability within the region.

One primary indicator or two secondary indicators are necessary to conclude wetland hydrology is present.

Indicators of wetland hydrology include, but are not limited to, the following:

Indicator A1 – Surface Water (Primary) – this indicator consists of the direct, visual observation of surface water.

Indicator A2 – High Water Table (Primary) – this indictor consists of the direst, visual observation of the water table within 12 inches or less below the soil surface.

Indicator A3 – Saturation (Primary) – Visual observation of saturated soil conditions 12 inches or less from the surface as indicated by water glistening on the surfaces and broken interior faces or soil samples removed from the pit or auger hole.

Indicator B1 – Water Marks (Primary) – water marks are discolorations or stains on the bark of woody vegetation, rocks, bridge supports, buildings, fences, or other fixed objects as a result of inundation.

Indicator B2 – Sediment Deposits (Primary) – sediment deposits are thin layers or coatings of fine grained mineral material or organic matter, sometimes mixed with detritus, remaining on tree bark, plant stems or leaves, rocks, and other objects after surface water recedes.

Indicator B3 – Drift Deposits (Primary) – Consists of rafted debris that has been deposited on the ground surface or entangled in vegetation or other fixed objects.

Indicator B4 - Algal Mats (Primary) – consists of a mat or dried crust of algae, perhaps mixed with other detritus, left on the soil surface after dewatering.

Indicator B5 – iron Deposits (Primary) – consists of a thin orange or yellow crust or gel of oxidixed iron on the soil surface or on objects near the surface.

Indicator B7 – Inundation Visible on Aerial Imagery (Primary) – one or more recent aerial photographs or satellite images show the site to be inundated.

Indicator B9 – Water-stained Leaves (Primary) – water-stained leaves are fallen or recumbent dead leaves that are turned grayish or blackish in color due to inundation for long periods.

Indicator B13 – Aquatic Fauna (Primary) – presence of live individuals, diapausing insect eggs or crustacean cysts, or dead remains of aquatic fauna, such as but not limited to, sponges, bivalves, aquatic insects, ostracods, shrimp, other crustaceans, tadpoles, or fish, either on the soil surface or clinging to plants or other emergent vegetation.

Indicator B 14 – True Aquatic Plants (Primary) – consist of the presence of live individuals or dead remains of true aquatic plants.

Indicator B6 – Surface Soil Cracks (Secondary) – surface soil cracks consist of shallow cracks that form when fine-grained mineral or organic sediment dry and shrink, often creating a network of cracks.

Indicator B8 – Sparsely Vegetated Concave Surface (Secondary) – on concave land surfaces, the ground surface is either un-vegetated or sparsely vegetated due to long-duration ponding or flooding during the growing season.

Indicator B10 – Drainage Patterns (Secondary) – consists of flow patterns visible on the soil surface or eroded into the soil, low vegetation bent over ion the direction of flow, absence of leaf litter or small woody debris due to flowing water, and similar evidence that water flowed across the ground surface.

Indicator B16 Moss Trim Lines (secondary) – the presence of moss trim lines on trees or other upright objects in seasonally inundated areas.

Indicator C1 – Hydrogen Sulfide Odor (Primary) – the presence of hydrogen sulfide odor within 12 inches of the soil surface.

Indicator C3 – oxidized rhizospheres along living roots (Primary) – presence of a layer containing 2% or more iron-oxide coatings or plaques on the surfaces of living roots and/or iron-oxide coatings or linings on soil pores immediately surrounding living roots within 12 inches of the soil surface.

Indicator C4 – Presence of Reduced Iron (Primary) – presence of a layer containing reduced iron in the upper 12 inches of the soil profile, as indicated by a ferrous iron test or by the presence of a soil that changes color upon exposure to air.

Indicator C6 – Recent Iron Reduction in tilled Soils (Primary) – presence of a layer containing 2% or more redox concentrations as pore linings or soft masses in the tilled surface layer of soils cultivated within the last two years.

Indicator C7 – Thin Muck Surface (Primary) – consists of a layer of muck 1 inch thick or less thick on the soil surface.

Indicator C2 – Dry-season water Table (Secondary) - visual observation of the water table between 12 and 24 inches below the surface of the soil during the normal dry season or during a drier-than-normal-year.

Indicator C8 – Crayfish Burrows (Secondary) – presence of crayfish burrows.

Indicator C9 – Saturation visible on Aerial Imagery (Secondary) – one of more recent aerial photographs or satellite images indicate soil saturation.

Indicator D1 – Stressed Vegetation (Secondary) – in agriculture or planted vegetation located in a depression, swale or other topographically low area, this indicator is present if individuals of the same species growing in the potential wetland are clearly of smaller stature, less vigorous, or stressed compared with individuals growing in nearby drier landscape situations.

Indicator D2 – Geomorphic position (Secondary) – present if the area in question is located in a localized depression, drainageway, concave position within a floodplain, at the toe of a slope, on the low-elevation fringe of a pond or other body of water, or in an area where groundwater discharges.

Indicator D3 – Shallow Aquitard (Secondary) – occurs in and around the margins of depressions and in flat landscapes, and consists of the presence of an aquitard within the soil profile that is potentially capable of perching water within 12 inches of the soil surface.

Indicator D4 – Microtopographic Relief (Secondary) – consists of the presence of microtopographic features that occur in areas of seasonal inundation or shallow water tables, such as hummocks and tussocks.

Indicator D5 (FAC-Neutral test (Secondary) – the plant community passes the FAC-neutral test.

3.0 WETLAND DELINEATION RESULTS

Wetland Determination Data Forms were completed for each habitat type located within the Site and can be seen in Appendix A of this report. Data Forms sampling locations are indicated on Figures 3.

At no point within the limits of the Site were all three required wetland parameters met. Therefore, no wetlands were found to exist within the limits of the Site.

4.0 WATERCOURSE DETERMINATION

Two watercourses (Fallen Timber Run, Monongahela River) are located within the Site boundaries.

Fallen Timber Run transects the Site (enters the Site from the south, flowing north into the Monongahela River).

The Monongahela River is located on the northern border of the Site and flows northeast.

Relevant photographs of the Site are contained in Appendix B and are keyed to Figures 3.

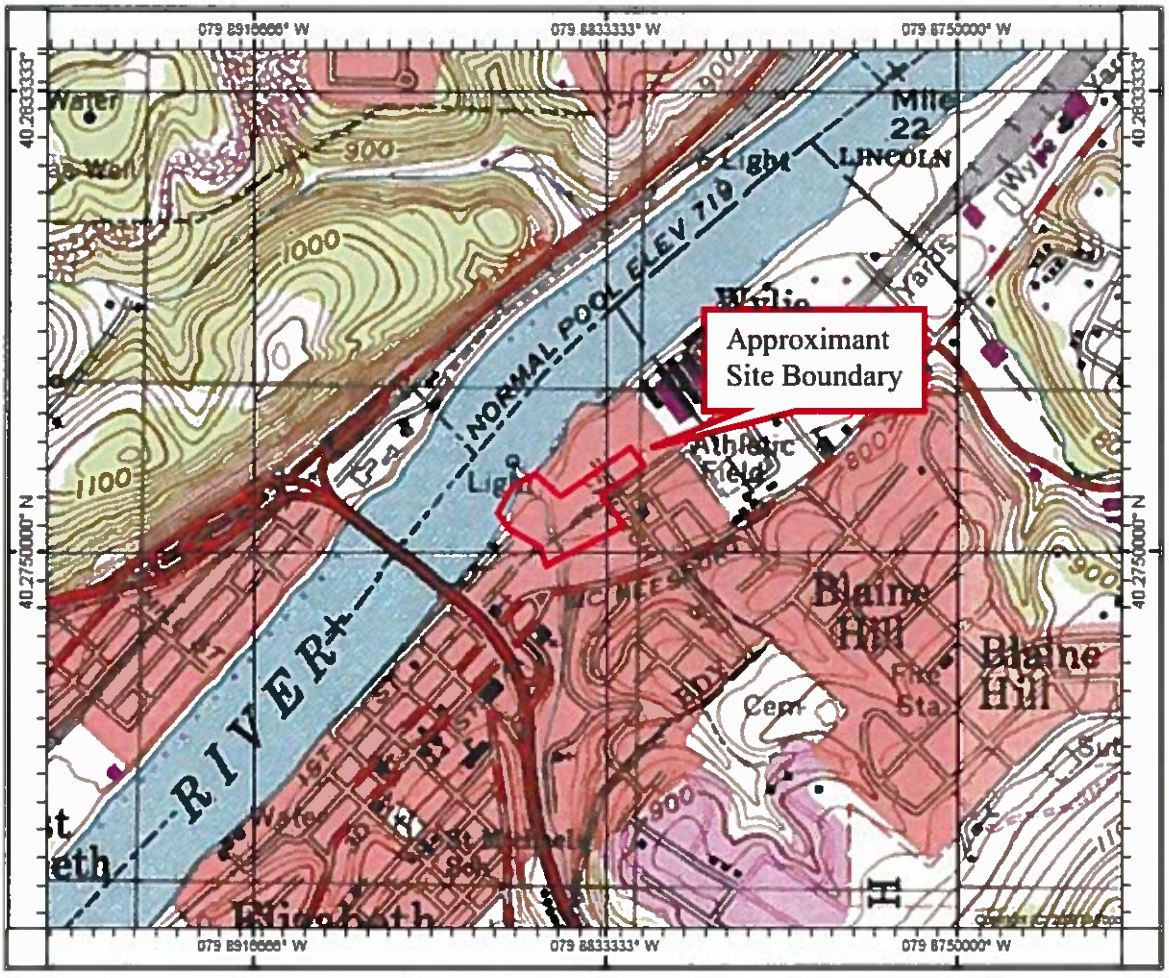


Figure 1 – Elizabeth Borough Municipal Area Site Location Map
Glassport, PA USGS Map

ENVIRONMENTAL CONSULTANTS
215 EXECUTIVE DRIVE, SUITE 204
CRANBERRY TOWNSHIP, PA 16066
VOICE (724) 779-9010
FAX (724) 779-9011



Figure 2 – Elizabeth Borough Municipal Area Site
Aerial Location Map (2014 Google Earth)



ENVIRONMENTAL CONSULTANTS
215 EXECUTIVE DRIVE, SUITE 204
CRANBERRY TOWNSHIP, PA 16066
VOICE (724) 779-9010
FAX (724) 779-901



Figure 3 - Elizabeth Borough Municipal Area Site - Existing Conditions Plan

ENVIRONMENTAL CONSULTANTS
215 EXECUTIVE DRIVE, SUITE 204
CRANBERRY TOWNSHIP, PA 16066
VOICE (724) 779-9010

FAX (724) 779-9011

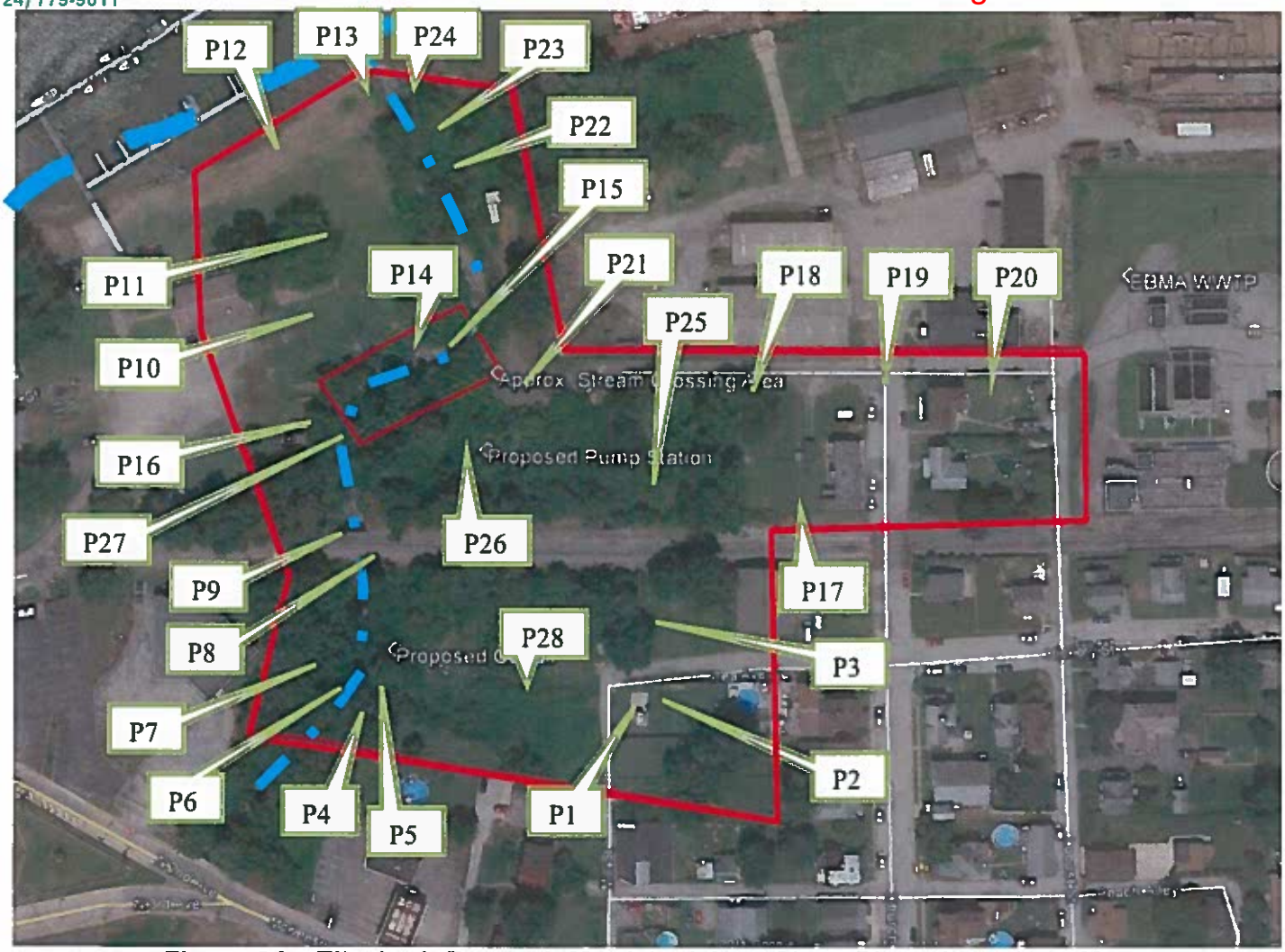


Figure 3A - Elizabeth Borough Municipal Area Site – Photo Locations Map

Ecotune
ENVIRONMENTAL CONSULTANTS
215 EXECUTIVE DRIVE, SUITE 204
CRANBERRY TOWNSHIP, PA 16066

VOICE (724) 779-9010
FAX (724) 779-9011

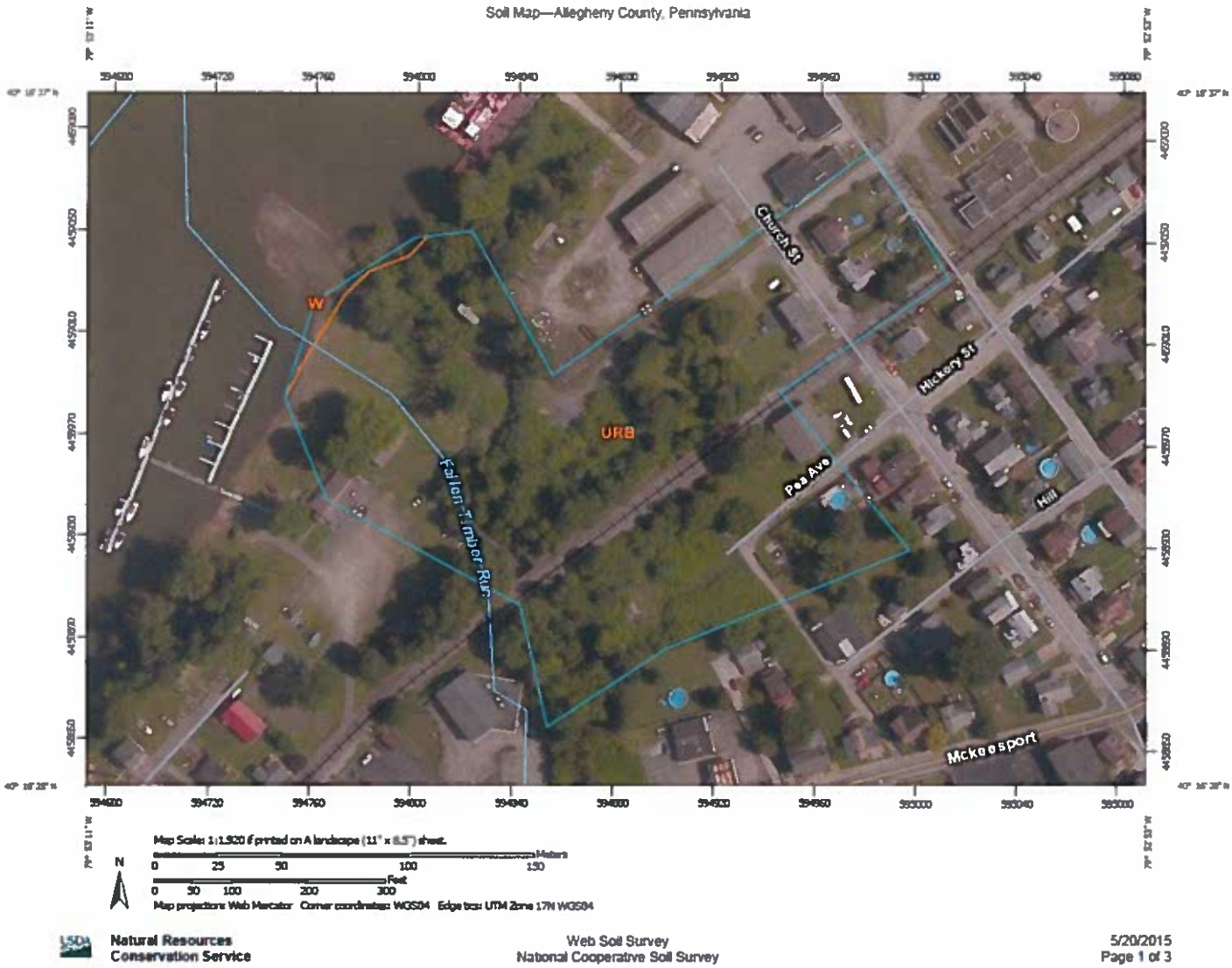


Figure 4 – Elizabeth Borough Municipal Area Site
Soils Map
USDA Soil Survey

ENVIRONMENTAL CONSULTANTS
215 EXECUTIVE DRIVE, SUITE 204
CRANBERRY TOWNSHIP, PA 16066
VOICE (724) 779-9010

FAX (724) 779-9011

Map Unit Legend

Allegheny County, Pennsylvania (PA003)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
URB	Urban land-Rainsboro complex, gently sloping	7.3	98.8%
W	Water	0.1	1.2%
Totals for Area of Interest		7.4	100.0%

Figure 4A – Elizabeth Borough Municipal Area Site
Soils Legend
USDA Soil Survey

ENVIRONMENTAL CONSULTANTS
215 EXECUTIVE DRIVE, SUITE 204
CRANBERRY TOWNSHIP, PA 16066
VOICE (724) 779-9010

FAX (724) 779-9011

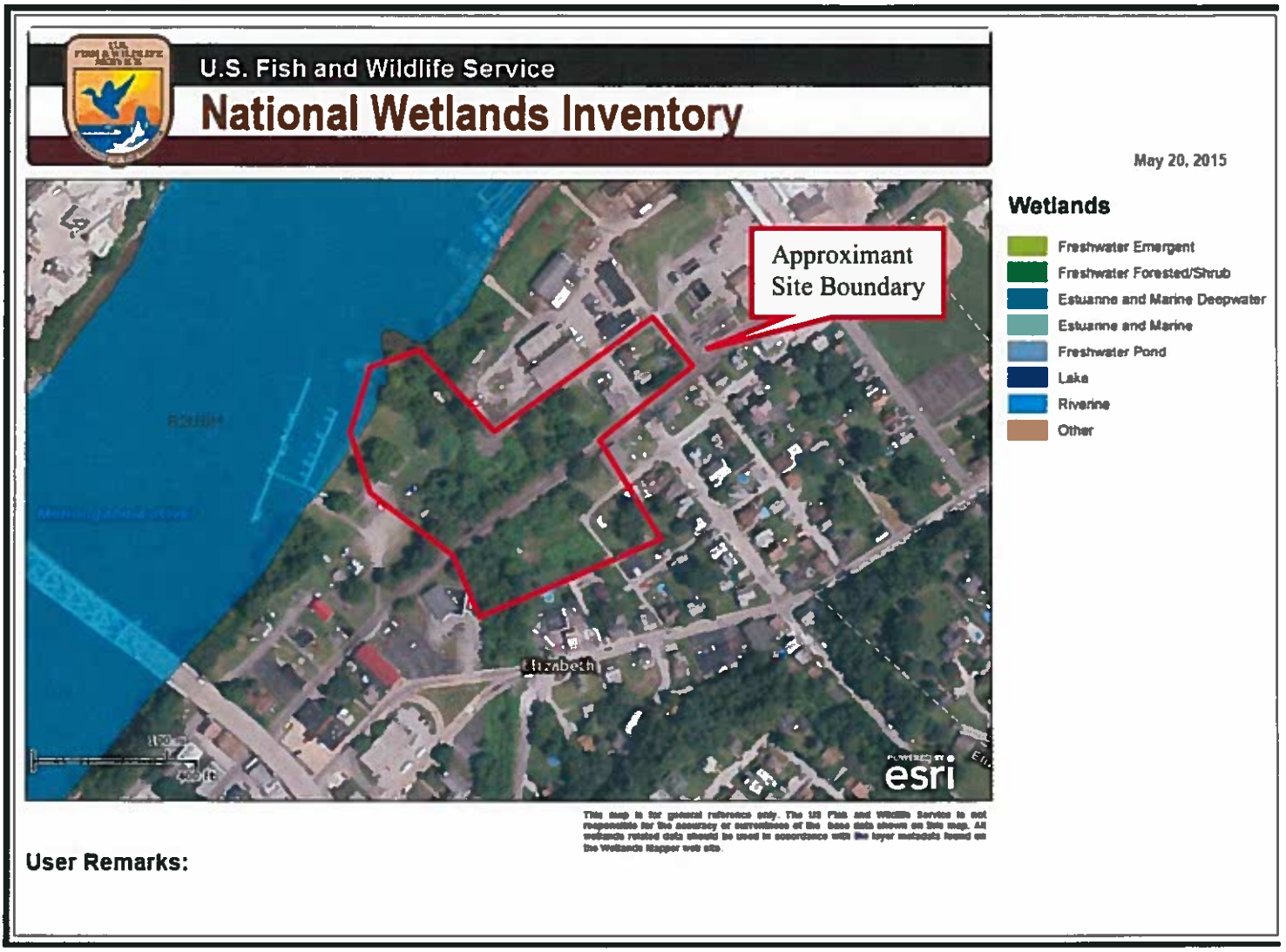


Figure 5 – Elizabeth Borough Municipal Area Site
NWI Map

Ecotune
ENVIRONMENTAL CONSULTANTS
215 EXECUTIVE DRIVE, SUITE 204
CRANBERRY TOWNSHIP, PA 16066
VOICE (724) 779-9010
FAX (724) 779-9011

APPENDIX A
WETLAND DETERMINATION DATA FORMS

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Elizabeth Borough Municipal Area City/County: Allegheny Sampling Date: 5/19/2015

Applicant/Owner: Senate Engineering Company State: PA Sampling Point: DF 1

Investigator(s): ECOTUNE- AM Section, Township, Range: Elizabeth Borough

Landform (hillslope, terrace, etc.) Flat Local relief (concave, convex, none): None

Slope (%): n/a Lat: 40.2756 Long: -79.8833 Datum:

Soil Map Unit Name: UrB NWI Classification: Not Mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?**	Yes ____ No X
Hydric Soil Present?	Yes ____	No X		
Wetland Hydrology Present?	Yes ____	No X		

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches):	
Water Table Present?	Yes ___ No X	Depth (inches):	**Wetland Hydrology Present?** Yes ___ No X
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) - Use scientific names of plants.

Sampling Point DF 1 _____

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Ailanthus altissima	25	X	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
50/20=12.5/5	25	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
50/20=		= Total Cover	

Herb Stratum (Plot size: 5')			
1. Lolium perenne	85	X	FACU
2. Trifolium repens	5		FACU
3. Taraxacum officinale	10		FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
50/20=50/20	100	= Total Cover	

Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6.			
50/20=		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		X 2 =	
FAC species		X 3 =	
FACU species		X 4 =	
UPL species		X 5 =	
Column Totals:		(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is > 50%

___ 3 - Prevalence Test is ≤ 3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: DF 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 18	10 YR 4/4						Mineral	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (s4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Suface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of Hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches):

Hydric Soil Present? **Yes** _____ **No** **X**

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Elizabeth Borough Municipal Area City/County: Allegheny Sampling Date: 5/19/2015

Applicant/Owner: Senate Engineering Company State: PA Sampling Point: DF 2

Investigator(s): ECOTUNE- AM Section, Township, Range: Elizabeth Borough

Landform (hillslope, terrace, etc.) Hill slope Local relief (concave, convex, none): None

Slope (%): n/a Lat: 40.2751 Long: -79.8840 Datum:

Soil Map Unit Name: UrB NWI Classification: Not Mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?**	Yes ____	No X
Hydric Soil Present?	Yes ____	No X			
Wetland Hydrology Present?	Yes ____	No X			

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches):	
Water Table Present?	Yes ___ No X	Depth (inches):	**Wetland Hydrology Present?** Yes ____ No X
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) - Use scientific names of plants.

Sampling Point DF 2 _____

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer saccharinum	35	X	FACW
2. Prunus serotina	15		FACU
3. Acer saccharum	35	X	FACU
4.			
5.			
6.			
7.			
8.			
50/20=42.5/17	85	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
50/20=		= Total Cover	

Herb Stratum (Plot size: 5')			
1. Impatiens capensis	30	X	FACW
2. Toxicodendron radicans	5		FAC
3. Verbesina alternifolia	10		FAC
4. Polygonum erectum	40	X	FACU
5. Allium canadense	5		FACU
6.			
7.			
8.			
9.			
10.			
11.			
12.			
50/20=45/18	90	= Total Cover	

Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6.			
50/20=		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	65	X 2 =	130
FAC species	15	X 3 =	45
FACU species	95	X 4 =	380
UPL species	0	X 5 =	0
Column Totals:	175 (A)		555 (B)

Prevalence Index = B/A = 3.1

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

_X_ 2 - Dominance Test is > 50%

___ 3 - Prevalence Test is ≤ 3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No _X_

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: DF 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 18	10 YR 4/2	100					Mineral	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (s4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Suface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of Hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** **X**

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Elizabeth Borough Municipal Area City/County: Allegheny Sampling Date: 5/19/2015

Applicant/Owner: Senate Engineering Company State: PA Sampling Point: DF 3

Investigator(s): ECOTUNE- AM Section, Township, Range: Elizabeth Borough

Landform (hillslope, terrace, etc.) Hill slope Local relief (concave, convex, none): none

Slope (%): n/a Lat: 40.2759 Long: -879.8850 Datum:

Soil Map Unit Name: UrB NWI Classification: Not Mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?**	Yes ____	No X
Hydric Soil Present?	Yes ____	No X			
Wetland Hydrology Present?	Yes ____	No X			

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches):	
Water Table Present?	Yes ___ No X	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches):	

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) - Use scientific names of plants.

Sampling Point DF 3 _____

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer saccharinum	20	X	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
50/20=10/4	20	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
50/20=		= Total Cover	

Herb Stratum (Plot size: 5')			
1. Viola sororia	10		FAC
2. Lolium perenne	75	X	FACU
3. Ranunculus parvilflorus	10		FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
50/20=47.5/19	95	= Total Cover	

Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6.			
50/20=		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	20	X 2 =	40
FAC species	20	X 3 =	225
FACU species	75	X 4 =	300
UPL species	0	X 5 =	0
Column Totals:	115 (A)		565 (B)

Prevalence Index = B/A = 4.9

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is > 50%

___ 3 - Prevalence Test is ≤ 3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: DF 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 18	10 YR 4/4	100					Mineral	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (s4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Suface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of Hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches):

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Elizabeth Borough Municipal Area City/County: Allegheny Sampling Date: 5/19/2015

Applicant/Owner: Senate Engineering Company State: PA Sampling Point: DF 4

Investigator(s): ECOTUNE- AM Section, Township, Range: Elizabeth Borough

Landform (hillslope, terrace, etc.) Flat Local relief (concave, convex, none): None

Slope (%): n/a Lat: 40.2757 Long: -79.8846 Datum:

Soil Map Unit Name: UrB NWI Classification: Not Mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?**	Yes ____	No X
Hydric Soil Present?	Yes ____	No X			
Wetland Hydrology Present?	Yes X	No ____			

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches):	
Water Table Present?	Yes ___	No X	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches):	>3

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) - Use scientific names of plants.

Sampling Point DF 4

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Gleditsia triacanthos	10		FAC
2. Picea pungens	20	X	FAC
3.			
4.			
5.			
6.			
7.			
8.			
50/20=15/6	30	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. Gleditsia triacanthos	5	X	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
50/20=2.5/1	5	= Total Cover	

Herb Stratum (Plot size: 5')			
1. Impatiens capensis	40	X	FACW
2. Polygonum erectum	25	X	FACU
3. Lolium perenne	25	X	FACU
4. Taraxacum officinale	10		FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
50/20=50/20	100	= Total Cover	

Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6.			
50/20=		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	40	X 2 =	80
FAC species	35	X 3 =	105
FACU species	60	X 4 =	240
UPL species	0	X 5 =	0
Column Totals:	110 (A)		425 (B)

Prevalence Index = B/A = 3.8

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is > 50%

___ 3 - Prevalence Test is ≤ 3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: DF 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 18	10 YR 4/2	100					Mineral	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (s4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Suface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of Hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Elizabeth Borough Municipal Area City/County: Allegheny Sampling Date: 5/19/2015

Applicant/Owner: Senate Engineering Company State: PA Sampling Point: DF 5

Investigator(s): ECOTUNE- AM Section, Township, Range: Elizabeth Borough

Landform (hillslope, terrace, etc.) Hill slope Local relief (concave, convex, none): None

Slope (%): n/a Lat: 40.2756 Long: -79.8841 Datum:

Soil Map Unit Name: UrB NWI Classification: Not Mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?**	Yes ____	No X
Hydric Soil Present?	Yes ____	No X			
Wetland Hydrology Present?	Yes ____	No X			

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches):	
Water Table Present?	Yes ___ No X	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches):	

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) - Use scientific names of plants.

Sampling Point DF 5

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer negundo	25	X	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
50/20=12.5/5	25	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
50/20=		= Total Cover	

Herb Stratum (Plot size: 5')			
1. Polygonum erectum	80	X	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
50/20=40/16	80	= Total Cover	

Woody Vine Stratum (Plot size: 30')			
1. Vitis aestivalis	10	X	FACU
2.			
3.			
4.			
5.			
6.			
50/20=5/2	10	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		X 2 =	
FAC species		X 3 =	
FACU species		X 4 =	
UPL species		X 5 =	
Column Totals:		(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is > 50%

___ 3 - Prevalence Test is ≤ 3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: DF 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 18	10 YR 4/2	100					Mineral	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (s4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Suface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of Hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches):

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Elizabeth Borough Municipal Area City/County: Allegheny Sampling Date: 5/19/2015

Applicant/Owner: Senate Engineering Company State: PA Sampling Point: DF 6

Investigator(s): ECOTUNE- AM Section, Township, Range: Elizabeth Borough

Landform (hillslope, terrace, etc.) Flat Local relief (concave, convex, none): None

Slope (%): n/a Lat: 40.2753 Long: -79.8834 Datum:

Soil Map Unit Name: UrB NWI Classification: Not Mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the Sampled Area within a Wetland?**	Yes ___	No X
Hydric Soil Present?	Yes ___	No X			
Wetland Hydrology Present?	Yes ___	No X			

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches):	
Water Table Present?	Yes ___ No X	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches):	

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) - Use scientific names of plants.

Sampling Point DF 6 _____

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
50/20=	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')			
1. Ailanthus altissima	25	X	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
50/20=12.5/5	25 = Total Cover		

Herb Stratum (Plot size: 5')			
1. Polygonum erectum	45	X	FACU
2. Carex bushii	30	X	FACW
3. Lolium perenne	15		FACU
4. Taraxacum officinale	5		FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
50/20=47.5/19	95 = Total Cover		

Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6.			
50/20=	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		X 2 =	
FAC species		X 3 =	
FACU species		X 4 =	
UPL species		X 5 =	
Column Totals:		(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is > 50%

___ 3 - Prevalence Test is ≤ 3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: DF 6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 – 2	10 YR 4/1	95	10 YR 5/6	5	C	PL	Organic	
2 - 18	10 YR 4/3	100					Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (s4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Suface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of Hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches):

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

APPENDIX B
SITE PHOTOGRAPHS

All Photographs Taken On May 20, 2015



P1 – Photo location 1, facing southeast



P2 – Photo location 2, facing northeast



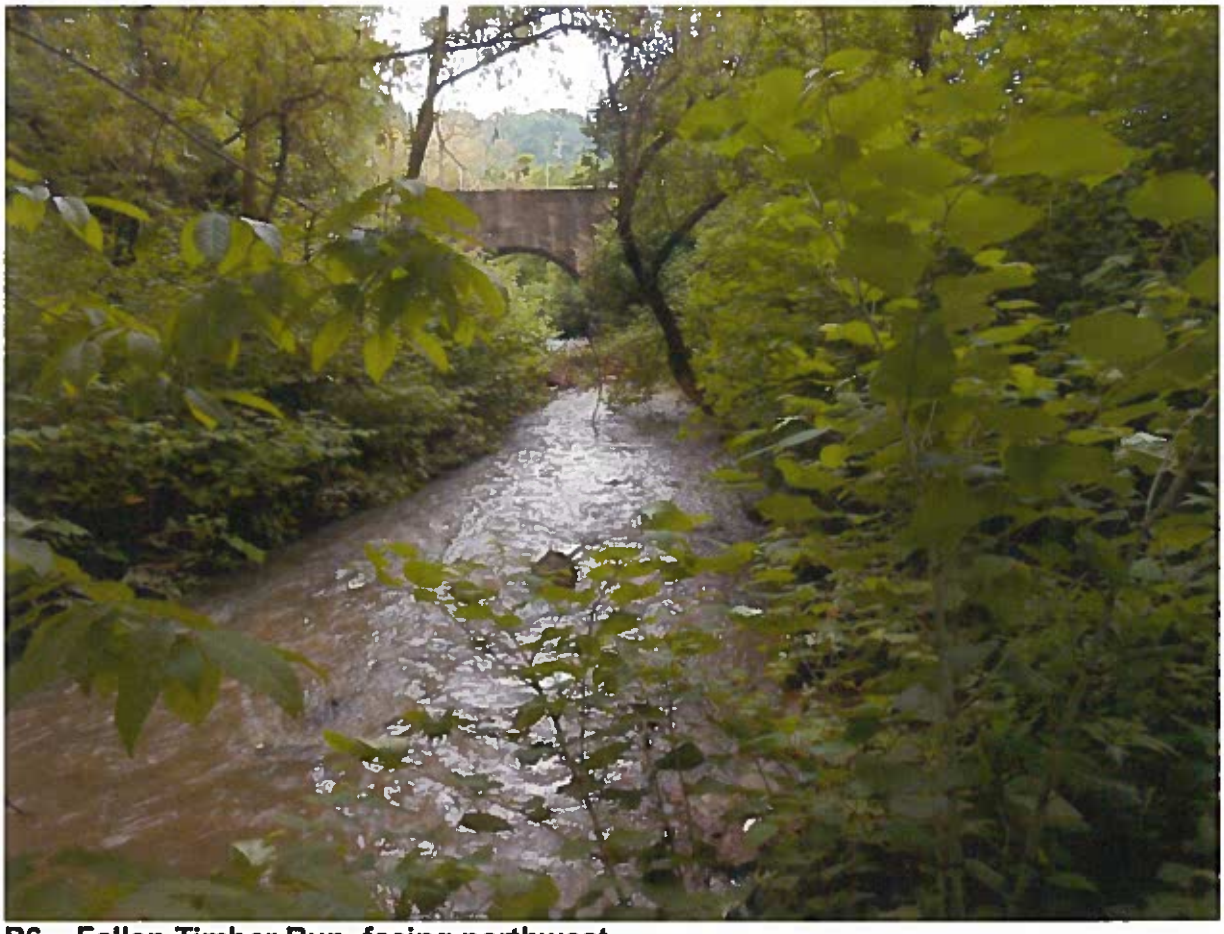
P3 – Data form location 1, facing northeast



P4 – Dataform location 2, facing east



P5 – Photo location 5, facing northwest



P6 – Fallen Timber Run, facing northwest



P7 – Photo location 7, facing west



P8 – Photo location 8, facing northeast



P9- Fallen Timber Run, facing northwest



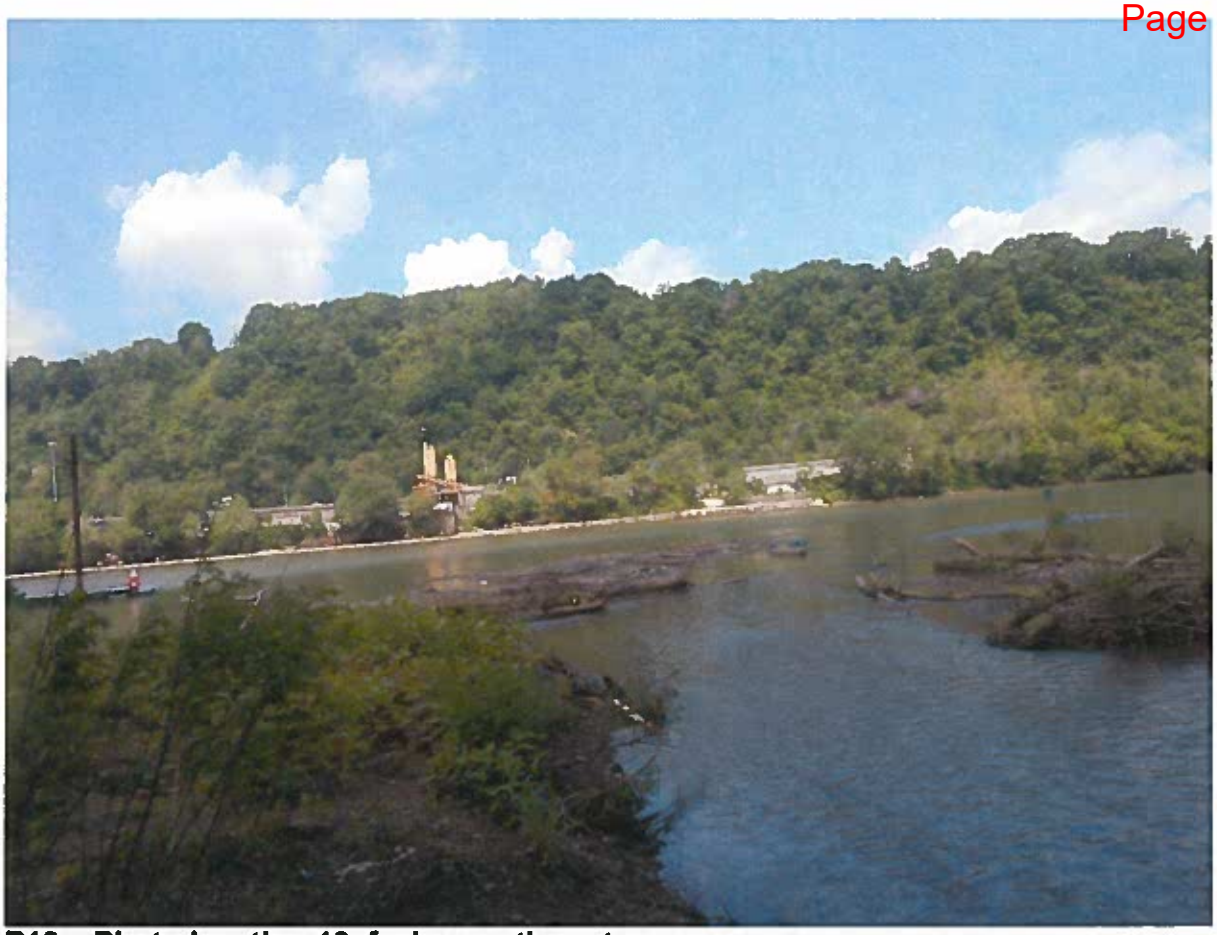
P10 – Photo location 10, facing northeast



P11 – Data form location 11, facing northwest



P12 – Photo location 12, facing southwest



P13 – Photo location 13, facing northwest



P14 – Data form location 4, facing southwest



P15 – Photo location 15, facing south



P16 – Photo location 16, facing southwest



P17 – Photo location 17, facing northwest



P18 – Photo location 18, facing north



P19 – Photo location 19, facing southeast



P20 – Photo location 20, facing southeast



P21 – Photo location 21, facing west



P22 – Photo location 22, facing northwest



P23 – Photo location 23, facing southeast



P24 – Photo location 24, facing northwest



P25 – Photo location 25, facing southeast



P26 – Photo location 26, facing northwest



P27 – Fallen Timber Run, facing south



P28 – Data form location 6, facing south

APPENDIX I

PNDI Project Environmental Review Receipt Project Search ID: 20150508506938

1. PROJECT INFORMATION

Project Name: **EBMA Pump Station**
Date of review: **5/8/2015 9:24:45 AM**
Project Category: **Waste Transfer, Treatment, and Disposal,Liquid waste/Effluent,Sewage module/Act 537 plan**
Project Area: **2.2** acres
County: **Allegheny** Township/Municipality: **Elizabeth Boro**
Quadrangle Name: **GLASSPORT** ~ ZIP Code: **15025,15037**
Decimal Degrees: **40.275478 N, -79.883838 W**
Degrees Minutes Seconds: **40° 16' 31.7" N, -79° 53' 1.8" W**



2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	No Known Impact	No Further Review Required
PA Department of Conservation and Natural Resources	No Known Impact	No Further Review Required
PA Fish and Boat Commission	No Known Impact	No Further Review Required
U.S. Fish and Wildlife Service	No Known Impact	No Further Review Required

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate no known impacts to threatened and endangered species and/or special concern species and resources within the project area. Therefore, based on the information you provided, no further coordination is required with the jurisdictional agencies. This response does not reflect potential agency concerns regarding impacts to other ecological resources, such as wetlands.

3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jurisdictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

PA Game Commission

RESPONSE: No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Department of Conservation and Natural Resources

RESPONSE: No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Fish and Boat Commission

RESPONSE: No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

U.S. Fish and Wildlife Service

RESPONSE: No impacts to **federally** listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.* is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other authorities.

4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. For cases where a "Potential Impact" to threatened and endangered species has been identified before the application has been submitted to DEP, the application should not be submitted until the impact has been resolved. For cases where "Potential Impact" to special concern species and resources has been identified before the application has been submitted, the application should be submitted to DEP along with the PNDI receipt. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. DEP and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at http://www.naturalheritage.state.pa.us.

5. ADDITIONAL INFORMATION

The PNDI environmental review website is a **preliminary** screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

6. AGENCY CONTACT INFORMATION

PA Department of Conservation and Natural Resources
Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552, Harrisburg, PA. 17105-8552
Fax:(717) 772-0271

U.S. Fish and Wildlife Service
Pennsylvania Field Office
110 Radnor Rd; Suite 101, State College, PA 16801
NO Faxes Please.

PA Fish and Boat Commission
Division of Environmental Services
450 Robinson Lane, Bellefonte, PA. 16823-7437
NO Faxes Please

PA Game Commission
Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA. 17110-9797
Fax:(717) 787-6957

7. PROJECT CONTACT INFORMATION

Name:_____
Company/Business Name:_____
Address:_____
City, State, Zip:_____
Phone:(_____)_____Fax:(_____)_____
Email:_____

8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

_____ _____
applicant/project proponent signature date

APPENDIX J

Commonwealth of Pennsylvania
Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Commonwealth Keystone Building, 2nd Floor
400 North Street
Harrisburg, PA 17120-0093
www.phmc.state.pa.us

4 December 2012

Christine Davis
Christine Davis Consultants
560 Penn Street
Verona, PA 15147

Re: ER# 2012-1969-003-B
PV: Record of Disturbance Form, Elizabeth Borough Pump Station, Elizabeth Borough, Allegheny County

Dear Ms. Davis:

Thank you for submitting information concerning the above referenced project. The Bureau for Historic Preservation (the State Historic Preservation Office) reviews projects in accordance with state and federal laws. Section 106 of the National Historic Preservation Act of 1966, and the implementing regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation, is the primary federal legislation. The Environmental Rights amendment, Article 1, Section 27 of the Pennsylvania Constitution and the Pennsylvania History Code, 37 Pa. Cons. Stat. Section 500 et seq. (1988) is the primary state legislation. These laws include consideration of the project's potential effects on both historic and archaeological resources.

This report meets our standards and specifications as outlined in *Guidelines for Archaeological Investigations in Pennsylvania* (BHP 2008) and the Secretary of the Interior's Guidelines for Archaeological Documentation. We agree with the recommendations of this report and in our opinion no further archaeological work is necessary for this project.

Please send three copies of the final report (one unbound) for our files and distribution to the various repositories. For all copies, photographs must adhere to the National Register Photo Policy. If you need further information in this matter please consult Kira Heinrich at (717) 705-0700.

Sincerely,

Douglas C. McLearen, Chief
Division of Archaeology & Protection

DCM/kmh

Pennsylvania Historical & Museum Commission
Bureau for Historic Preservation • State Historic Preservation Office

Record of Disturbance Form

ER# _____
DATE 10/12/2012

(submit after initial field view, Phase IA Investigation, or Phase I Investigation)

1. Project Identification:

ER Number Not Yet Assigned

Project Name &/or Agency Tracking #: Elizabeth Borough Pump Station

Agency: PV **Applicant:** Senate Engineering, Inc.

Preparers Name and affiliation: Christine Davis Consultants, Inc.

Date Prepared: October 2012

Project Area County/Municipality (list all)

County	Municipality
Allegheny	Elizabeth Borough

2. Project Setting: (check all that apply)

☒ urban/suburban; ☐ rural
☐ upland; ☒ floodplain/terrace (☐active; ☒stable terrace)

7.5" USGS Quadrangle(s) Name (list all):

Name	Date
Glassport, PA	1988

Physiographic Zone(s)(list All. Use DCNR Map 13 compiled by W.D. Sevon, Fourth Edition, 2000.):

Physiographic Zone
Unglaciated Appalachian Plateaus section of the Appalachian Plateaus physiographic province

Project Area Drainage(s), (list all) (Sub-basin and Watershed can be obtained from CRGIS):

Sub-basin	Watershed	Major Stream	Minor Stream
19	C	Monongahela River	Falling Timber Creek

3. Basic Field Conditions:

(Text fields will expand as needed. Please be complete)

Area of APE / Project Area in hectares: .8 Hectares tested: .8

General Description of APE / Project Area: The area of potential effect (APE) involves approximately 8,093 square (sq) meters (m) (87,120 sq feet (ft) or 2 acres (ac)). The area is topographically situated on a terrace located south of the Monongahela River within Elizabeth Borough. The APE is partially is characterized by deciduous growth and herb/shrub communities. Falling Timber Creek bisects the APE.

Type of Proposed Project / Impact: The project involves the installation of a pump station in Elizabeth Borough, Allegheny County. The APE is situated along the Monongahela River near Church Street and Pea Avenue. The project will consist of the proposed pump station building,

which will be approximately 45 feet long by 40 feet wide, along a parking area adjacent to the pump station building, and an access road.

Date of field investigation(s): September 2012

Description of Field Conditions and Disturbance: The APE was tested through the excavation of a deep backhoe trench. The trench contained a thick 4.5-meter deposit of modern industrial fill and no undisturbed alluvium was encountered. The area has been completely disturbed by past grading and filling.

4. Methodology Used to Determine Disturbance: (check all that apply; attach any supporting documents)

- ☒ PASS file Research
- ☐ Informant Data
- ☐ Surface Survey
- ☐ Test Units
- ☐ Contacted Local Historical Association/Commission/Park/Etc.
- ☒ Historic Records/Maps/Photos
- ☐ Geomorphological Borings
- ☒ Geomorphological Trenches
- ☒ SCS Soil Maps
- ☐ STPs
- ☐ Remote Sensing

Other: _____

Professional Geomorphologist was ☒ Present or ☐ Not Present During Field Investigations

Name: Dr. Frank J. Vento Affiliation: Department of Geology, Clarion University of Pennsylvania

Formal Geomorphological Report Prepared: ☒ Yes ☐ No

5. Previously Recorded Archaeological Sites within APE / Project Area:

PASS Site Number	Particular disturbance in this area
None	

6. Required Attachments:

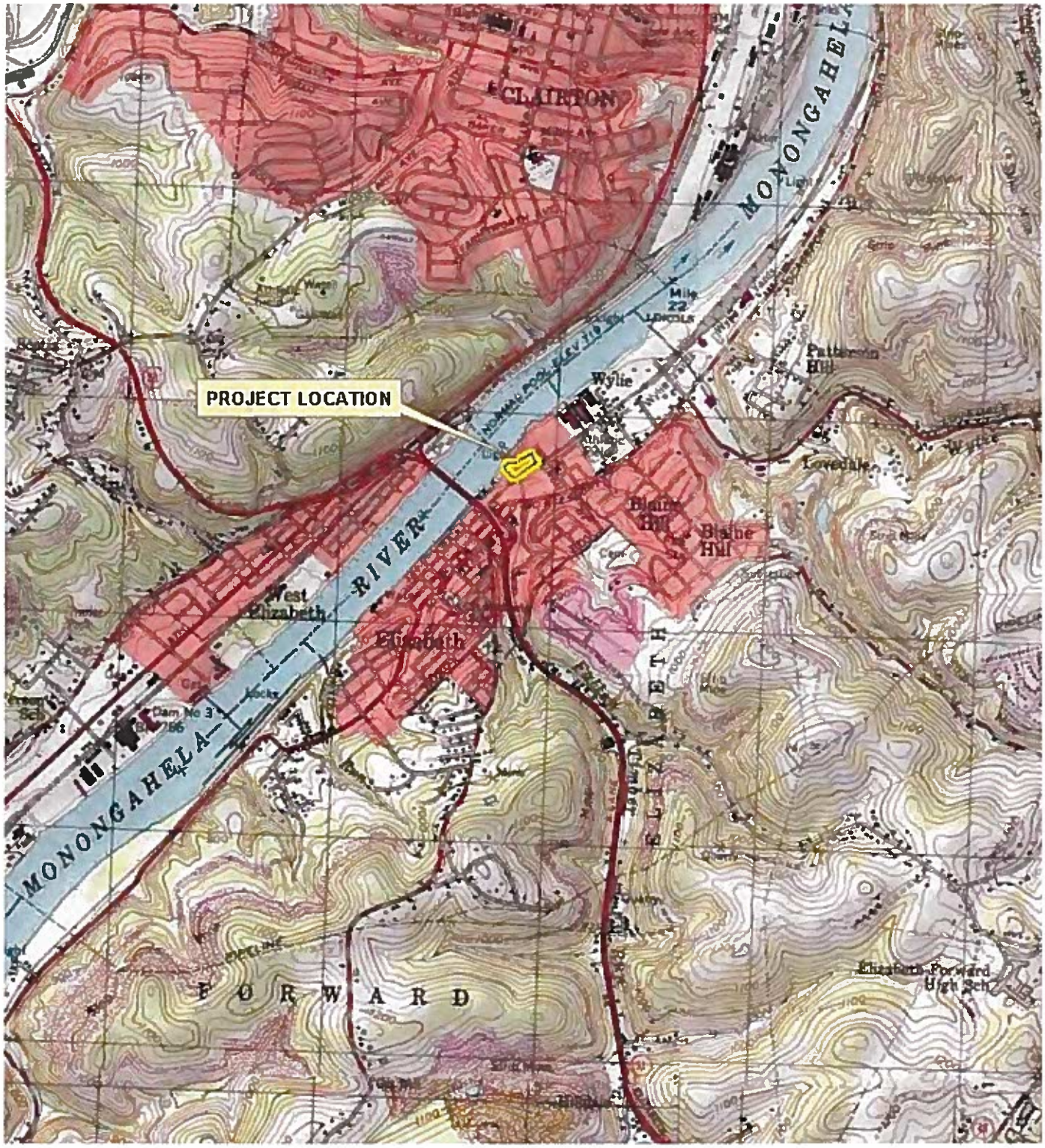
- ☒ **Attachment 1:** 7.5' USGS Quadrangle Map delineating APE / Project Area
- ☒ **Attachment 2:** APE map showing location of any test units &/or orientation of photographs
- ☒ **Attachment 4:** At least two (2) supporting photographs with descriptions of view and view direction
- ☒ **Attachment 3:** Engineering / Project Plans if prepared
- ☒ **Attachment 4:** Geomorphological Report if prepared
- ☐ Representative excavation profiles and descriptions

List all other attachments to this Record of Disturbance Form:

Attachment Type

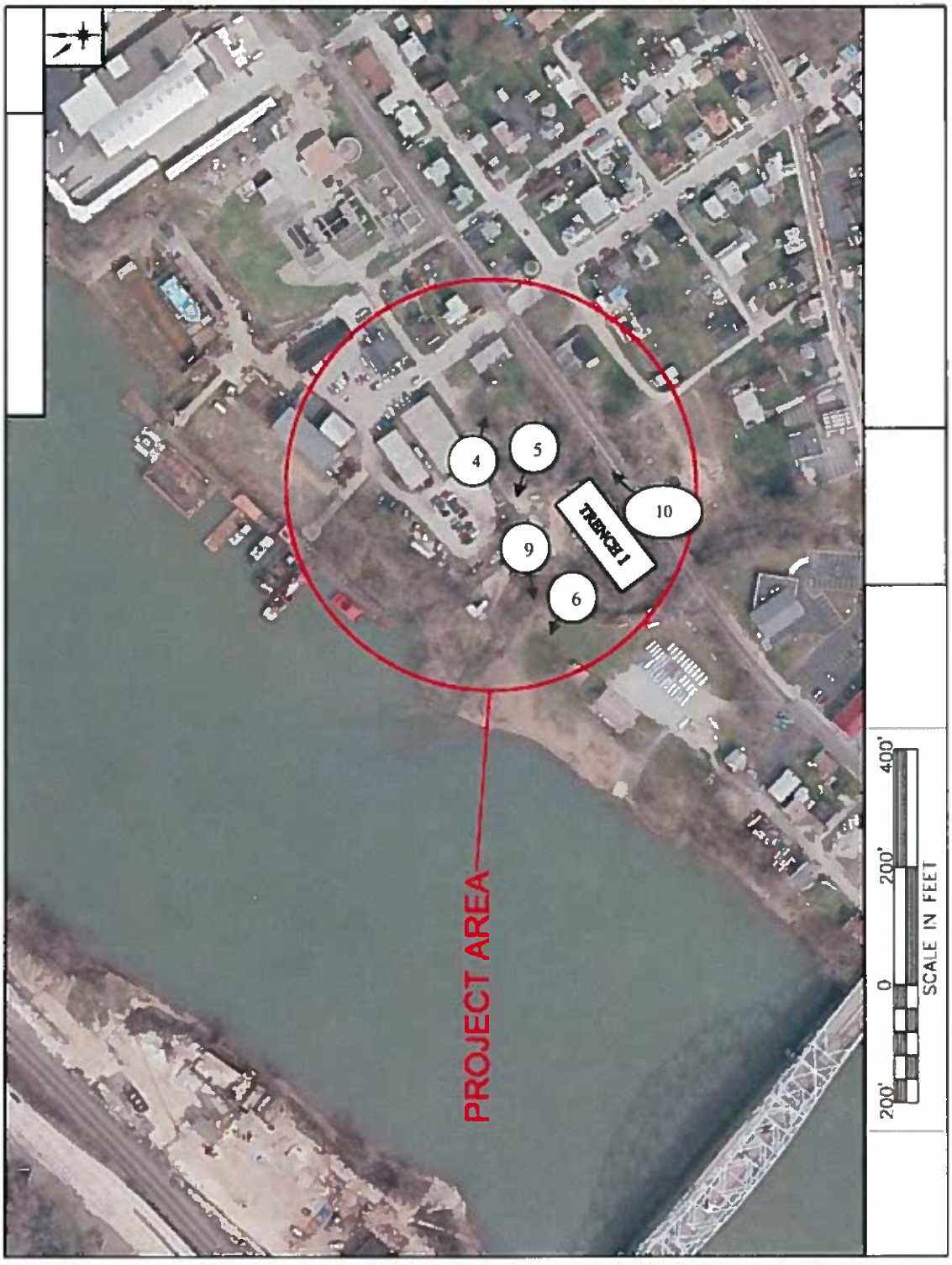
Record of Disturbance Form ER#_____ DATE 10/12/2012

ATTACHMENT 1: 7.5' USGS Quadrangle Map delineating APE / Project Area



GLASSPORT, PA 7.5' USGS QUADRANGLE MAP

ATTACHMENT 2: APE map showing location & orientation of photographs



(Photographs are located in Attachment 3: Geomorphological Report)

Record of Disturbance Form ER#_____ DATE 10/12/2012

ATTACHMENT 3: ENGINEERING/PROJECT PLAN



ATTACHMENT 4: GEOMORPHOLOGICAL REPORT

Phase IA Geomorphological Investigations at the proposed Elizabeth Borough Pump Station, Allegheny County, Pennsylvania

Prepared by

Dr. Frank J. Vento
Professional Geologist: PG-001831-G, RPA

Dept. of Geology
Clarion University of Pennsylvania
Clarion, Pennsylvania 16214

Submitted to
Christine Davis Consultants
Verona, Pennsylvania
September 22, 2012

1.0 INTRODUCTION

1.1 Location and Description of the Study Area

The Phase IA study area encompasses the proposed disturbance for the Elizabeth Borough Pump House. The proposed new pump house will lie approximately 50 m (150 ft) southeast of the existing pump house on the same landform and east of the Monongahela River at a nominal elevation of 750 ft. The normal pool of the Monongahela River north of Lock 3 is 719 ft. The new pump house will measure 800 square feet and will lie between the railway grade and the active river channel. To the west of the project area is the entrenched channel of Fallen Timber Creek. Presently the stream channel lies more than 6 m (19.5 ft) below the proposed pump house.

The property is owned by CONSOL Coal Company and over the years the property has been used for the disposal of waste material associated with rehabbing barges and disposal of wood and slag waste. It appears that the original ground surface may lie as much as 23 ft below the present surface. This is based upon the assumption that the original surface occurs at the same elevation of the Elizabeth Boat Club which occurs on the opposite bank of Fallen Timber Creek. The ground surface at the proposed new pump house is now comprised of piles of asphalt and slag (see Figures 1-10).

1.2 Purpose of the Investigation

The geomorphological study and its objectives were developed in consultation with CDC, Inc. and Elizabeth Borough. A summary of the objectives of each stage of geomorphological study are discussed below:
1) Determine the approximate ages of the landforms (flood plain/terraces and associated soils) which occur at the proposed Elizabeth Pump House; 2) Determine the depths to which testing should extend to ensure recovery of any and all potentially significant cultural resources, if warranted; 3) Discuss the site specific depositional processes responsible for emplacement of the soil/sediment package present at the project area.

1.3 Scope of Investigation

This investigation was performed solely by Dr. Frank J. Vento (PG-001831-G), Professor and Chairperson, Department of Anthropology, Geography and Earth Science, Clarion University of Pennsylvania. The study included a review of both general and specific references on the bedrock geology, quaternary history, and previous archaeological work conducted within the general project area. In addition, topographic maps, geologic and soil survey maps and reports, and hydrologic information were reviewed.

Field and archival investigations were initiated on September 13, 2012. Field work included a pedestrian surface reconnaissance of study area as well as the excavation of a single deep backhoe trench sounding in the proposed foot print of the small pump house. The soils encountered were classified according to Soil Taxonomy (1999) and the trench was photographed using a Pentax digital camera.

2.0 PERTINENT ENVIRONMENTAL BACKGROUND INFORMATION

2.1 Physiography

The proposed pump house is located within the Pittsburgh Low Plateaus section of the Appalachian Plateaus physiographic province. The Appalachian Plateaus province is situated west of the Allegheny Front and imposing escarpment which divides the plateaus on the west from the strongly folded rocks of the Ridge and Valley Province

to the east. As the name indicates, the Appalachian Plateau physiographic province is dominated by a high plateau or cuesta form structure. Unlike the Ridge and Valley, the lithologies of both the Glaciated and Unglaciated Appalachian Plateaus exhibit relatively flat-lying sedimentary rocks of early to middle Paleozoic age. The predominant lithologies are shale, sandstone, limestone and coal. Deformation is very mild with general regional dips of <5° to the south-southeast. Unlike the strong trellised (subsequent streams) pattern found in the Valley and Ridge province, streams within the Unglaciated Appalachian Plateaus display a dendritic to sub-dendritic drainage pattern. Locally, the area is maturely dissected with numerous, first-order and higher ranked tributaries (e.g., Casselman, Youghiogheny) supplying the main stem of the Monongahela River.

Within the general study area, elevations range from 1700 ft along the ridge tops to elevations of less than 720 ft along the main stem of the Monongahela River. Some of the larger river valleys in the region are broad and terraced while others are steep-sided and exhibit strongly entrenched meanders. Entrenchment or rejuvenation of rivers like the Casselman, Youghiogheny and Monongahela was the result of the late Cenozoic epierogenic uplift. Variations in the valley morphology (e.g., width of the valley bottom) have controlled in part both the historic and prehistoric utilization of a specific valley segment and hence site type or function.

2.2 General Geology

2.2.1 Structure

The bedrock units which crop out in the project area are ascribable to formations and units within the middle to lower Pennsylvanian Age Monongahela and Conemaugh Groups and lower Permian Dunkard Group. Structurally, the Appalachian Plateaus physiographic province is included within the Appalachian Plateaus structural province. Regionally, the units within this province consist of gently folded Pennsylvanian/Permian age sedimentary rocks which display shallow dips of less than 5° to the south/southeast or south/southwest, while the strike varies between 60° and 85° east of true north. The major folds within the general project area include the Waynesburg Syncline and Belle Vernon Anticline. The axial trend of the Waynesburg Syncline is drawn near Victory Hollows while the axis of the Belle Vernon anticline occurs at Charleroi. Structure contours drawn on the base of the Pittsburgh Coal seam indicate a general, gentle dip to the southeast.

2.2.2 Bedrock

The lithologies present within this portion of the Monongahela River drainage basin include a heterogeneous assemblage of resistant to weak sandstones, shales, siliceous shales, conglomerates, coal seams and associated under clays, siltstones, clay stones, and marine-fresh water limestones.

The oldest surficial bedrock units are ascribable to the Casselman Formation of the Conemaugh Group which crops out along the lower valley slopes of the Monongahela and Youghiogheny River. Within the project area, the Conemaugh and lower Monongahela Group lithologies are disconformably overlain by Quaternary age alluvium, colluvium and historic fill deposits. In most areas, this bedrock surface is disconformably overlain by coarse grained lateral accretion deposits of probable late Wisconsinan age (see Figure 11).

The Conemaugh Group proper contains fewer thick coal seams and minable marine limestones than the overlying Pittsburgh and Uniontown Formations of the Monongahela Group or underlying Allegheny Group. The occurrence of highly colored argillaceous shales, thick sandstones, red beds, nodular and fresh water limestones and hematitic concretions are especially prominent.

The Monongahela Group members typically crop out along the upper and lower valley slopes within the region. The base of the group is drawn at the base of the Pittsburgh coal and at the top of the Upper Freeport coal. The Monongahela Group contains several persistent and thick mineable coal seams (e.g., Pittsburgh and Redstone) as well as thick sequences of freshwater/brackish water limestones (e.g., Sewickley and Uniontown Formations) in its upper part.

The Monongahela Group is then overlain by members of the Waynesburg and Washington Formations of the Dunkard Group. Both formations exhibit primarily cyclic sequences of sandstone, shale, limestone, clay stone and thin coals with under clays. Dunkard Group lithologies cap the hills and ridges, locally. Below the level of the Monongahela River lies the Glenshaw Formation of the Conemaugh Group. The Glenshaw Formation is a heterogeneous unit composed of alternating layers of shale, sandstone, siltstone, clay stone, freshwater and marine shale and limestone, red beds and thin coal seams.

The Conemaugh Group is then underlain by the Allegheny Group which consists primarily of sandstones and shales with minable marine limestones (Vanport) and commercially important coal seams (Brookville, Clarion, Kittanning and Freeport seams. Outcrops of Allegheny Group lithologies occur well to the north of the project area, principally in Butler, Lawrence and Venango Counties.

A typical cyclothem sequence for the lower Pennsylvanian Allegheny and Pottsville Groups generally involves basal fluvial or deltaic sandstone emplaced on an erosional surface and laterally and vertically replaced by overbank shales (Rollins and Donahue 1979). Extensive coastal swamps develop over the top of the fluvial and deltaic sediments. A marine transgressive sequence then capped the cyclothem with shales and limestone. Lithic raw materials suitable for flaked stone manufacture do not occur locally along the investigated portion of the river corridor; however, within the general region lithic raw materials can be procured from such units as the Cambridge/Pine Creek Limestone, Brush Creek Limestone, Ten Mile limestone, and Monongahela and Uniontown Formations. In addition, flint clays suitable for flaked stone manufacture can be found in association with coal under clays (e.g., Pittsburgh and Redstone seams) that have burned naturally.

2.3 Drainage and Hydrology

The fairly rugged topography of Allegheny County, Pennsylvania is maturely dissected by numerous consequent and insequent rills, runs, and streams which are part of the Monongahela River basin. The Monongahela River flows essentially north for a distance of 128 miles and drains 7, 386 square miles of land in northern West Virginia, northwestern Maryland and southwestern Pennsylvania. The Monongahela River is formed by the West Fork and Tygart Valley Rivers at Fairmont, West Virginia. Downstream from this confluence the major tributaries entering the Monongahela River include the Cheat and Youghiogheny Rivers.

Elevations within the Monongahela River watershed range from 4,842 ft above mean sea level in the headwaters of the Cheat River to 710 ft above mean sea level at the Monongahela River's confluence with the Allegheny River at Pittsburgh. This confluence forms the modern day Ohio River. The mainstream of the Monongahela River has a nominal gradient of 1.15 feet per mile, while the West Fork, Tygart and lower Youghiogheny Rivers exhibit gradients of 7.5 ft/mi, 19.6 ft/mi and 22 ft/mi. The Youghiogheny River proper enters the Monongahela River at McKeesport, Pennsylvania.

The average runoff for the Monongahela River as measured at the Braddock Gaging Station (Lock and Dam No. 2) is 12,000 feet per second with more than 40 percent of this flow being contributed from the Cheat and Youghiogheny Rivers.

Geomorphologically, all of these drainage lines and their tributaries represent consequent streams which have developed a dendritic drainage pattern on an older plateau surface. In places, Quaternary epierogenic uplift has caused entrenchment along some of the major rivers valleys (e.g., Casselman and Monongahela Rivers). Some effect on the drainage evolution are rooted in epierogenic effects such as regional up warping and rock fracturing. Some controls on drainage may be exogenic and related to past climates.

The highest discharges along the Monongahela River occurs during the late winter and early spring in association with lowered rates of evapotranspiration and more effective precipitation/runoff. Low flows typically occur during the late summer and fall in association with low rates of precipitation and high levels of potential evapotranspiration. During the fall, soil water budgets are running in a deficit with recharge occurring during the early winter months. Flooding along streams and creeks in the region can occur due to intense low pressure centers (e.g., hurricanes, tropical storms), localized thunderstorms, and from rapid snow runoff. The largest recorded flood event (200 yr recurrence interval) occurred in 1888 prior to most navigation and flood control projects, however, several other large events have occurred in the years 1962, 1967, 1972, 1974 and 1985. It has been estimated based upon total discharge that the 1985 event would have attained a flood recurrence of 1000 years in the absence of flood control measures. Over the last 40 years, the project area has been inundated by flood waters at least three times.

2.4 Pedology

Variations in soil morphology along the Monongahela River is resultant from flood frequency, landform/terrace age, degree of weathering, soil drainage conditions, erosion rates, vegetation type, and degree of historic disturbance.

The soil association present in the study area is mapped to the Urban land-Philo-Rainsboro association which consists of deep, moderately well drained soils formed on flood plains and terraces which in places has been completed disturbed by urbanization (see Figure 12).

Soils ascribable to the Urban Land, Urban Land Complex, Made Land, Mine Dump and Urban Land-Rainsboro Complex are mapped on both banks of the Monongahela River essentially from Lock 2 to the downstream end of Lock 4. Presently, only three distinct areas presently mapped contain non-anthromorphic (i.e., natural) soils along the Monongahela River. These include the following river reaches: 1) The segment within Allegheny County between Bunola and Elkhorn which is mapped to the Rainsboro and Allegheny series; 2) The segment in Washington County situated just east of Victory Hills is mapped to the Allegheny series and 3) The segment in Westmoreland County at Monessen situated in a broad, terraced meander bend and which exhibits extensive impact to the soils through urbanization is surprisingly mapped to the Monongahela series.

Urban Land and Made land soils consist of land so altered by earth moving or so obscured by buildings or other structures that the original soils cannot be identified. Mine dump soils consist of those areas which have been in-filled with mine refuse and tailings associated with coal mining and processing within the region.

Urban land complex (UB) soils consist of nearly level land on flood plains. It consists of fill material that was brought in and placed over the original soils. Slopes are 0%-3%. The fill material is 2.0 feet or more thick and that composition is highly variable including rubbish, cinders, industrial waste such as slag, old brick and other building materials, limestone and other natural soils. Urban land complex (UB) soils range from level to gently sloping (0%-8%). This complex is about 75% urban land, 15% Rainsboro soils, and 10% other soils. The urban land part has been subjected to extensive cut and fills sequences and is covered by buildings in many areas. Rainsboro soils are deep, nearly level to sloping, moderately well drained soils that have a fragipan. These soils formed in old, acid alluvium. The mapping unit does not specify the location of natural soils as opposed to urban land but only

indicates some natural soils may be present in small areas. Extensive field work would be needed to identify natural soils in this complex as well as identify the thicknesses of the historic fill deposits in areas of Urban Land and Urban Land Complex soils.

2.5 Navigation and Flood Control Measures

2.5.1 The Early Years: 1832-1838

The first attempts at modifying and controlling flow and pool level position likely occurred during prehistoric times in association with the construction of fish weirs. Unlike the upper Susquehanna River, evidence of these earlier weirs has been removed by flood scouring and pool level modifications. Other efforts to maintain some level of control of water depth was associated with the numerous ferry lines present along the Monongahela River during the late 18th and well into the first-quarter of the 19th century. These efforts included limited dredging and near-shore bank modification of the channel.

It was not until 1832 that the Federal government authorized a survey of the Monongahela River to improve navigation for steamboats between Pittsburgh and the National Road (U.S. 40) at Brownsville, Pennsylvania. The first navigation system on the Monongahela River was privately funded and owned by the Monongahela Navigation Company (MNC) beginning in 1838. During a 25 year period the Monongahela Navigation Company constructed a total of seven locks and dams between Pittsburgh and the West Virginia state-line.

The objective of the MNC was to maintain a minimum depth of 6 ft along the lower Monongahela River. In actuality, due to varying heights of lock gate sills the navigable depths ranged from 4 ft to 6.7 ft. In 1897, the Federal government acquired all seven lock and dam structures through condemnation and initiated an aggressive improvement plan to increase the navigable depth of the river to equal or exceed the depth of 7 ft on the upper river (e.g., Port Marion and Grays Landing). The most significant changes occurred between 1906 and 1912 when Dams 1,2 and 3 were rebuilt or relocated with the addition of three-foot moveable crests. When utilized, these moveable crests effectively raised the pool level of the river an additional three feet. This pool level rise of 3 feet was made permanent in 1920 by the replacement of moveable crests by stationary concrete crests. In sum, the current pool elevations on the lower river have been in place since before 1912, and are about three feet above the pool elevations established by the MNC beginning in 1838.

2.5.2 1920 to Present

While these navigation structures provided minimum navigation depths under optimal conditions, river elevations continued to be controlled by variations in seasonal runoff. Low flow conditions such as those experienced in 1908, 1918, 1930, 1947, and 1954 did have disastrous effects on river traffic. For example during the 1930's flows at Dam 4 dropped to less than 10 cubic feet per second on several occasions. In 1908, the water pool lying behind Dam 4 was intentionally released to maintain some level of navigability below Dam 4 to Pittsburgh. It was not until the construction of gated navigation dams and reservoirs that river pool elevations could be more directly controlled. These reservoirs include the Tygart Dam (1938), Youghiogheny Dam (1948), Stonewall Jackson Dam (1988), Lake Lynn (Cheat River), and Deep Creek Lake (Md-Youghiogheny River) which allows the Pittsburgh District to provide a minimum flow of 720 cubic feet per second (cfs) at Dam 2.

Prior to construction of these three reservoirs, floods associated with hurricanes, long-lived and stationary low pressure centers and seasonal late winter runoff could elevate river levels well above normal pool levels. The most famous of these floods occurred on March 18, 1936 when the Monongahela River rose 36.8 ft (745.5ft) above its normal pool elevation of 718.8 ft. Presently, both the Allegheny and Monongahela Rivers exhibit considerable

changes in their discharges and pool elevation positions due to seasonal flows or storm events. The changes in pool elevations over time has created a visible demarcation line termed the Ordinary High Water (OHW) level and represents the elevation at which inundation occurs at least once during a normal year. Between Dam 2 and Dam 3 for example, the OHW varies between 10 ft and 14 ft above the normal pool elevation. Construction on and specified usage of the river channel at or below the OHW requires a special permit from the Corps of Engineers as specified in the Rivers and Harbors Act of 1899. This act also established laws which prohibited the dumping of waste materials into any navigable waterway without consent from the U.S. Corps of Engineers.

2.6 Specific Modern Climatic Conditions

Allegheny County can be characterized as having a humid, Continental climate. In winter the average temperature is 29 degree F, and the average daily minimum temperature is 19 degree F. The lowest temperature on record which occurred near Confluence on January 30, 1963 is 22 degrees F. In summer the average temperature is 68 degrees, and the average daily maximum temperature is 81 degrees. The highest recorded temperature occurred on September 3, 1953 is 99 degrees. Of the total annual precipitation 23 inches or 55 percent usually falls in April through September, which includes the growing season for most crops. The heaviest one-day rainfall during the period of record (1951-1975) was 4.93 inches on October 16, 1954. Thunderstorms occur on about 35 days each year, and most occur during the summer months.

Average seasonal snowfall is 66 inches. The greatest snow depth during the period of record was 24 inches. On an average of 34 days, at least one-inch of snow is on the ground. The number of such days varies greatly from year to year. The average relative humidity in mid-afternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 80 percent. The sun shines 60 percent of the time possible in summer and 35 percent in winter. The prevailing wind is from the southwest. Average wind speed is highest, 11 miles per hour in winter.

2.7 General: Preglacial and Present Drainage Systems

Late Cenozoic (pre-Pleistocene) topography and drainage of the Appalachian Plateau were much different from that seen today. Topographic relief was much lower and drainage flowed north and northwest (Munn 1911, Ray 1965, Wagner et al. 1974, Beynon and Donahue 1980) to basins which would later be occupied by the Great Lakes. The present Ohio River did not exist. Actually, two main river systems drained the western Appalachian Plateau. The Teays-Mahomet River flowed from the Piedmont area of Virginia and West Virginia and then northwest into Ohio, Indiana and Illinois (Beynon and Donahue 1980). Final drainage was either through the pre-Great Lake Basins or the Mississippi River (Beynon and Donahue 1980). The other drainage network was the Monongahela-Beaver to which the Ohio River, Casselman River and Lower Allegheny were tributary. This system drained the Allegheny Plateau and flowed north to what is today the Lake Erie Basin (Leverett 1934).

During this time, the relatively flat land surface was epierogenically uplifted and the plateau rivers responded by incising their valleys. What is left today of this nearly flat, erosional surface is a sequence of flat-topped hills or summits with elevations of between 366 m - 427 m (1200 ft - 1400 feet) above sea level. This surface is termed the Harrisburg or Allegheny Peneplain. As incision slowed, a second terrace level was created. This terrace surface is commonly termed the Worthington Erosion surface and typically occurs along the major river valleys at elevations between 329 m - 347 m (1080 ft - 1140 ft) above sea level.

Following establishment of the Worthington surface a second period of incision occurred along the Ohio, Monongahela, and Allegheny Rivers and its major tributaries. Eventually, as incision slowed, lateral channel migration occurred forming in places a well-defined wide valley floor. The remnants of this early flood plain now lie ca. 275 m (900 ft) above sea level or 61 m (200 feet) below the Worthington Erosional Surface and 91.5 m - 122 m

(300 to 400 ft) below the Allegheny/Harrisburg Peneplain. This relic valley floor has been variously termed the Parker Strath, from a typical occurrence near Parker, on the Allegheny River in northern Armstrong County or the Carmichaels Formation along the Monongahela River Valley. The flat upland benches which occur at ca. 940 ft above mean sea level along the inside of large menader bends on the Monongahela River and the lower Youghiogheny River can be correlated with the Pleistocene Carmichaels terrace/Parker Strath.

Although five major glacial advances and retreats are recognized in the United States (Richmond and Fullerton 1987) only the last two advances (Illinoian and Wisconsinan) can be clearly demonstrated to have reached northeastern Ohio and northwestern Pennsylvania. While the Meyersdale area lies far south of the southern edge of the Wisconsin ice sheet and a clear periglacial position, the effects of the ice sheets and colder climate can be clearly seen today in the form of periglacial colluvial slopes, float-block strewn valley slopes, rock streams and asymmetric drainage lines.

Sediments of the pre-Illinoian advance are not present south of the mapped Illinoian drift sheet and hence have been extensively reworked by later glacial advances and retreats. As the Illinoian glaciers advanced into the region, the ice sheet blocked the north-flowing streams causing ponding (lake-forming) episodes to occur. However, by the time Illinoian ponding occurred in the Monongahela River, or shortly afterward, the course of the modern Casselman, Youghiogheny and Ohio Rivers had been created by breaching drainage divide near New Martinsville, West Virginia (Jacobsen 1985, Hamel 1987). With the onset of the Wisconsin ice advance about 70,000 years ago, glacial melt waters once again filled the Ohio and Allegheny River valleys. These major drainage outlets were filled with glacial outwash that in places reached a thickness in excess of 115 m (350 ft) (e.g., along French Creek). These Wisconsinan age deposits are often termed the first bottom (Late Wisconsin outwash) and second bottom (Earlier Wisconsin outwash) soils along the Allegheny and Ohio Rivers at Pittsburgh.

During the terminal late Pleistocene and early Holocene, in response to increased rates of evapotranspiration, a thicker vegetative cover, lowered base level, warmer temperatures and a decrease in discharge and accompanying sediment load, the Casselman and Monongahela Rivers as well as their major tributaries adjusted their channels by incising these Wisconsin valley-fill deposits. The result was the construction of one or more low, late Wisconsin age terrace situated typically between 3 m and 4 m (10 ft -13 ft) and 5 m and 6 m (16.5 ft - 19.5 ft) above present stream grade. These terraces within the project area would have had a moderately thick package of Holocene age alluvium; however, due to urbanization these Holocene vertical accretion deposits have been removed. Where present, the thickness of the Holocene vertical accretion package is greater on the slightly lower terrace segments. In places these late Wisconsin age terrace are bound toward the river or tributary stream by a series of topographically lower Holocene age terrace/flood plain levels.

2.8 Topography and Land Use

Based upon a review of historic maps, atlases, county histories, cultural resource management reports, and U.S. Geological Survey maps for the survey area as well as informant interviews with local residents, it appears that farming has been carried out in parts of the region since the late 18th to early 19th century. It was not until the mid to late 19th century that major land use changes occurred. This was evidenced by the extraction/use of coal, limestone, lumber and oil development during this time. The project area soils have been significantly impacted by construction of utility line right-of-ways, railway construction and filling/grading by Consol Coal.

3.0 RESULTS OF INVESTIGATION

Based upon all levels of inquiry there is no potential for the occurrence of in situ prehistoric or historic cultural resources. The project area is comprised of more than 4.5 m (13.5 ft) of fill which has been emplaced by

grading and filling in association with CONSOL coals use of the facility. No additional cultural resource management work is warranted or recommended (see Figure 13).

4.0 References

Beckerman, Ira C.
1978 Generative Settlement Pattern Models: A Critical Review. Master's Paper. Department of Anthropology, The Pennsylvania State University, University Park, PA.

1986 Prehistoric Settlement and Subsistence in Piedmont North Carolina. Ph.D. Dissertation, The Pennsylvania State University. Ann Arbor, MI: University Microfilms.

Buck, Solon J. and Elizabeth H. Buck
1968 The Planting of Civilization in Western Pennsylvania. Pittsburgh, PA: University of Pittsburgh Press.

Caldwell, Joseph R.
1958 Trend and Tradition in the Prehistory of the Eastern United States. American Anthropological Association, Memoir 88. Menasha, WI.

Carpenter, Edmund S.
1942 "Archaeological Reconnaissance in the Upper Allegheny Valley." Pennsylvania Archaeologist 12(1): 20-23.

1950 "Ecology and Pennsylvania Mounds." Pennsylvania Archaeologist 20(3-4): 63-74.

Carpenter, Edmund S.
n.d ."Pennsylvania Mounds." Manuscript on file in the library of the American Philosophical Society, Philadelphia.

Curtis, Sue Ann
1970 A Preliminary Report on the Venango County Archaeological Project. Manuscript on file at the State Museum of Pennsylvania, Section of Archaeology, Harrisburg, PA.

1971 The Cultural Ecology of Early Late Woodland Venango County, Pennsylvania. M.A. Thesis, The Pennsylvania State University, University Park, PA.

Davis, Christine E.
1989 A Phase I Cultural Resource Survey of the Oil Creek State Park Improvement Sites. Report submitted to Tai Lee Miller Architects, P.C., Pittsburgh, PA. (BHP ER 18 No. 87-1388-121)

Dragoo, Don W.
1959 Archaic Hunters of the Upper Ohio Valley. Annals of the Carnegie Museum of Natural History, 35: 139-245. Pittsburgh.

1963 Mounds for the Dead. Annals of the Carnegie Museum, 37.

Hamilton, Christopher E. and Conran A. Hay
1987 Phase I Summary Report and Phase II Workplan, The State Street Bridge Replacement Project, Oil City, Venango County, Pennsylvania. Report submitted to Skelly and Loy, Inc. and the Venango County Commissioners. Archaeological and Historical Consultants, Inc., Boalsburg, PA (BHP ER No. 86-0819-121)

Johnson, William C. James B. Richardson, III, and Allen S. Bohnert
1979 Archaeological Site Survey in Northwest Pennsylvania, Region IV. Report submitted to the Pennsylvania Historical and Museum Commission, Harrisburg, PA. Department of Anthropology, The University of Pittsburgh, Pittsburgh, PA.

Kent, Barry C.
1984 Susquehanna's Indians. Anthropological Series No.6. Harrisburg: Pennsylvania Historical and Museum Commission.

Lantz, Stanley W.
1982 A Cultural Resource Survey of L.R. 93 (T.R. 62), Irvine Bridge Located Near the Town of Irvine, Warren County, Pennsylvania. Report submitted to Kozel Engineering Company, Inc., Pittsburgh. Carnegie Museum of Natural History, Section of Man, Pittsburgh.

Mayer-Oakes, William J.
1955 Prehistory of the Upper Ohio Valley. Annals of the Carnegie Museum, No. 34. Pittsburgh, PA: Carnegie Museum of Natural History.

Miller, Patricia E.
1988 A Phase I Archaeological Survey of the Proposed Fisherman's Cove Access Area, Victory Township, Venango County, Pennsylvania. Report submitted to the Pennsylvania Fish Commission, Division of Engineering and Architecture, Bellefonte, PA. Archaeological and Historical Consultants, Inc., Centre Hall, PA. (BHP ER No. 87-1220-121)

Oil City Derrick
1896 Souvenir of the Oil City Derrick, Illustrating the City of Oil City, Pennsylvania in the Year 1896. Oil City: Derrick Publishing Company.

Raber, Paul A. (ed.)
1985 A Comprehensive Plan for the Conservation of Archaeological Resources. Volume 2. Preservation Planning Series, No. 1. Harrisburg, PA: Pennsylvania Historical and Museum Commission.

Stewart, R. Michael and Judson Kratzer
1989 "Prehistoric Site Locations on the Unglaciated Appalachian Plateau." Pennsylvania Archaeologist 59(1): 19-36.

Stewart, R. Michael, Chris C. Hummer, and Jay F. Custer
1986 "Late Woodland Cultures of the Middle and Lower Delaware River Valley and the Upper Delmarva Peninsula." in J.F. Custer (ed.) Late Woodland Cultures of the Middle Atlantic Region, pp. 58-89. Newark, DE: University of Delaware Press.

Straffin, Dean
n.d .Report on the Clarion University Field School at the Petroleum Centre Site. Manuscript on file at the State Museum of Pennsylvania, Section of Archaeology, Harrisburg.

Vento, Frank J., Harold B. Rollins, R. Michael Stewart, Paul A. Raber, and William C. Johnson
1990 Genetic Stratigraphy, Climate Change, and Deep Burial of Archaeological Sites in Alluvial Contexts in Pennsylvania. Report submitted to the Pennsylvania Historical and Museum Commission, Harrisburg.

Wallace, Paul A.W.
1987 Indian Paths of Pennsylvania. Harrisburg: Pennsylvania Historical and Museum Commission.

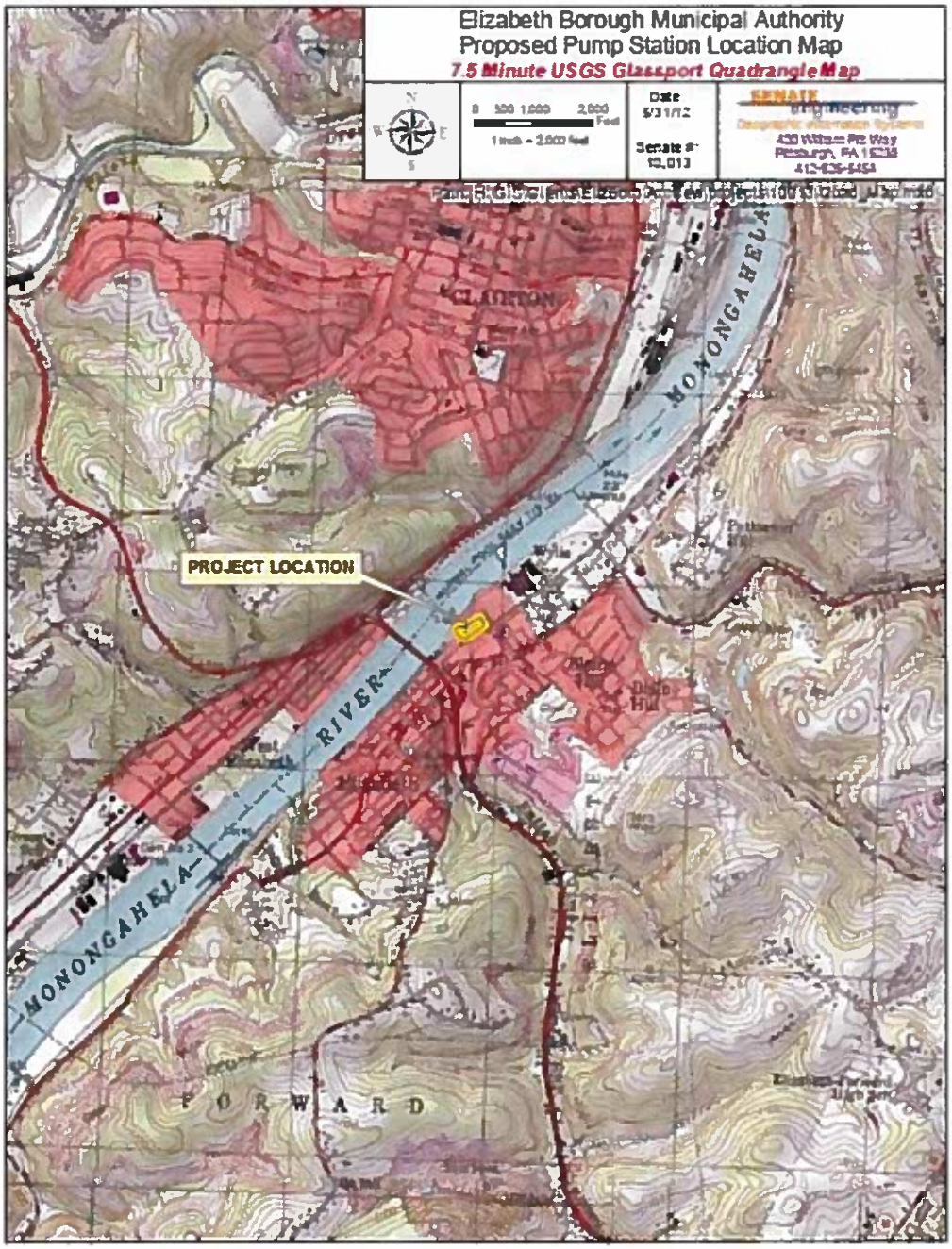


Figure 1. Topographic map showing general location of proposed Elizabeth pump house.



Figure 2. Lidar/aerial photograph showing location of proposed Elizabeth Pump House.

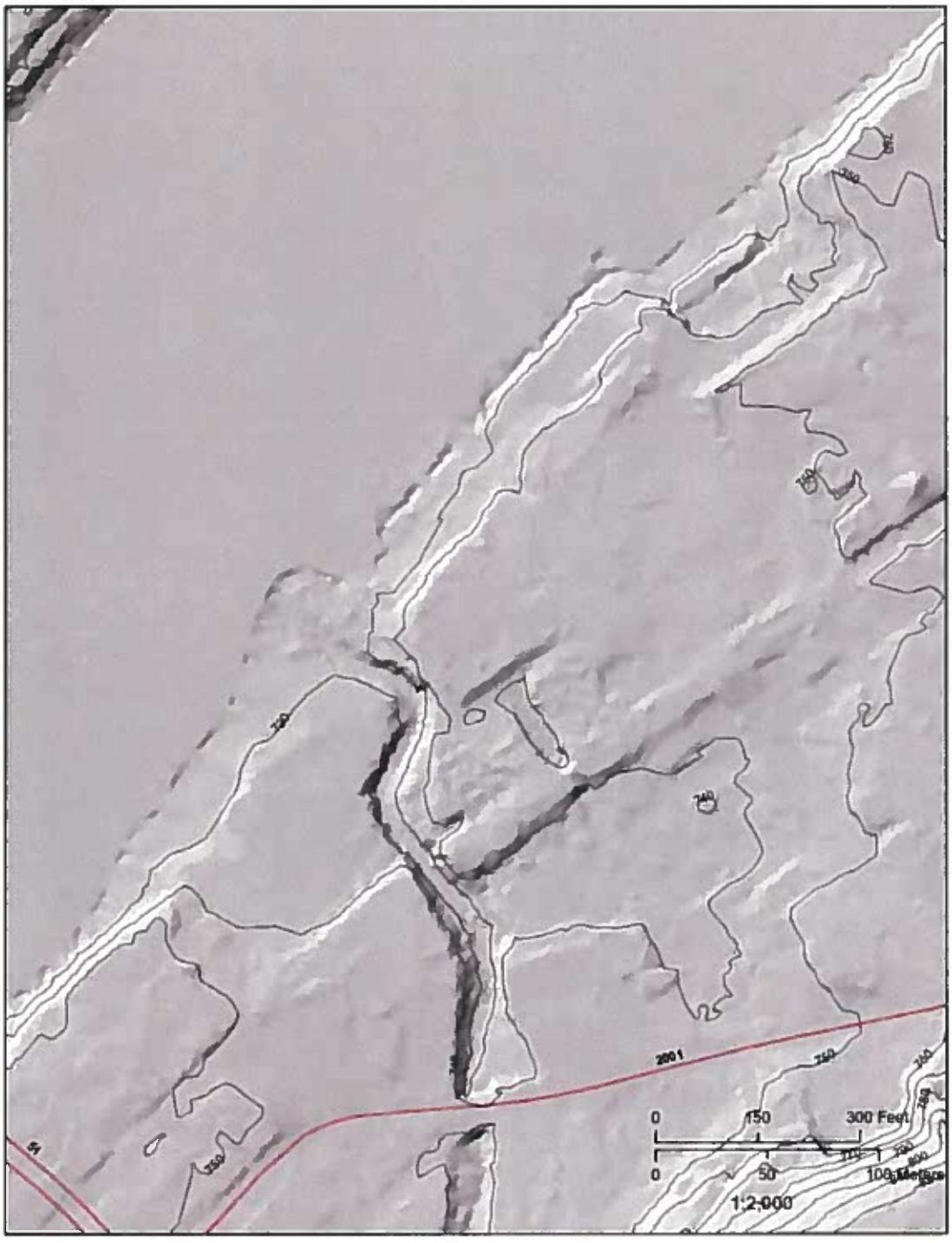


Figure 3. Shaded relief map of general project area.



Figure 4. Photograph facing southeast toward railway grade.

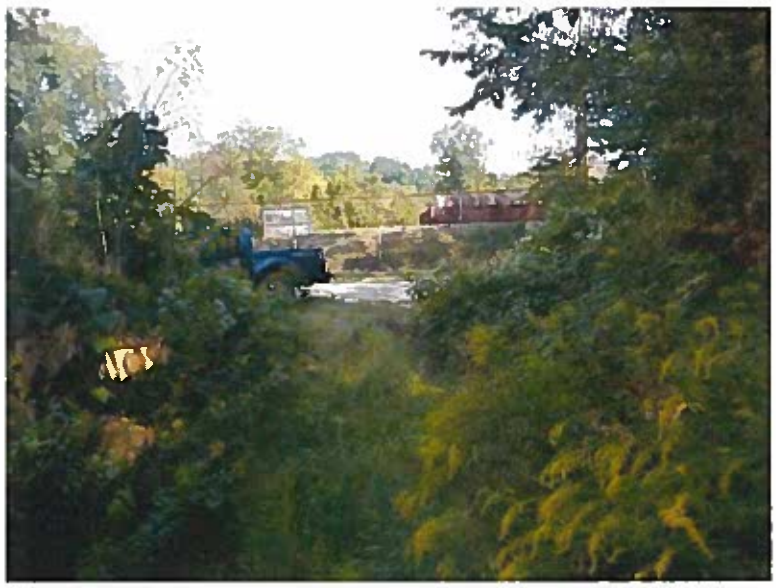


Figure 5. Photograph facing northwest. Note fenced area which lies north of the proposed pump house. The raised area is owned by CONSOL and is comprised of fill material.

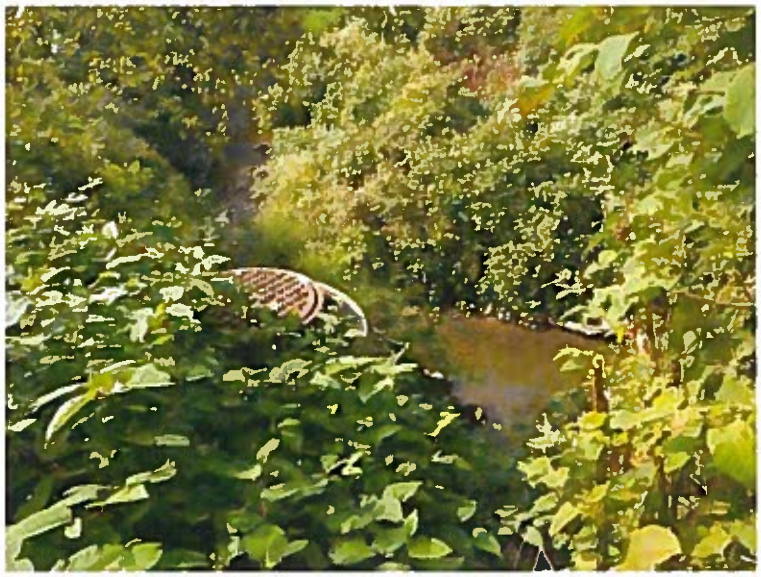


Figure 6. Photograph of Fallen Timber Creek channel. The channel is deeply entrenched through fill material. The stream channel present lies 6 m (19.5 ft) below the surface of the pump house. The pipeline will be directionally drilled under the stream channel.



Figure 7. Photograph of backhoe trench excavated in foot print of proposed pump house. The trench encountered more than 4.5 m of fill mate4rial. No undisturbed alluvium was encountered.



Figure 8.Photograph of gray clay fill encountered at base of trench.



Figure 9. Photograph of boat club situated on opposite bank of Fallen Timber Creek.



Figure 10. Photograph of area where the pump house will be located. Note asphalt deposits in piles. More than 4.5 m of fill was encountered in the study area. The area has been completely disturbed by past grading and filling.

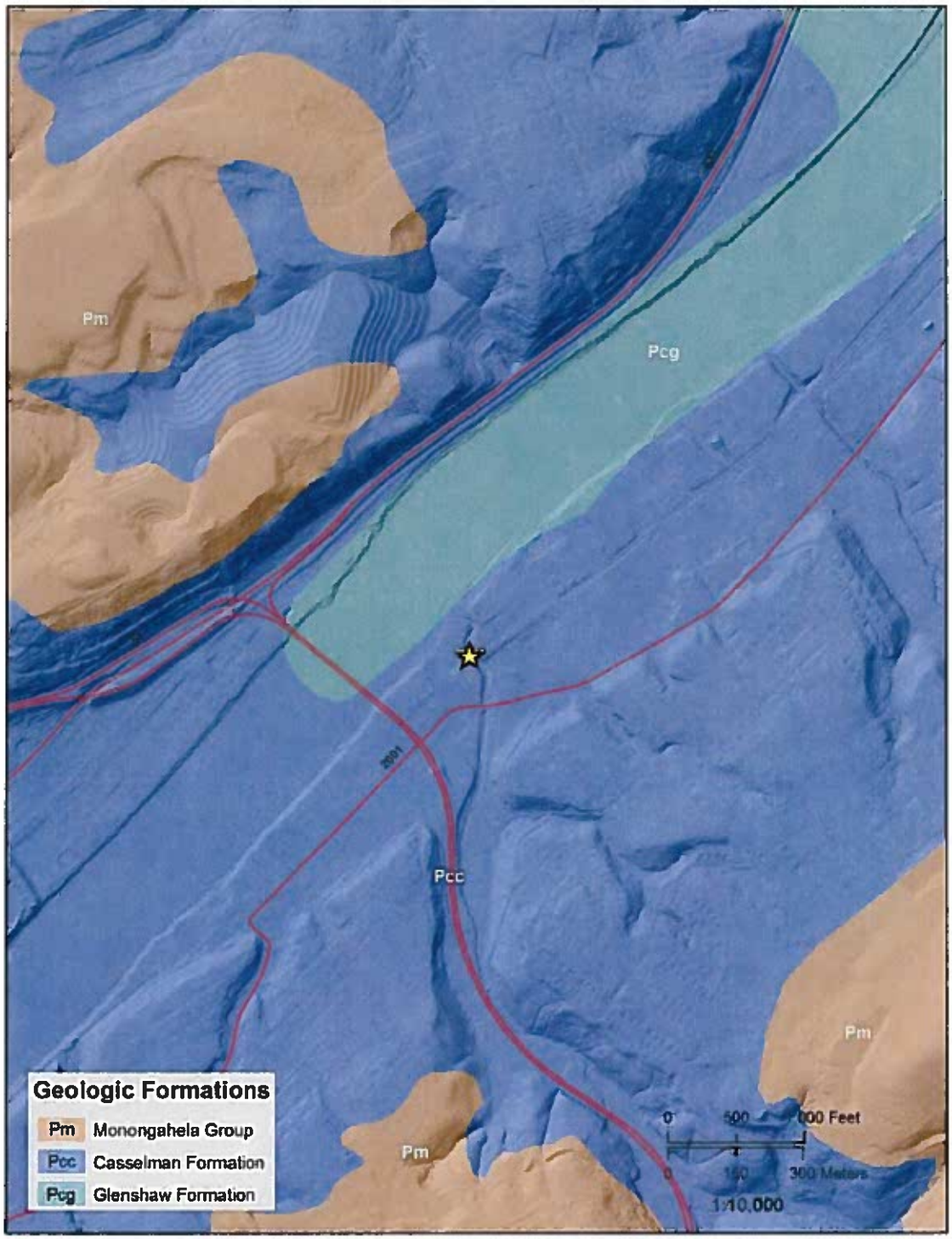


Figure 11. Geologic map of study area. The bedrock is mapped to the Casselman Fm. of the Conemaugh Group. The bedrock is mantled by a thick package of Quaternary age alluvium.



Figure 12. Lidar and soil map of study area. Note that the soils are mapped to the Urban Land series.

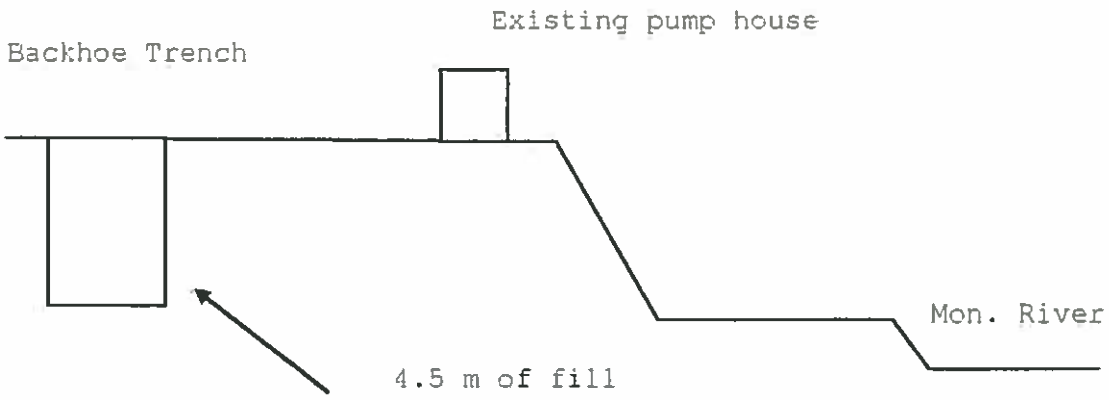


Figure 13. Soil stratigraphic cross section. Note that the study area is comprised of more than 4.5 m of fill.

APPENDIX K

TRIB TOTAL MEDIA

LEGAL ADVERTISING

Proof of Publication of Notice in The Daily News

Under the Act of July 9, 1976, P.L. 877, No. 160

Commonwealth of Pennsylvania

County of Allegheny } **SS:**

ROBERT HAMMOND, Division Manager of the Trib Total Media, Inc., a Corporation of the Commonwealth of Pennsylvania with places of business in Greensburg, Westmoreland County, Pennsylvania and Pittsburgh, Allegheny County, Pennsylvania, being duly sworn, deposes and says that the **Daily News** is a daily newspaper circulated in Allegheny & Westmoreland Counties, Pennsylvania, and elsewhere, published in the City of McKeesport, Allegheny County, Pennsylvania, established July 1, 1884, and issued every day, except Sunday, since that date. A copy of the printed notice of publication is attached hereto exactly as the same was printed and published in the regular editions of the said newspapers on the following dates,

viz: LEGAL# 6174615, RE: OFFICIAL PUBLIC NOTICE Amendment to approved Act 537 Plan C on 09/14/15

Affiant further deposes that she/ he is an officer duly Authorized by the Trib Total Media, Inc., Publisher of The Daily News, to verify the foregoing statement under oath and also declares that affiant is not interested in the subject matter of the aforesaid notice of pubication, and that all allegations in the foregoing statement as to time, place and character of publication are true.

Division Manager
Trib Total Media, Inc.

Sworn to and subscribed before me this
14 day of SEPT, 2015

Notary Public

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Bonnie Sorgen, Notary Public
Liberty Boro, Allegheny County
My Commission Expires Jan. 28, 2017
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

Statement of Advertising Costs

ELIZABETH BOROUGH MUNICIPAL AUTHORITY
1 LOCUST STREET
ELIZABETH, PA 15037

To **Trib Total Media, Inc.**
For Publishing the notice or advertisement attached hereto on the above stated dates $ 192 65
Probating Same $
Total $ 192 65

Publisher's Reci

The **Trib Total Media, Inc.**, publisher of The **Daily News**, of the aforesaid advertising and publicaiton costs, and cer a receipt

Trib Total Media Inc., Publisher
of The **Daily News**, a Newspaper

OFFICIAL PUBLIC NOTICE
Amendment to approved Act 537 Plan

Chapter 71 of the Rules and Regulations of the Pennsylvania Department of Environmental Protection (PA DEP) requires that all Sewage Facilities Plan updates or revisions should be available to the public for review and comments.

By this notice all public and interested agencies are hereby notified that the Amendment to the Act 537 Plan for Elizabeth Borough, Elizabeth Township, Forward Township, and Lincoln Borough in Allegheny County is available for public inspection at the following location:

1 Locust Street
Elizabeth, PA 15037

Please call Cathy DiRocco at 412 384 3686 to make an appointment to review the plan. The amendment to the approved plan proposes that the existing Elizabeth Borough Pump Station be replaced by a new pump station with screening and grit removal capabilities several hundred feet to the east of the existing pump station location.

A 30-day comment period has been established to allow the general public or other interested agencies to review the plan and offer comments. Comments should be submitted in writing to the following address on or before October 14, 2015:

420 William Pitt Way
Pittsburgh, PA 15238

Comments received will be addressed in the final submission to PA DEP.
6174515(9/14/2015)

LETTER OF TRANSMITTAL

SENATE ENGINEERING COMPANY
U-PARC, 420 William Pitt Way
Pittsburgh, PA 15238-1330
Telephone (412) 826-5454
Fax No. (412) 826-5458
senate@senateengineering.com
www.senateengineering.com

DATE: September 18, 2015

TO: ~~LINCOLN BOROUGH~~
~~45 Abe's Way~~
~~Elizabeth, PA 15037~~

ELIZABETH BOROUGH
206 Third Avenue
Elizabeth, PA 15037

RE: ELIZABETH BOROUGH MUNICIPAL AUTHORITY
ACT 537 SPECIAL STUDY
SENATE #11154

WE ARE SENDING YOU THE FOLLOWING ITEMS:

COPIES	DATE	NO.	DESCRIPTION
1	9/18/15	1	Act 537 Special Studyfor EBMA Pump Station Improvements
1	9/18/15	1	Act 537 Special Studyfor EBMA Pump Station Improvements, Attachment A

THESE ARE TRANSMITTED as checked below:

__ For approval	__ Approved as submitted	__ Resubmit __ copies for approval
__ For your use	__ Approved as noted	__ Submit __ copies for distribution
__ As requested	__ Returned for corrections	__ Return __ corrected prints
X For review and comment	__ _____	

REMARKS:

Attached is a copy of EBMA's Act 537 Special Study for the EBMA Pump Station Improvements for your review and comment.

FROM: Michael Elisco E.I.T

RECIVED BY: Pamela Sharp

SIGNATURE: [signature]

DATE: 9-18-15

LETTER OF TRANSMITTAL

SENATE ENGINEERING COMPANY
U-PARC, 420 William Pitt Way
Pittsburgh, PA 15238-1330
Telephone (412) 826-5454
Fax No. (412) 826-5458
senate@senateengineering.com
www.senateengineering.com

DATE: September 18, 2015

TO: LINCOLN BOROUGH
45 Abe's Way
Elizabeth, PA 15037

RE: ELIZABETH BOROUGH MUNICIPAL AUTHORITY
ACT 537 SPECIAL STUDY
SENATE #11154

WE ARE SENDING YOU THE FOLLOWING ITEMS:

COPIES	DATE	NO.	DESCRIPTION
1	9/18/15	1	Act 537 Special Studyfor EBMA Pump Station Improvements
1	9/18/15	1	Act 537 Special Studyfor EBMA Pump Station Improvements, Attachment A

THESE ARE TRANSMITTED as checked below:

__ For approval	__ Approved as submitted	__ Resubmit __ copies for approval
__ For your use	__ Approved as noted	__ Submit __ copies for distribution
__ As requested	__ Returned for corrections	__ Return __ corrected prints
X For review and comment	__ _____	

REMARKS:

Attached is a copy of EBMA's Act 537 Special Study for the EBMA Pump Station Improvements for your review and comment.

FROM: Michael Elisco E.I.T

RECIVED BY: _____

SIGNATURE: _____

DATE: _____

LETTER OF TRANSMITTAL

SENATE ENGINEERING COMPANY
U-PARC, 420 William Pitt Way
Pittsburgh, PA 15238-1330
Telephone (412) 826-5454
Fax No. (412) 826-5458
senate@senateengineering.com
www.senateengineering.com

DATE: September 18, 2015

TO: ELIZABETH TOWNSHIP
522 Rock Run Road
Elizabeth, PA 15037

RE: ELIZABETH BOROUGH MUNICIPAL AUTHORITY
ACT 537 SPECIAL STUDY
SENATE #11154

WE ARE SENDING YOU THE FOLLOWING ITEMS:

COPIES	DATE	NO.	DESCRIPTION
1	9/18/15	1	Act 537 Special Studyfor EBMA Pump Station Improvements
1	9/18/15	1	Act 537 Special Studyfor EBMA Pump Station Improvements, Attachment A

THESE ARE TRANSMITTED as checked below:

__ For approval	__ Approved as submitted	__ Resubmit __ copies for approval
__ For your use	__ Approved as noted	__ Submit __ copies for distribution
__ As requested	__ Returned for corrections	__ Return __ corrected prints
X For review and comment	__ _____	

REMARKS:

Attached is a copy of EBMA's Act 537 Special Study for the EBMA Pump Station Improvements for your review and comment.

FROM: Michael Elisco E.I.T

RECIVED BY: _____

SIGNATURE: _____

DATE: _____

LETTER OF TRANSMITTAL

SENATE ENGINEERING COMPANY
U-PARC, 420 William Pitt Way
Pittsburgh, PA 15238-1330
Telephone (412) 826-5454
Fax No. (412) 826-5458
senate@senateengineering.com
www.senateengineering.com

DATE: September 18, 2015

TO: FORWARD TOWNSHIP
1000 Golden Circle
Elizabeth, PA 15037

RE: ELIZABETH BOROUGH MUNICIPAL AUTHORITY
ACT 537 SPECIAL STUDY
SENATE #11154

WE ARE SENDING YOU THE FOLLOWING ITEMS:

COPIES	DATE	NO.	DESCRIPTION
1	9/18/15	1	Act 537 Special Studyfor EBMA Pump Station Improvements
1	9/18/15	1	Act 537 Special Studyfor EBMA Pump Station Improvements, Attachment A

THESE ARE TRANSMITTED as checked below:

__ For approval	__ Approved as submitted	__ Resubmit __ copies for approval
__ For your use	__ Approved as noted	__ Submit __ copies for distribution
__ As requested	__ Returned for corrections	__ Return __ corrected prints
X For review and comment	__ _____	

REMARKS:

Attached is a copy of EBMA's Act 537 Special Study for the EBMA Pump Station Improvements for your review and comment.

FROM: Michael Elisco E.I.T

RECIVED BY: Karen Stetor

SIGNATURE: Karen Stetor

DATE: 9/18/15

Elizabeth Borough Municipal Authority

Act 537 Special Study for EBMA Pump Station Improvements

Public Comment and Response

The Elizabeth Borough Municipal Authority (EBMA) advertised the Act 537 Special Study for public comment on September 14, 2015 for a 30-day comment period. One comment letter was received from the Gateway Engineers representing Elizabeth Township Authority (ETA) during the public comment period for the Act 537 Special Study for the EBMA Pump Station. A copy of the letter is attached. The following responses address each of the comments contained in the letter in relation to its relevance to the Act 537 Special Study.

1. **In Appendix E, Figure 5.2, it appears as though the label for the Fallen Timber Line has been incorrectly marked. It appears as through the line from Sewershed 3 and Fallen Timber are in the same line, which we believe is not correct**

   Figure 5.2 has been revised so that each line is labeled correctly

2. **EBMA is performing a flow monitoring plan to evaluate the projected flows in preparation for their LTCP preparation. If any of this monitoring is occurring on the ETA lines, we are requesting maps of the meter locations and be provided with the data received.**

   The flow monitoring work was completed in 2014 as part of the LTCP plan development, and is not a part of this Act 537 Special Study. The data in question was collected in EBMA manholes and pipes at points where ETA flows enter the Borough collection system (with the exception of the Fallen Timber line) and where they could positively be segregated from Borough flows. The ETA flows will not be used in this this pump station replacement project since the immediate concern is to replace the existing pump station with a capacity equal to the existing facility. The ETA flow data will be used for future pump station upgrades to handle wet weather flows and will be addressed in a separate Act 537 Plan Update.

3. **ETA has performed flow monitoring as well as flow isolation work on the lines above the Wylie Pump Station and will be performing lining and manhole work to reduce I&I in this portion of the system in 2016. Once the work is completed, we intend to remonitor the area to determine if flows have been reduced and if and what upgrades need to occur at the Wylie Pump station to prevent overflow occurrences. We will share the results of both final flow monitoring as well as the projected flow from the Wylie Pump Station upon completion so that this can be reflected in the LTCP for the EBMA**

   The LTCP will be completed in early 2016 using data available at that time. Two separate requests for flow projections for the Wylie Pump Station have been sent to ETA but no response has been received to date. If any Wylie Pump Station flow data and projections are available from ETA for use in the LTCP please forward them as soon as possible.

4. **ETA would like to request an engineer's meeting between the two Authority Engineers to review the project scope and upcoming plans for the LTCP and any additional upgrades planned.**

   The pump station replacement project scope is outlined in the Act 537 Special Study. EBMA will be contacting the contributing municipalities to complete the LTCP and will schedule a future meeting however, that meeting will have no bearing on this Act 537 Special Study.

End of Comments

GATEWAY
On Call. On Time. On Target.

THE GATEWAY ENGINEERS, INC.

400 HOLIDAY DRIVE, SUITE 300
PITTSBURGH, PA 15220-2727
412.921.4030 PHONE
412.921.9960 FAX

www.gatewayengineers.com

October 21, 2015
C-76018

Senate Engineering
420 William Pitt Way
Pittsburgh, PA 15238

ATTN: Michael Elisco, E.I.T.

RE: Elizabeth Township Authority Comments
Act 537 Special Study for EBMA Pump Station Improvements

Dear Mr. Elisco:

On behalf of the Elizabeth Township Authority (Authority) we have reviewed the Elizabeth Borough Municipal Authority Act 537 Sewage Facilities Plan Update Special Study for EBMA Pump Station Improvements dated September 2015 and the accompanying Environmental Report. Based on this review, we have the following comments.

- In Appendix E, Figure 5.2, It appears as though the label for the Fallen Timber Line has been incorrectly marked. It appears as though the line from Sewershed 3 and Fallen Timber are in the same line, which we believe is not correct.
- EBMA is performing a flow monitoring plan to evaluate the projected flows in preparation for their LTCP preparation. If any of this monitoring is occurring on ETA lines, we are requesting maps of the meter locations and be provided with the data received.
- ETA has performed flow monitoring as well as flow isolation work on the lines above the Wylie Pump Station and will be performing lining and manhole work to reduce I&I in this portion of the system in 2016. Once that work is completed, we intend to remonitor the area to determine if flows have been reduced and if and what upgrades need to occur at the Wylie Pump station to prevent overflow occurrences. We will share the results of both final flow monitoring as well as the projected flows from the Wylie Pump Station upon completion so that this can be reflected in the LTCP for the EBMA.
- ETA would like to request an engineers' meeting between the two Authority Engineers to review the project scope and upcoming plans for the LTCP and any additional upgrades planned.

If you have any questions or require additional information, please contact me at 412-921-4030, Ext. 102.

Sincerely,
THE GATEWAY ENGINEERS, INC.

Ruthann L. Omer, P.E.
Authority Engineer

Cc: Edward Campbell, ETA Chairman

G:\Projects\76000 Elizabeth Township Authority\76018 Elizabeth Borough Act 537 Plan\Senate Comment ltr.docx

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office

June 25, 2019

Richard Janus
Elizabeth Township
522 Rock Run Road
Elizabeth, PA 15037

Re: Approval Letter-Official Plan Update
Act 537 Planning
Boston and Buena Vista Watersheds
DEP Code No. 02909-17-537
Elizabeth, Sewickley and Forward Townships
Sutersville, Lincoln and Versailles Boroughs
City of McKeesport
Allegheny County

Dear Mr. Janus:

We have reviewed your Act 537 Plan Update Revision (Plan), submitted on November 10, 2016 with revisions submitted on October 24, 2017 and, prepared by KLH Engineering, Inc. entitled Act 537 Sewage Facilities Plan Update, Boston and Buena Vista Watersheds. The Plan is consistent with the planning requirements given in Chapter 71, of the rules and regulations of the Department.

The Plan provides for decommissioning the Buena Vista Wasterwater Treatment Facility (BVWWTF), construction of a pump station and equalization tank at the BVWWTF, construction of a single forcemain along the Great Allegheny Passage (Rail Trail) to the Boston Pump Station, upgrade of the Boston Pump Station and the construction of a single forcemain from the Boston Pump Station to a point of connection with the Municipal Authority of the City of McKeesport's system near the CSX Railroad Bridge. Additionally, the Lovedale and Simpson Howell pump stations will be upgraded to address overflows and get all flows to the new Buena Vista Pump Station.

The Plan Update is approved.

The approved project will require a Water Management Part II Permit for the construction and operation of the proposed sewage facilities. The permit application must be submitted in the name of the Township. Issuance of a Part II Permit will be based upon a technical evaluation of the permit application and supporting documentation. Starting construction prior to obtaining a Part II Permit is a violation of The Clean Streams Law.

Other Department permits may be required for construction if encroachment to streams or wetlands will result. Information regarding the requirements for such permits or approvals can be obtained from the Department's Permitting and Technical Services Section, Watershed Management Program, Southwest Regional Office, at the letterhead address, or by calling 412-442-4315.

It is now Elizabeth Township, Sewickley Township, Forward Township, Sutersville Borough, Borough of Versailles, Borough of Lincoln and the City of McKeesport's responsibility to implement the 537 Plan in accordance with the schedule contained within the Plan.

As required by regulation, 25 Pa Code 71.41, the Department will administer grants to municipalities, counties and authorities for preparing update revisions and special studies to the **extent of the appropriations made by the General Assembly for that purpose**. Over the past few years, each budget that was passed cut the amount of the appropriations for this program. As required by regulation, 25 Pa Code 71.43(b), the Department will pay grants to applicants on administratively complete applications in the order in which the application was received. Grant amounts are based on 50% of eligible sewage facilities planning costs. You are reminded that reimbursement applications must show detailed cost breakdowns of tasks completed or you will place your reimbursement in jeopardy.

Please be advised the approval of this scope of work is not a guarantee of eligibility of planning costs for reimbursement by the Commonwealth pursuant to Section 6 (a) of Act 537 and 25 Pa Code Chapter 71 of the Department's regulations.

In addition, Act 13 of 2012 established the Marcellus Legacy Fund that allocates funds to the Commonwealth Financing Authority (CFA). Because funding for Act 537 planning grants has been severely reduced, you are encouraged to apply for a grant thru the CFA for planning costs associated with Act 537, Pennsylvania Sewage Facilities Act. Grants awarded to applicants from CFA funding may reimburse up to 50 percent of eligible costs, not to exceed $100,000. To be eligible for this funding, work related to these planning activities must have occurred after February 14, 2012. Information regarding the CFA funding program and how to apply is available at: http://www.newpa.com/find-and-apply-for-funding/funding-and-program-finder/sewage-facilities-program

Any person aggrieved by this action may appeal the action to the Environmental Hearing Board (Board), pursuant to Section 4 of the Environmental Hearing Board Act, 35 P.S. § 7514, and the Administrative Agency Law, 2 Pa.C.S. Chapter 5A. The Board's address is:

Environmental Hearing Board
Rachel Carson State Office Building, Second Floor
400 Market Street
P.O. Box 8457
Harrisburg, PA 17105-8457

TDD users may contact the Environmental Hearing Board through the Pennsylvania Relay Service, 800-654-5984.

Appeals must be filed with the Board within 30 days of receipt of notice of this action unless the appropriate statute provides a different time. This paragraph does not, in and of itself, create any right of appeal beyond that permitted by applicable statutes and decisional law.

A Notice of Appeal form and the Board's rules of practice and procedure may be obtained online at http://ehb.courtapps.com or by contacting the Secretary to the Board at 717-787-3483. The Notice of Appeal form and the Board's rules are also available in braille and on audiotape from the Secretary to the Board.

IMPORTANT LEGAL RIGHTS ARE AT STAKE. YOU SHOULD SHOW THIS DOCUMENT TO A LAWYER AT ONCE. IF YOU CANNOT AFFORD A LAWYER, YOU MAY QUALIFY FOR FREE PRO BONO REPRESENTATION. CALL THE SECRETARY TO THE BOARD AT 717-787-3483 FOR MORE INFORMATION. YOU DO NOT NEED A LAWYER TO FILE A NOTICE OF APPEAL WITH THE BOARD.

IF YOU WANT TO CHALLENGE THIS ACTION, YOUR APPEAL MUST BE FILED WITH AND RECEIVED BY THE BOARD WITHIN 30 DAYS OF RECEIPT OF NOTICE OF THIS ACTION.

If you have any questions or concerns, please contact Thomas Flanagan of my staff at either 412.442.4047 or thflanagan@pa.gov , and refer to DEP Code No. 02909-17-537.

Sincerely,

Donald Leone P.E.
Planning Chief
Clean Water Program

cc: ACHD
Sewickley Township
Forward Township
Sutersville Borough
Borough of Versailles
Borough of Lincoln
City of McKeesport
Sutersville-Sewickley Municipal Sewage Authority

bc: Planning Section
Stacy Greenwald
Bruce Herschlag
Thomas Flanagan
Judy Self

Mark Petros
Sewickley Township
Sewickley Township Municipal Building
2288 Mars Hill Road
Irwin, PA 15642

Karen Stetor
Forward Township
1000 Golden Circle
Elizabeth, PA 15037

Valerie Converso
Sutersville Borough
320 Municipal Avenue
Sutersville, PA 15083

Sharon O'Toole
Borough of Versailles
5100 Walnut Street
McKeesport, PA 15132

Tammy Firda
Borough of Lincoln
45 Abe's Way
Elizabeth, PA 15037

Annette James
City of McKeesport
500 Fifth Avenue
McKeesport, PA 15132

Sutersville-Sewickley Municipal Sewage Authority
826 Curry Road
Sutersville, PA 15083

KLH
ENGINEERS, INC

January 30, 2017
Ref. No. 542-04

RECEIVED
JAN 31 2017
Clean Water
DEP, Southwest Regional Office

Mr. Thomas E. Flanagan
Sewage Planning Specialist Supervisor
Department of Environmental Protection
Clean Water Program
Southwest Regional Office
400 Waterfront Drive
Pittsburgh, PA 15222

Dear Mr. Flanagan:

Elizabeth Township
Act 537 Sewage Facilities Plan Update

On behalf of Elizabeth Township, KLH Engineers offers the following responses to your comments regarding the Act 537 Sewage Facilities Plan Update for the Boston and Buena Vista sewersheds in Elizabeth Township, Allegheny County, Pennsylvania:

1. The following communities are served by the Boston and Buena Vista sewerage facilities:

   - Elizabeth Township
   - Forward Township
   - Sutersville Borough

2. The Act 537 Sewage Facilities Plan Update was sent to Forward Township, Lincoln Borough, Sutersville Borough, Versailles Borough and the City of McKeesport. Original signed and sealed Resolutions of adoption will be forwarded to your attention as soon as they are received.

3. Please find the ACHD comment letter dated December 28, 2016, and KLH's response letter dated January 30, 2017 attached.

4. All flow rates presented in the Act 537 Sewage Facilities Plan Update were developed from the inherited Gateway model based on flow monitoring conducted by Elizabeth Township. Flow monitoring in the Buena Vista sewershed began as early as October 2007 and was completed by June 2015. All SSO flow monitors remain active in the Buena Vista sewershed. Flow monitoring in the Boston sewershed began in February 2009 and remains active. Maps of all flow monitoring locations and a list of all flow monitors (including monitoring dates) are attached.

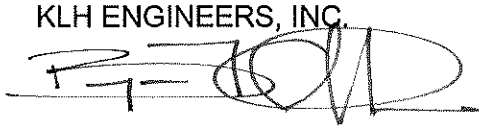
5. The attached on-lot system map was developed based on the Township's existing GIS data. It was assumed that areas not served by public sewerage are served by on-lot systems.

5173 Campbells Run Road Pittsburgh, PA 15205 Phone: 412.494.0510 Fax: 412.494.0426 info@klhengineers.com
www.klhengineers.com

Should you have any questions or concerns, please feel free to contact our office.

Very truly yours,

KLH ENGINEERS, INC.



Bryan M. Churilla, P.E.

Enclosure

cc: Elizabeth Township

RECEIVED
NOV 10 2016
Water Management
DEP, Southwest Regional Office

ELIZABETH TOWNSHIP
ACT 537 SEWAGE FACILITIES PLAN UPDATE

Table of Contents

PLAN SUMMARY 1

I. PREVIOUS WASTEWATER PLANNING 7

II. PHYSICAL AND DEMOGRAPHIC ANALYSIS 10

III. EXISTING SEWAGE FACILITIES IN THE PLANNING AREA 14

IV. FUTURE GROWTH AND LAND DEVELOPMENT 21

V. IDENTIFICATION OF ALTERNATIVES TO PROVIDE NEW OR IMPROVED WASTEWATER DISPOSAL FACILITIES 28

VI. EVALUATION OF ALTERNATIVES 36

VII. INSTITUTIONAL EVALUATION 45

VIII. IMPLEMENTATION SCHEDULE AND JUSTIFICATION FOR SELECTED TECHNICAL & INSTITUTIONAL ALTERNATIVES 48

IX. ENVIRONMENTAL REPORT GENERATED FROM THE UNIFORM ENVIRONMENTAL REVIEW (UER) PROCESS 51

TABLES

1 User Cost Analysis 3
2 Schedule of Implementation 6
3 Buena Vista Watershed Pump Stations 14
4 Permitted Effluent Limits of the MACM WPCP 15
5 MACM WPCP Monthly Biosolids Production (2015) 20
6 Approved Buena Vista Flows 24
7 Approved Boston Flows 24
8 Approved Total Flows to MACM 24
9 Existing Average Flow Rates 25
10 Peak Flow Projects 25
11 Year 2015 Pump Station Peak Overflow Volumes 25
12 Buena Vista Pump Station Projected Flows 26
13 Boston Pump Station Projected Flows 26

14 Comparison of Alternatives 29
15 Estimated Alternative Project Costs 42
16 Alternative Present Worth 42
17 Monthly User Rates 43
18 Schedule of Implementation 50

APPENDICES

Appendix A: UER
Appendix B: Plan Checklist
Appendix C: Municipal Resolution
Appendix D: Planning Agency
Appendix E: Proof of Publication
Appendix F: Comment Response
Appendix G: COA
Appendix H: Exhibits
Appendix I: Zoning Map
Appendix J: Flow Agreement
Appendix K: PNDI
Appendix L: PHMC
Appendix M: Cost Estimates
Appendix N: Present Worth Analysis
Appendix O: User Rate Analysis

ELIZABETH TOWNSHIP
ALLEGHENY COUNTY, PENNSYLVANIA

ACT 537 SEWAGE FACILITIES PLAN UPDATE

PLAN SUMMARY

The Pennsylvania Sewage Facilities Act (Act 537) was enacted by the Pennsylvania Legislature in 1966. It requires every municipality in the Commonwealth of Pennsylvania (Commonwealth) to develop and maintain an up-to-date Act 537 Sewage Facilities Plan. The purpose of the Act 537 planning process is to protect the health, safety and welfare of the citizens living in a municipality, to prevent future sewage disposal problems from occurring, and to provide protection for the groundwater and surface waters of the Commonwealth. An Act 537 Plan should be updated when the existing Plan is out of date, is inconsistent with other municipal planning, does not provide adequate solutions to resolve existing sewage disposal problems, or is needed to provide for planned growth.

This Act 537 Sewage Facilities Plan Update was developed to evaluate sewage facilities alternatives to handle existing and future wastewater flows in the Boston and Buena Vista sewersheds in Elizabeth Township, Allegheny County, Pennsylvania. The Plan Update was developed in accordance with the Pennsylvania Department of Environmental Protection (PADEP) document entitled, *A Guide for Preparing Act 537 Update Revisions*. It includes all applicable information to provide adequate planning, as outlined on the PADEP document entitled, *Act 537 Plan Content and Environmental Assessment Checklist*, provided herein as Appendix B.

On August 26, 2015, the PADEP issued an Administrative Order to Elizabeth Township and the Elizabeth Township Authority requiring the Township to abandon the Buena Vista Sewage Treatment Plant (STP), implement a project to convey the Boston and Buena Vista sewershed flows to McKeesport, and apply to transfer the Part II Permits to the Township. The Township and the Authority would later appeal the August 2015 Administrative Order. However, the appeal was retracted after the Township Board of Commissioners voted to terminate and disband the Authority in March 2016. The Township assumed sole ownership and operation of the sanitary sewerage facilities and agreed to submit an all inclusive Act 537 Sewage Facilities Plan Update recommending flows in both the Boston and Buena Vista sewershed be conveyed to McKeesport for treatment. This Plan Update meets that requirement as established in the Township's Consent Order and Agreement (COA) with the PADEP. The PADEP indicated this is preferable as a regional approach to the treatment of municipal sewage.

The existing Buena Vista STP and the Boston Pump Station have exceeded their useful lifespan due to capacity-related issues. The capacity of these facilities is exceeded under peak flow conditions during major rainfall events resulting in overflows into the Youghiogheny River and its tributaries. Overflows have also occurred at all of the existing pump stations in the Buena

Vista sewershed, including the Buena Vista, Lovedale, Duncan and Simpson Howell Pump Stations, and within specific collection and conveyance sewers in the Buena Vista and Boston sewersheds. Additional problems exist along the conveyance lines through Versailles, to which the Boston Pump Station currently discharges, including confirmed manhole surcharging due to the inflow and infiltration entering the system during rainfall events. It is believed that the lack of capacity to handle existing and projected peak flows will cause additional problems resulting in critical public health concerns.

In order to address the capacity issues identified in the Buena Vista and Boston sewersheds, to abate critical public health hazards, and to comply with the COA, the following projects, identified herein as Alternative 1, are recommended for implementation:

- Decommission the existing Buena Vista STP
- Construct a pump station and equalization tank at the site of the Buena Vista STP
- Construct a single force main along the Great Allegheny Passage (Rail Trail) to the Boston Pump Station
- Upgrade the Boston Pump Station
- Pump from the Boston Pump Station through a single force main to a point of connection with MACM near the CSX Railroad Bridge over the Youghiogheny River
- Upgrade Buena Vista sewershed pump stations, Lovedale and Simpson Howell, to address overflows and get all flow to the new Buena Vista Pump Station

The Township will continue to evaluate the feasibility of the diversion of flow from the Lovedale and Simpson Howell Pump Stations to a proposed interceptor along Lovedale Hollow Road (Wylie Run) to the Wylie Run Pump Station, and then to the Elizabeth Borough STP for treatment. This will allow reduced flows in the Buena Vista sewershed. However, the Borough does not currently have the capacity to treat these flows.

The Township is committed to meeting the requirements of the COA to bring the sewer system into compliance with the Clean Water Act. In addition to the technical alternatives identified above, the Township will complete the following administrative and operational tasks:

- Continue flow monitoring in the system to measure volume, duration and dates of all sanitary sewer overflow (SSO) events
- Eliminate any remaining SSOs after completion of Elizabeth to McKeesport project through I&I removal and/or system improvements
- Implement the newly developed Operation and Maintenance Plan
- Submit annual Tap Control Plans to the PADEP
- Submit semi-annual progress reports to the PADEP
- Continue to implement yearly Contracts for televising, cleaning, and repairs of the sewers

There are no significant administrative issues, organizational needs or deficiencies in legal authority necessary for implementation of this Plan Update. The proposed improvements will be implemented under the existing authority of Elizabeth Township. Elizabeth Township will maintain the existing agreement with the Municipal Authority of the City of McKeesport.

The total estimated project cost of the implementation of Alternative 1 is $23,022,200. This will result in user cost of approximately $76 / month per customer, or $910 / year per customer.

Current rates result in an average monthly user cost of $55. However, based upon the Year 2015 budget in the annual CE report, and consistent with the annual audit, the Authority was projecting a yearly deficit at the current rate structure. The Authority was looking into a rate increase to cover current bond obligations and operating expenses. It is estimated that, after this rate increase, the average monthly user cost would need to be $69.

Therefore, this project will realistically result in a user cost comparable to what is currently required to finance the existing sanitary operation. However, the total impact to the customer will be about $21 / month due to current revenue shortfalls.

A summary of these rates is as follows.

Table 1: User Cost Analysis

Rate Structure	Monthly User Cost
Current Average Monthly Customer Rate	$ 55.00
Current Required Monthly Customer Rate	$ 69.00
Proposed Monthly Customer Rate	$ 76.00

The calculation to develop these rates is as follows.

Current User Rate

The current user rates are calculated as follows.

Year 2015 Net Sewer Charge Revenue	= $ 4,075,000
÷ Total Number of Customers	= 6,164
Average Yearly Cost per Customer	= $ 661
Average Monthly Cost per Customer	**= $ 55**

Current Required User Rate

The required current user rates are calculated as follows.

	Year 2016 Budget Expense	= $ 3,265,841
+	Year 2016 Budget Debt Service	= $ 1,777,504
+	110% Debt Service Requirement	= $ 177,750
-	Year 2016 Budget Non Sewer Charge Revenue	= $ 117,100
	Total Required Sewer Charge Revenue	= $ 5,103,995
÷	Total Number of Customers	= 6,164
	Average Yearly Cost per Customer	= $ 828
	Average Monthly Cost per Customer	**= $ 69**

Proposed User Rate

The proposed user rates are calculated as follows.

	Proposed Budget Expense	= $ 3,212,600
+	Proposed Budget Debt Service	= $ 2,328,173
+	110% Debt Service Requirement	= $ 232,817
-	Proposed Budget Non Sewer Charge Revenue	= $ 165,100
	Total Required Sewer Charge Revenue	= $ 5,608,491
÷	Total Number of Customers	= 6,164
	Average Yearly Cost per Customer	= $ 910
	Average Monthly Cost per Customer	**= $ 76**

The former Elizabeth Township Sanitary Authority obtained Revenue Bonds to finance the Consent Order work and the Act 537 Plan implementation in the amount of $35,885,000 (of which approximately $28,805,000 is still outstanding). Those bonds are now in the name of Elizabeth Township. There remains approximately $13,500,000 in Bond funds that will be directed toward the projects identified within this Act 537 Plan Update. The Township is working on a bond refinancing plan to reduce payments on existing debt and to borrow additional funds for this project.

The Township will need to obtain additional financing to complete the proposed project. It is anticipated that this funding will come from additional Revenue Bonds.

The anticipated schedule of implementation of the Act 537 Sewage Facilities Plan Update, contingent upon receiving favorable funding, is included in Table 2 in the Implementation Schedule section below.

MUNICIPAL ADOPTION

In addition to Elizabeth Township, the Act 537 Sewage Facilities Plan Update was sent to Versailles Borough (due to the removal of flow from their system) and the Municipal Authority of the City of McKeesport (due to the addition of flow into their system). Original signed and sealed Resolutions of Adoption of the Plan Update by Elizabeth Township, Versailles Borough and the Municipal Authority of the City of McKeesport is included in Appendix C.

PLANNING COMMISSION / HEALTH DEPARTMENT COMMENTS

General correspondence with the Elizabeth Township Planning Commission and the Allegheny County Health Department is included in Appendix D. All applicable planning agency comments have been addressed within the Act 537 Sewage Facilities Plan Update as necessary.

PUBLICATION

Proof of Public Notice, which documents the adoption and summary of the Act 537 Sewage Facilities Plan Update, and the establishment and conduct of a 30-day comment period, is included in Appendix E.

In addition, an advertised special public meeting was held on Thursday, August 22, 2016 at the Elizabeth Township Municipal Building to discuss the Plan alternatives with both Commissioners and the public. A copy of this Proof of Public Notice is also included in Appendix E.

COMMENTS AND RESPONSES

Copies of all written comments received as a result of the public comment period are included in Appendix F. Comments have been addressed within the Act 537 Sewage Facilities Plan Update as necessary.

IMPLEMENTATION SCHEDULE

The anticipated schedule of implementation of the Act 537 Sewage Facilities Plan Update, contingent upon receiving favorable funding, is included in Table 1.

Table 2: Schedule of Implementation

Activity	Completion Date
Submit the Plan Update to the PADEP	November 9, 2016 *
PADEP Review and Approval of the Plan Update	December 31, 2016
Complete Design	December 31, 2016
Submit Necessary WQM Part II Permits	January 8, 2017 **
Obtain Construction Financing	July 15, 2017
Begin Construction	September 1, 2017
Decommission BVSTP	April 1, 2018 ***
Complete Construction	May 1, 2018 ****

* Within 180 days of May 13, 2016 Consent Order and Agreement
** Within 45 days of Plan approval, or 240 days after execution of COA, whichever is later
*** Within 24 months of the execution of COA -- May 13, 2018 deadline
**** Within 750 days of issuance of Part II Permits (assumed to be March 2017)

CONSISTENCY DETERMINATION

According to Act 537, all technically feasible sewage facility alternatives must be evaluated for consistency with certain acts, programs and policies. There are no expected inconsistencies associated with the alternatives proposed herein. The alternatives are consistent with the following Acts, programs and policies, and do not require resolution during this planning phase of the project:

- Sections 4 and 5 of the Clean Streams Law
- Section 208 of the Clean Water Act
- Municipal Wasteload Management Under PA Code, Title 25, Chapter 94
- Title II of the Clean Water Act
- Titles II and VI of the Water Quality Act of 1987
- Comprehensive Plans developed under the Pennsylvania Municipalities Planning Code
- Antidegradation requirements as contained in PA Code, Title 25, Chapters 93, 95 and 102
- State Water Plan developed under the Water Resources Planning Act
- Pennsylvania Prime Agricultural Land Policy
- Allegheny County Stormwater Management Plan
- Wetlands Protection
- Protection of rare, endangered or threatened plant and animal species as identified by the Pennsylvania Natural Diversity Inventory (PNDI)

- Historical and archaeological resource protection relating to cooperation with public officials with the Pennsylvania Historical and Museum Commission (PMHC)

Additional action may be required to demonstrate consistency with the above named acts, programs and policies. This will occur during the design and permitting phases upon implementation of the selected sewage facilities alternative. For more information, refer to Section VI.A.

I. PREVIOUS WASTEWATER PLANNING

I.A. IMPACT OF PAST WASTEWATER PLANNING ON THE CURRENT PLANNING EFFORT

This section of the Plan Update identifies and describes the impacts of previous planning efforts on the current planning effort.

I.A.1 Planning Previously Undertaken Under the Sewage Facilities Act

Water and Wastewater Needs in Allegheny County – Green International, 1970

Planning for sewage related needs in Elizabeth Township dates back to the early 1970's when a study entitled, *Water and Wastewater Needs in Allegheny County*, was prepared by Green International. The study divided Allegheny County into a series of individual drainage basins and provided specific recommendations for each basin. Elizabeth Township was encompassed within a few separate basins with recommendations provided as follows:

- Youghiogheny River Basin (McKeesport Watershed, Greenock and Boston Area)
  Sewage from the Buena Vista and McKeesport Watershed should be conveyed to and be treated at McKeesport.

- Wildcat Run, Douglass Run and Pollock Run Basins (Buena Vista STP Watershed)
  Sewers should be extended to the areas in these basins (except Pollock Run) with treatment provided at the Elizabeth Township plant or at McKeesport. Most of this watershed has been sewered, and is currently connected to the Buena Vista Plant.

- Fallen Timber Run Basin (Fallen Timber Run Watershed, Elizabeth Borough STP Watershed)
  An interceptor should be constructed and treatment of sewage should be provided at the Elizabeth Borough STP. This area is covered by a separate Act 537 Sewage Facilities Plan Update. The facilities proposed in that update have been constructed and are in operation along the State Route 51 corridor.

- Lobbs Run and Wylie Run Basin (Elizabeth Borough STP Watershed)
  The existing facilities are consistent with the 1970 study. These consist of sewers in the Happy Hollow Basin, the Wylie Run Pump Station and treatment at the Elizabeth Borough STP. Additionally, a planning module was prepared, submitted and approved by PADEP for the Wylie Run Watershed in a letter dated December 4, 2004. The planning module proposed elimination of the Lovedale Pump Station and connection to the Wylie Run system and treatment at the Elizabeth Borough STP.

Southwestern Planning Commission, 1971 and 1979

The Southwestern Planning Commission prepared sewage planning documents in 1971 and 1979, which provided sewage planning recommendations for Elizabeth Township. The 1971 study recommended construction of sewers throughout Elizabeth Township through a grant program with the Department of Housing and Urban Development. However, funding never became available and the projects were never completed. The 1979 study recommended expansion of the Buena Vista STP in three phases. The plant was expanded from 0.5 MGD to 1.0 MGD in 1982. The plant was later rerated to 1.4 MGD in 1995.

Twin Rivers Council of Government Study, 1983

The Twin Rivers Council of Government prepared a study in 1983 to evaluate sanitary and storm sewers in several member communities including Elizabeth Township. The study evaluated four separate areas of the Township including the Village of Smithdale, the Village of Blythedale/Douglas Run area, the Weigle's Hill Road area and the Opferville Area. The Village of Blythedale/Douglas Run area was sewered within the past ten years and is connected to the Buena Vista STP. A planning module was later approved to extend sewers upstream from the Buena Vista STP to the Arrowhead Lake Area above Douglas Run. That project allowed further extension into Forward Township. Extension to the Village of Smithdale was not economically feasible. The report also suggested provision of sanitary sewers and a separate sewage treatment plant to serve Smithdale and Blythedale. However, that recommendation was inconsistent with previous planning.

The Weigle's Hill Road area and the Opferville Area were addressed in a previous Act 537 Plan revision for the Fallen Timber Run watershed.

I.A.2 Planning Not Carried Out According to an Approved Implementation Schedule

Elizabeth Township adopted an Act 537 Plan Update for the Buena Vista sewershed dated October 2008. The October 2008 Plan Update recommended abandonment of the Buena Vista STP and the pumping of wastewater from the Buena Vista sewershed to the MACM WPCP. It also recommended diversion of flows from the Simpson Howell and Lovedale Pump Stations to the Elizabeth Borough STP sewershed. McKeesport adopted a Plan Update of its own dated July 2009 to accept the Buena Vista flows in its WPCP upgrade project. The Implementation

Schedule in the October 2008 Plan Update called for all construction of the new sewerage facilities to be completed by December 31, 2012. However, the October 2008 Plan Update was never implemented and a subsequent Plan Update was later prepared for the Buena Vista sewershed in August 2015 revising the recommendations for the sewershed. The August 2015 Plan Update proposed the upgrade of the Buena Vista STP. The purpose of the current Plan Update is to further evaluate these alternatives and determine the most cost effective solution for the Township, including both the Buena Vista and Boston sewersheds.

I.A.3 Planning Anticipated or Planned by Applicable Sewer Authorities or Approved Under a Chapter 94 Corrective Action Plan

On August 26, 2015, the PADEP issued an Administrative Order to Elizabeth Township and the Elizabeth Township Authority requiring the Township to abandon the Buena Vista STP, implement a project to convey the Boston and Buena Vista sewershed flows to McKeesport, and apply to transfer the Part II Permits to the Township. The Township and the Authority would later appeal the August 2015 Administrative Order. However, the appeal was retracted after the Township Board of Commissioners voted to terminate and disband the Authority in March 2016. The Township assumed sole ownership and operation of the sanitary sewerage facilities and agreed to submit an all inclusive Act 537 Sewage Facilities Plan Update recommending flows in both the Boston and Buena Vista sewershed be conveyed to McKeesport for treatment. This Plan Update meets that requirement. The PADEP indicated this is preferable as a regional approach to the treatment of municipal sewage.

The sanitary sewerage facilities in Elizabeth Township remain hydraulically overloaded and the system discharges unauthorized sanitary sewer overflows (SSOs) to the Youghiogheny River, a water of the Commonwealth, as defined by the Clean Streams Law. This is a direct violation of the Clean Streams Law. Therefore, Elizabeth Township entered into a Consent Order and Agreement (COA) with the PADEP on May 13, 2016. The signed COA is included as Appendix G, and contains many of the same requirements identified in the August 2015 Administrative Order.

There is also an existing agreement requiring a 10-year corrective action schedule in the Boston sewershed due to the Corrective Action Plan (CAP) that was part of the PADEP approval for the McKeesport Act 537 Plan. The CAP is summarized as follows:

- Year 0 Adopt Plan
- Years 1-10 Administrative Meetings
- Years 1-4 Map the Sewer System
- Year 2 Adopt Dye Test Ordinance
- Years 2-5 Perform Manhole Inspections
- Years 4-7 Dye Test Structures
- Years 5-10 Clean and Televise Sewer System
- Years 7-10 Assess Sewer System Condition and Perform Repair / Rehab Work

I.A.4 Planning Through Planning Modules for New Land Development, Planning Exemptions and Addenda

There are no current planning endeavors through planning modules for new land development, planning exemptions and addenda that would impact the current Plan Update.

II. PHYSICAL AND DEMOGRAPHIC ANALYSIS

II.A. IDENTIFICATION OF THE PLANNING AREA

Elizabeth Township is located in Allegheny County, Pennsylvania, roughly 25 miles southeast of Pittsburgh. The Township is positioned between the Monongahela River to the west and the Youghiogheny River to the east. The Township is divided into three separate sewersheds: the Buena Vista, Boston and Elizabeth Borough sewersheds.

- The Buena Vista sewershed is currently served by the Buena Vista STP and includes the localities identified as Buena Vista, Industry, Blythedale, Mt. Vernon, Rock Run Road and Arrowhead Lakes. Portion of Forward Township, Sutersville Borough and Sewickley Township are also included. A portion of the Township that is physically located in the Elizabeth Borough sewershed is pumped to the Buena Vista sewershed by the Simpson Howell and Lovedale Pump Stations.

- The Boston sewershed along the Youghiogheny River near the Boston Bridge and the Greenock area is pumped across the Youghiogheny River to the Borough of Versailles and then conveyed to McKeesport.

- The Elizabeth Borough sewershed is served by the Elizabeth Borough Sewage Treatment Plant, owned, operated and maintained by the Elizabeth Borough Municipal Authority. The Elizabeth Borough sewershed includes the areas of Happy Hollow Road and Blaine Hill near Elizabeth Borough, as well as the Fallen Timber Run watershed along State Route 51.

This Plan Update is specific to the Buena Vista and Boston sewersheds within the Township. The municipal boundaries and sewershed delineations are shown on Exhibit 1 in Appendix H.

II.B. PHYSICAL CHARACTERISTICS OF THE PLANNING AREA

Consideration must be given to the environmental impacts of land development activities throughout a watershed. Urbanization has the potential to degrade environmental values of watersheds with protected streams. For this reason, it is important to identify the physical characteristics of an area during the planning phase to ensure protection for important environmental resources.

The planning area for this Plan Update lies within the Youghiogheny River Watershed. The Pennsylvania Code, Title 25, Chapter 93 (Water Quality Standards) contains classifications of every stream in Pennsylvania and orders and promotes their protection. The Youghiogheny River is classified as a warm water fishery (WWF) under Chapter 93 regulations, as shown on Exhibit 2 in Appendix H. Chapter 93 defines a WWF as a stream used for the maintenance and propagation of fish species and additional flora and fauna that are indigenous to a warm water habitat.

Additional protection measures exist for waters classified as high quality (HQ) or exceptional value (EV). HQ and EV waters or watersheds have excellent quality and features that require special water quality protection measures. It is important to note that the Youghiogheny River is not classified as HQ or EV, but a major goal of this Plan Update is to protect the waters of the Commonwealth through the preservation of the overall Youghiogheny River drainage basin to support aquatic life.

II.C. SOILS ANALYSIS

Soils play a key role in determining the appropriateness of various on-lot and community sewage disposal systems, and often pose limitations for construction in certain areas. The slope, geologic composition, depth to restrictive layer, depth to water table and drainage characteristics of soils affect the ability to install on-lot or public sewerage systems. Soil characteristics including the appropriateness for on-lot and community sewage system installation and farmland classifications must be determined during the planning phase of a project, as these factors may impact the chosen alternative.

Discussion of areas suitable for in-ground on-lot systems, elevated sand mounds, individual residential spray irrigation systems, and areas unsuitable for soil dependent systems is irrelevant. Those types of sewage disposal systems are not considered in this Plan Update, as it was developed to evaluate alternative to convey flow in both the Boston and Buena Vista sewersheds to McKeesport for treatment, and to address future growth within the sewersheds.

Agricultural areas, as defined by the Pennsylvania Code, are areas used primarily for the production of crops and where the soil is without vegetative cover during certain periods of the year. Prime farmland is land that has the best physical and chemical characteristics for the production of food, feed and forage, fiber, and oil seed crops. Pennsylvania's Prime Agricultural Land Policy orders and directs the prevention of irreversible conversion of prime agricultural land to uses that result in its loss as an environmental or essential food production resource. Prime farmlands are important to examine for scenarios in which future development is expected to occur because of the protective measures in existence to preserve this important resource. The farmland classifications for the soil types found in the planning area are shown on Exhibit 3 in Appendix H. It is important to note that there are soil areas classified as prime farmland and farmland of statewide importance in the planning area. However, all construction will occur in previously developed areas or the impacted areas will be restored to

existing conditions post construction. There will be no lasting impacts on prime agricultural lands through the implementation of this Plan Update.

The distribution of general soil classifications for the soil types found in the planning area is shown on Exhibit 3 in Appendix H. The types, characteristics and farmland classifications of the soils were obtained from the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS).

II.D. GEOLOGIC FEATURES

Geologic features impact the ability to install and properly operate on-lot or community sewage disposal facilities. Sinkholes and solution channels provide direct conduits through which sewage may travel and cause contamination of groundwater. Inadequate depth to the water table may indicate that the unsaturated soil zone is too thin to adequately treat wastewater in on-lot system applications. These limitations must be avoided when implementing sewage disposal technologies and necessitate an investigation of geologic features during the planning phase of a project.

Mapping of the underlying geologic features in the planning area is shown on Exhibit 4 in Appendix H. This mapping shows the most dominant geological formations in the planning area. These formations are not considered to adversely affect the area and there are no known geologic features in relation to existing or potential nitrate-nitrogen pollution and drinking water sources. The various geologic formations and descriptions of each, obtained from the United States Geological Survey (USGS), are as follows:

- Casselman Formation
  The Casselman Formation includes cyclic sequences of shale, siltstone, sandstone, red beds, thin, impure limestone, and thin, nonpersistent coal. Red beds are associated with landslides. The base of the Casselman Formation is at top of Ames limestone.

- Glenshaw Formation
  The Glenshaw Formation includes cyclic sequences of shale, sandstone, red beds, and thin limestone and coal. The Glenshaw Formation includes four marine limestone or shale horizons. Red beds are involved in landslides. The base of the Glenshaw Formation is at top of Upper Freeport coal.

- Monongahela Group
  The Monongahela Group includes cyclic sequences of limestone, shale, sandstone, and coal. Commercial coals are present in the Monongahela Group. The base is at the bottom of Pittsburgh coal.

- Waynesburg Formation
  The Waynesburg Formation includes cyclic sequences of sandstone, shale, limestone and coal. Commercial coals are present in the Waynesburg Formation. The base is at the bottom of Waynesburg coal.

II.E. TOPOGRAPHY

Slopes within Elizabeth Township are moderately steep to the river basin plateau where the topography is generally level. The majority of the Township is served by public sanitary sewers. Certain portions of the Township contain slopes that are much too steep for on-lot system installation.

II.F. POTABLE WATER SUPPLIES

Elizabeth Township is provided public water service by the PA American Water Company, Inc. There are, however, 26 homes in the Buena Vista sewershed and 7 homes in the Boston sewershed which have private wells.

II.G. WETLANDS

Wetlands are areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions including swamps, marshes, bogs and similar areas. Wetland areas are considered to be a valuable public water resource and are subject to strict conservation regulations. They provide an environment and habitat for aquatic life including fish, amphibians and waterfowl. Additionally, many endangered plant species are thought to exist in wetlands, and wetlands are essential for the maintenance of surface water quality and quantity. Due to these characteristics and the additional permitting and mitigation that may be required, it is important to identify wetlands during the planning phase of a project.

Hydric soils are formed in conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. Hydric soils contain the characteristics necessary for potential wetland existence and may indicate the presence of a wetland area. The planning phase should, therefore, also consider hydric soil conditions.

Exhibit 5 in Appendix H contains National Wetlands Inventory (NWI) mapping and hydric soils mapping of the planning area. The mapping indicates that there are very few wetlands within the planning area. The only identified wetlands that may impact the proposed projects are located along the Youghiogheny River, which is classified as riverine. Additionally, there are soils within the planning area that are classified as all hydric or partially hydric.

Based on the wetlands and hydric soils mapping, there are no expected impacts on wetlands. The Township will make all attempts to minimize the impact on any ecologically sensitive areas

during any construction activities. All work associated with the chosen alternative will be consistent with all applicable state and federal regulations regarding wetlands.

III. EXISTING SEWAGE FACILITIES IN THE PLANNING AREA

III.A. SEWERAGE SYSTEMS IN THE PLANNING AREA

III.A.1 Location, Size and Ownership of Sewerage Facilities in the Planning Area

Elizabeth Township owns, operates and maintains the existing Buena Vista Sewage Treatment Plant. The Buena Vista STP has a permitted capacity of 1.4 MGD and is operated under National Pollutant Discharge Elimination System (NPDES) Permit No. PA0024732. Treated effluent is discharged to the Youghiogheny River. The Buena Vista STP is located at 433 Maria St, Buena Vista, PA 15018. Sewage from the north arrives at the plant through the Buena Vista Pump Station by gravity and from three other pump stations including the Lovedale, Duncan and Simpson Howell Pump Stations. Sewage from the south flows by gravity to the Buena Vista Pump Station. The Buena Vista STP will be abandoned and flows in both the Boston and Buena Vista sewersheds will be conveyed to McKeesport for treatment upon implementation of this Act 537 Sewage Facilities Plan Update.

The following is a list of pump stations within the Buena Vista system, and their corresponding capacity.

Table 3: Buena Vista Watershed Pump Stations

Pump Station	2-Pump Capacity [MGD]
Buena Vista STP	2.819
Lovedale	0.598
Simpson Howell	0.957
Duncan Station	0.662

The collection and conveyance system serving the Buena Vista sewershed consists of approximately 55 miles of collection and interceptor sewers ranging in size from 6 to 30 inches in diameter. The Buena Vista sewershed serves a portion of Elizabeth Township, a portion of Forward Township, a portion of Lincoln Borough, and the Sutersville Borough collection system owned by the Sutersville-Sewickley Municipal Sewer Authority.

The collection and conveyance system serving the Boston sewershed consists of approximately 29 miles of collection and interceptor sewers ranging in size from 8 to 27 inches in diameter. The Boston sewershed contains one pump station referred to as the Boston Pump Station located off of Donner Street below the Boston Bridge on the bank of the Youghiogheny River. The Boston Pump Station has three (3) pumps, each with a capacity of 950 gpm. The combined

capacity, with all three (3) pumps in operation, is approximately 4.1 MG. The pump station discharges across the Youghiogheny River to the Borough of Versailles through a 12-inch force main and ultimately to McKeesport.

Exhibit 6 in Appendix H shows the existing sewerage facilities in the planning area.

Upon implementation of this Act 537 Plan Update, sewage flows from the Buena Vista and Boston sewersheds will be conveyed to the Municipal Authority of the City of McKeesport (MACM) Water Pollution Control Plant (WPCP). The MACM WPCP is located at 100 Atlantic Avenue, McKeesport, PA 15132, and operates under NPDES Permit No. PA0026913. The permitted average and peak hydraulic capacities of the plant are 13.0 and 56.0 MGD, respectively. The permitted organic capacity of the plant is 19,950 lbs BOD_5/day. The MACM WPCP discharges treated effluent to the Monongahela River. The NPDES permitted effluent discharge limits for the WWTP are listed in Table 2.

Table 4: NPDES Permitted Effluent Limits of the MACM WPCP

PARAMETER	CONCENTRATION (mg/l)			
	Average Monthly	Average Weekly	Instantaneous Maximum	Units
FLOW	Monitor and Report			-
TOTAL RESIDUAL CHLORINE	0.5		1.6	mg/l
$CBOD_5$	25	38	50	mg/l
TOTAL SUSPENDED SOLIDS	30	45	60	mg/l
AMMONIA NITROGEN	Report Average Monthly, Daily Maximum			-
FECAL COLIFORM				
May 1 through September 30	200/100 ml as a Geometric Mean			#/100 ml
October 1 through April 30	2,000/100 ml as a Geometric Mean			#/100 ml
TOTAL NITROGEN	Report Daily Maximum			-
TOTAL PHOSPHORUS	Report Daily Maximum			-
UV TRANSMITTANCE	Report Average Monthly, Weekly Average			
DISSOLVED OXYGEN	4.0 mg/l minimum			mg/l
pH	Not less than 6.0 nor greater than 9.0			Standard Units

III.A.2 Narrative & Schematic Diagram of the Facility's Basic Treatment Processes

The existing Buena Vista STP has a permitted capacity of 1.4 MGD. Sewage from the north arrives at the plant through the Buena Vista Pump Station by gravity and from three other pump stations including the Lovedale, Duncan and Simpson Howell Pump Stations. Sewage from the south flows by gravity to the Buena Vista Pump Station. Influent flow is pumped

through a bar screen, grit removal, the aeration tanks, and then to the clarifiers. Flow from the clarifiers is sent to the chlorine contact tank before treated effluent is discharged to the Youghiogheny River. Sludge is settled and pumped to the sludge thickener tank and sludge holding tanks prior to ultimate disposal at the MACM WPCP. The Buena Vista STP will be abandoned and flows in both the Boston and Buena Vista sewersheds will be conveyed to McKeesport for treatment upon implementation of this Act 537 Sewage Facilities Plan Update.

The MACM WPCP has permitted average and peak hydraulic capacities of 13.0 and 56.0 MGD, respectively. It employs an extended aeration-activated sludge process capable of meeting secondary treatment. The secondary treatment process is intended to remove 85% of Biological Oxygen Demand (BOD), 90% of Total Suspended Solids (TSS), and 99% of settable solids. The MACM WPCP consists of a pump station, headworks, a control and incineration building, process air building, blower building, chlorine building, administration building, two 3-bay garages, and a maintenance garage. Figure 1 depicts the process flow diagram of the MACM WPCP with sample points and the receiving stream.

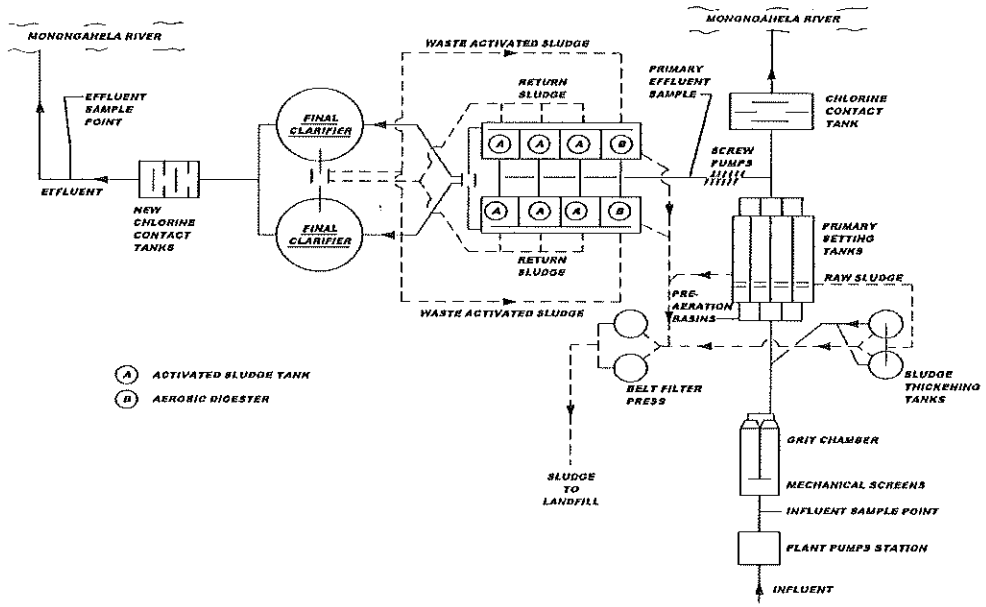


Figure 1: MACM WPCP Process Flow Diagram

III.A.3 Problems with Existing Facilities

The existing Buena Vista STP and the Boston Pump Station have exceeded their useful lifespan due to capacity-related issues. The capacity of these facilities is exceeded under peak flow conditions during major rainfall events resulting in overflows into the Youghiogheny River and its tributaries. Overflows have also occurred at all of the existing pump stations in the Buena Vista sewershed, including the Buena Vista, Lovedale, Duncan and Simpson Howell Pump

Stations, and within specific collection and conveyance sewers in the Buena Vista and Boston sewersheds. Additional problems exist along the conveyance lines through Versailles, to which the Boston Pump Station currently discharges, including confirmed manhole surcharging due to the inflow and infiltration entering the system during rainfall events. It is believed that the lack of capacity to handle existing and projected peak flows will cause additional problems resulting in critical public health concerns.

In August 2006, untreated sewage discharges from a sanitary sewer overflow to the Youghiogheny River were observed. No metering device was installed to record the overflow volume. At the request of the ACHD and the PADEP, the Elizabeth Township Sanitary Authority installed a metering device at the overflow location in August 2007. An order dated January 24, 2008, was later issued requiring the measuring and reporting of overflows and also to take steps to reduce flows, eliminate the overflows and/or provide treatment of such flows.

Existing SSO Issues within the System

Under the most recent COA, the Township is required to eliminate all system SSOs within 24 months of the completion of the construction of the Elizabeth to McKeesport project.

Boston Pump Station

The current Boston Pump Station is capable of conveying up to 4.1 MGD with all three (3) in operation. Based on the most recent flow data, it is estimated that up to 14.77 MGD could overflow from the Boston Pump Station during a 2-year, 24-hour design storm event. All capacity issues at the pump station will be eliminated with the improvements recommended in this plan.

Dad's Lane SSO

During large storm events, an overflow exists along the Buena Vista interceptor providing conveyance to the influent pump station. This interceptor was televised, and no deficiencies were discovered. The Gateway Engineers conducted a hydraulic analysis of the interceptor and determined that the overflow was caused by surcharging in the interceptor as a result of insufficient pump station capacity. The upgrades to the Buena Vista Pump Station will alleviate this overflow.

Conveyance System Pump Station SSOs

The Township also meters the overflows at each of the pump stations within the system. It is estimated that an additional 61,000 GPD must be accounted for from the pump station overflows within the Buena Vista watershed, mainly at the Lovedale and Duncan Station Pump Stations. This flow rate has been accounted for in the Buena Vista facility upgrades, however,

future flow monitoring will be conducted to quantify actual influent flow rates and upgrades required to convey them to the Buena Vista Pump Station.

III.A.4 Scheduled or In-progress Upgrading or Expansion of Treatment Facilities

There are no scheduled or in-progress upgrades or expansions of treatment facilities. The MACM WPCP was recently upgraded to handle the sewage flows presented in the McKeesport Act 537 Plan.

III.A.5 Operation & Maintenance Requirements for Small Flow Treatment Facility Systems

The only small flow sewage treatment plant (SFSTP) in Elizabeth Township is located at 3136 Long Hollow Road, Elizabeth, PA 15037, and is known as the Peterson SR STP. The Peterson SR STP was permitted by the PADEP on July 29, 2009. The facility contributes to the Buena Vista Sewershed. The Township requires a bond or money put into escrow to cover maintenance of these facilities in the event the owner does not maintain the system.

III.A.6 Disposal Areas

The existing Buena Vista STP discharges treated effluent to the Youghiogheny River. The Buena Vista STP will be decommissioned as a result of this Act 537 Sewage Facilities Plan Update and all flow conveyed to the MACM WPCP. The MACM WPCP discharges treated effluent to the Monongahela River.

III.B. ON-LOT SEWAGE DISPOSAL SYSTEMS IN THE PLANNING AREA

III.B.1 Types of On-lot Systems in Use

Approximately 10% of homes in Elizabeth Township are served by individual on-lot sewage disposal systems. Extension of public sewerage facilities to serve these properties has not been economically feasible due to the scattered nature of these remaining residences and structures. The majority of existing on-lot systems consist of a septic tank and in-ground adsorption area. At least one known holding tank exists in the Boston Sewershed located off Boston Hollow Road.

III.B.2 Sanitary Survey

A sanitary survey was not completed in preparation of this Plan Update. However, the ACHD tested numerous properties along Lincoln Hall Road and determined there were several homes with potentially failing on-lot systems.

Boston Pump Station
Boston Sewershed
Duncan Pump Station
Lovedale Pump Station
Wylie Pump Station
Elizabeth Borough
Simpson-Howell Pump Station
Sewage Treatment Plant
Buena Vista Pump Station
Elizabeth Sewershed
Buena Vista Sewershed
ELIZABETH TOWNSHIP
ROSTRAVER TOWNSHIP
FORWARD TOWNSHIP
ROSTRAVER TOWNSHIP

PACIFIC AV
WASHINGTON BL
LIBERTY WY
EDEN PARK BL
WALNUT ST
LONG RUN RD
RIPPLE RD
CENTER ST
SMITHFIELD ST
LINCOLN WY
FIVE PINES RD
RIDGE RD
GLASSPORT-ELIZABETH RD
BELLBRIDGE RD
PORT VUE RD
WEST SMITHFIELD ST
MORAY DR
BUENA VISTA RD
GREENOCK
COULTERVILLE RD
TURNER VALLEY RD
RENZIE ST
BOSTON HOLLOW RD
LINCOLN BL
STATE ST
ST CLAIR AV
HARRISON HOLLOW RD
LIBERTY WY
FINNEY RD
RIDGE RD
GREENOCK RD
BROADLAWN DR
DRAVOSBURG RD
MCKEESPORT RD
HARRISON RD
LOVEDALE RD
INDUSTRY RD
MILL HILL RD
ROCK RUN RD
FALLEN TIMBER RD
SIMPSON - HOWELL RD
WEIGEL HILL RD
SCENERY DR
ELIZABETH
NICHOLS HILL RD
BLYTHEDALE RD
MARS HILL RD
ROUND HILL RD
HAYDEN BL
DOUGLAS RUN RD
FIRST AV
SECOND AV
ROBERTSON RD
LOWBER RD
LONG HOLLOW RD
WEST NEWTON RD
COAL HOLLOW RD
MAIN ST
ROSTRAVER RD
VERNON DR
RAINBOW RUN RD
SR 0051 SH
SALEM CHURCH RD

Legend
- On-Lot System
- Sewersheds
- Treatment Plant
- Pump Station
- Meter
- Forcemain
- Sewer Line
- State Road
- Railroad Line
- Municipal Boundary
- River

S:\Active Clients\542 Elizabeth Township Sanitary\542-04 Act 537 Update\GIS only\542-04 On-lot System Map.mxd

542-04	0 2,300 4,600 Feet	**ELLIZABETH TOWNSHIP AUTHORITY ALLEGHENY COUNTY, PENNSYLVANIA EXISTING ON-LOT SYSTEMS**	KLH ENGINEERS, INC
EXHIBIT	Author: Cesar A. Simon Date: 1/23/2017 NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet Projection: Lambert Conformal Conic		5173 Campbells Run Road Pittsburgh, PA 15205 Phone: 412-494-0510 Fax: 412-494-0426 www.klhengineers.com

III.B.3 On-lot System Appropriateness

Discussion regarding the appropriateness of existing on-lot systems is not included as it is not a goal of this Plan Update to extend public sewage service into unsewered portions of the Township.

There is, however, a possibility that homes along Mansfield Road will tie into the facilities proposed herein if Alternative 3 is selected. Approximately 32 homes would tie in.

III.B.4 Individual Water Supply Survey

Elizabeth Township is provided public water service by the PA American Water Company, Inc. There are, however, 26 homes in the Buena Vista sewershed and 7 homes in the Boston sewershed which have private wells.

III.B.5 Operation and Maintenance Requirements for On-lot Systems

Elizabeth Township employs no specific rules or ordinances regarding the operation and maintenance of on-lot systems. These systems fall under the jurisdiction of the ACHD, the designated sewage enforcement officer (SEO) for the Township.

Typical maintenance for septic systems includes regular pumping of settled solids depending on usage and tank size. Holding tanks are equipped with a float switch which activates an alarm and a flashing red light when the tank is 75% full. The liquid in the tank is pumped and hauled to an approved sewage disposal facility.

III.C. WASTEWATER SLUDGE AND SEPTAGE GENERATION, TRANSPORT AND DISPOSAL METHODS

III.C.1 Location of Sources of Wastewater Sludge or Septage

Sludge from the Buena Vista STP is settled and pumped to the sludge thickener tank and sludge holding tanks. Thickened sludge is then hauled to the MACM WPCP for disposal. This requirement will be eliminated with the decommissioning of the Buena Vista STP.

Sludge is generated at the MACM WPCP in the digesters.

III.C.2 Quantities of the Types of Sludges or Septage Generated

Sludge generated in the Buena Vista and Boston sewersheds is typical domestic sludge. It is estimated that approximately 1,240 lb/day are generated from the Buena Vista sewershed and approximately 600 lb/day are generated from the Boston sewershed.

Table 3 provides information on the monthly sludge production in wet and dry tons, as well as average percent solids, in the sludge generated by the MACM WPCP in 2015. In 2015, 782.8 dry tons of sludge were removed from the MACM WPCP for disposal at the landfill.

Table 5: MACM WPCP Monthly Biosolids Production (2015)

Month	Sludge Production (Wet Tons)	Average Percent Solids	Sludge Production (Dry Tons)
January	475	16.8%	79.8
February	308	16.2%	49.9
March	258	16.7%	43.1
April	352	17.0%	59.8
May	491	18.3%	89.9
June	410	20.6%	84.5
July	408	20.4%	83.2
August	246	20.7%	50.9
September	409	20.0%	81.8
October	358	18.8%	67.3
November	195	16.5%	32.2
December	345	17.5%	60.4
Total	**4,255**	---	**782.8**

III.C.3 Present Disposal Methods, Locations, Capacities and Transportation Methods

Sludge generated at the Buena Vista STP is hauled to the MACM WPCP. This requirement will be eliminated with the decommissioning of the Buena Vista STP. Sludge at the MACM WPCP is then hauled to a landfill disposal site. The actual landfill chosen is under the direction of the MACM. During the operating year 2015, dewatered sludge was hauled to the Westmoreland Waste site (Permit No. 100277).

IV. FUTURE GROWTH AND LAND DEVELOPMENT

IV.A. MUNICIPAL AND COUNTY PLANNING DOCUMENTS ADOPTED PURSUANT TO THE PENNSYLVANIA MUNICIPALITIES PLANNING CODE (ACT 247)

IV.A.1 Land Use Plans and Zoning

Elizabeth Township consists of primarily residential areas with several commercial establishments, institutional establishments and small industrial properties located throughout the Township. The Elizabeth Township Zoning Map is included in Appendix I. The zoning classifications are as follows:

- S-C Special Conservation District
- R-C Riverfront Conservation District
- R-1 Rural Residential District
- R-2 Suburban Residential District
- R-3 Medium Density Residential
- R-4 Multifamily Residential District
- B-1 Local Commercial District
- B-2 Highway Commercial District
- M-1 Light Industrial District

IV.A.2 Zoning & Subdivision Regulations

Zoning or subdivision regulations establishing lot sizes predicated on sewage disposal methods, based on the Elizabeth Township zoning ordinance, are as follows:

R-1 The minimum lot area allowed is 1 acre without public sewers and 20,000 ft² with public sewers.

R-2 The minimum lot area allowed is 1 acre without public sewers and 10,500 ft² with public sewers. The minimum lot width allowed is 100 feet without public sewers and 70 feet with public sewers.

IV.A.3 Floodplains, Stormwater Management and Special Protection Areas

Certain regulations exist in regards to floodplains, stormwater management, and special protection (Chapter 93) areas for the protection of citizen health, safety and welfare, as well as the surrounding environment. Floodplain regulations, stormwater management planning and special protection area regulations are identified below.

Floodplain Regulations

A flood occurs when the capacity of a stream channel to convey flow within its banks is exceeded and water flows out of the main channel onto and over the adjacent land. This adjacent land is known as the floodplain. In regulating floodplains, the standard is the 100-year flood, the flood that is defined as having a 1% chance of being equaled or exceeded during a given year. Pennsylvania Code regulations set forth limitations related to floodplains. These regulations prohibit encroachments and obstructions, including structures, in the regulated floodway without first obtaining a state Water Obstruction and Encroachment permit. The floodway is the portion of the floodplain adjoining the stream required to carry the 100-year flood event with no more than one (1) foot increase in the 100-year flood level due to encroachment in the floodplain outside the floodway. Floodplain regulations, such as elevating a first floor level above the 100-year floodplain and obtaining necessary local, state and federal permits for construction in these areas, exist for the preservation of citizen well being. Floodplain resources are of significant importance and are vital for maintaining the floodplain ecosystem, and the primary environmental policy in regards to floodplains is the protection of floodplain resource values. Floodplain management focuses on preventative and corrective measures to reduce flood damage.

A review of the floodplain mapping on Exhibit 7 in Appendix H reveals that there are floodplains located within the planning area. Site plans of the Boston Pump Station and the Buena Vista STP sites, which depict floodplains, are shown on Exhibits 8 and 9.

Design requirements for wastewater facilities are contained in the PADEP's *Domestic Wastewater Facilities Manual*. All design requirements in regards to flood protection will be met during design of the facility improvements proposed in this Act 537 Plan Update. Impacts on floodplains will be minimized to the greatest extent possible, and all construction activities will follow all local, state, and federal regulations regarding floodplains during any proposed upgrades.

Stormwater Management Regulations

Stormwater runoff is the result of precipitation from rain or melting snow that does not soak into the ground where it falls. It then flows over impervious surfaces (i.e., building, parking lots, driveways, sidewalks, streets, etc.), carrying silt and sediment, litter and debris, and non-point source pollutants such as insecticide, pesticides, solvents, motor oil and other automotive fluids which can degrade ecosystems. Stormwater can result in flooding, property damage and environmental degradation. The Stormwater Management Act of 1978, Act 167, as amended, encourages planning and management of stormwater runoff throughout a watershed which is consistent with sound water and land use practices. Stormwater management has been traditionally defined as measures used by property owners and local governments to limit the amount of stormwater runoff from urban development and control the path of runoff. Stormwater management has also recently included water quality considerations. Concerns of

flooding and accelerated erosion are introduced through land development from a permeable, vegetated condition to an impervious, paved condition. The major goal of stormwater management is to protect health, safety, the environment and property from damage. Pursuant to Act 167, the Allegheny County Stormwater Management Plan was developed to outline methods to control the flow of stormwater throughout the County.

The construction of the project identified within this Plan Update will follow all applicable local, state and federal stormwater regulations.

Special Protection Areas

The planning area for this Plan Update lies within the Youghiogheny River Watershed. The Pennsylvania Code, Title 25, Chapter 93 (Water Quality Standards) contains classifications of every stream in Pennsylvania and orders and promotes their protection. These standards, set by the PADEP to establish the water quality standards for each stream, are based upon designated water uses which are protected under the Pennsylvania Clean Streams Law. The Youghiogheny River is classified as a warm water fishery (WWF) under Chapter 93 regulations. Chapter 93 defines a WWF as a stream used for the maintenance and propagation of fish species and additional flora and fauna that are indigenous to a warm water habitat.

Additional protection measures exist for waters classified as high quality (HQ) or exceptional value (EV). HQ and EV waters or watersheds have excellent quality and features that require special water quality protection measures. It is important to note that the Youghiogheny River is not classified as HQ or EV, but a major goal of this Plan Update is to protect the waters of the Commonwealth through the preservation of the overall Youghiogheny River drainage basin to support aquatic life. All attempts will be made to minimize the impact on any ecologically sensitive areas during any construction activities.

IV.B. LAND USE AND FUTURE GROWTH

IV.B.1 Existing Development

The Buena Vista sewershed serves approximately 51% of Elizabeth Township (2,808 residential customers and 96 commercial customers), a portion of Forward Township (45 customers), a portion of Lincoln Borough (12 customers), and the Sutersville Borough collection system owned by the Sutersville-Sewickley Municipal Sewer Authority (506 customers).

The Boston sewershed serves approximately 27% of Elizabeth Township (1,654 customers).

Previous Approved Flow Rates

Table 6: Approved Buena Vista Flows

Watershed	Peak [MGD]
Buena Vista WWTP	2.2
Estimated WWTP Overflow	12.3
Total	**14.5**
Less I&I & Pump Station Removal	(5.0)
Less Retention (or additional I&I Removal)	(2.0)
Total Conveyed Peak Flow	**7.5**

Table 7: Approved Boston Flows

Watershed	Peak [MGD]
Boston Pump Station	4.2
Total	**4.2**

Table 8: Approved Total Flows to MACM

Watershed	Peak [MGD]
Buena Vista	7.5
Boston	4.2
Total	**11.7**

The original MACM Agreement, dated June 18, 2008, allowed for up to 14.5 MGD peak conveyance from Elizabeth Township.

After the time of the Plan approval, additional overflows were discovered at the Boston Pump Station and the MACM Agreement was revised to a final peak conveyance allowance of 17.5 MGD, adopted May 13, 2013. A copy of this Agreement can be found in Appendix J.

Existing Flow Rates

Since the time of the approved plan, I&I reduction efforts and system rehabilitation have led to a significant reduction in flow. As such, revised flow estimates have been established.

Table 9: Existing Average Flow Rates

Watershed	MAF [MGD]
Buena Vista	1.29
Boston	0.75
TOTAL	**2.04**

Gateway Engineers previously established existing peak flow projections for each watershed based upon an RTK analysis for a winter storm event. Therefore, estimated peak flow projections for each watershed, as presented in the Gateway Engineers Boston Sewershed Act 537 Plan, are as follows.

Table 10: Peak Flow Projects

Watershed	1-YR Storm [MGD]	2-YR Storm [MGD]	5-YR Storm [MGD]	10-YR Storm [MGD]
Buena Vista	5.95	6.50	7.03	7.41
Boston	12.94	14.77	16.53	17.78
TOTAL	**18.89**	**21.27**	**23.56**	**25.19**

The maximum pump station overflow event volumes in the Year 2015 were as follows.

Table 11: Year 2015 Pump Station Peak Overflow Volumes

Pump Station	Max Overflow [MG]
Buena Vista STP	1.490
Lovedale	0.110
Simpson Howell	-----
Duncan Station	0.374
TOTAL	**1.974**

There were no recorded overflows at the Simpson Howell Pump Station in the Year 2015.

KLH ENGINEERS, INC

CLIENT	Elizabeth Township Sanitary
PROJECT	Act 537 Sewage Facilties Plan Update
REF NO	542-04
DATE	1/26/2017
SUBJECT	PA DEP Comment Response
	Flow Meter Locations

Meter Name	Monitor Start	Date	Monitor End	Date
BUENA VISTA WATERSHED				
Wylie PS SSO	March	2009	Still	Active
Simpson Howell SSO	June	2009	Still	Active
Duncan Station SSO	November	2008	Still	Active
Kites Hollow SSO	February	2008	Still	Active
Lovedale SSO	February	2008	Still	Active
WWTP SSO	May	2005	Still	Active
908-1816	February	2015	June	2015
908-1898	February	2015	June	2015
Duncan Station PS Flow	November	2008	May	2009
Elway	November	2008	May	2009
Elway and Kratt	November	2008	May	2009
Greenock BV Road	November	2008	May	2009
Henderson	November	2008	May	2009
Industry Road	November	2008	May	2009
Lovedale PS Flow	November	2008	May	2009
Standpipe	November	2008	May	2009
Blythedale	January	2008	May	2009
Simpson Howell PS Flow	February	2008	May	2009
Wildcat Hollow	April	2008	May	2009
Bea Mar	December	2007	May	2009
Broadlawn	December	2007	May	2009
Mt. Vernon	December	2007	May	2009
Boyd's Hollow	March	2008	May	2009
Kites MH1	October	2007	January	2008
MH 53+27.04	October	2007	August	2008
Rock Run GC	December	2007	August	2008
Dad's Lane	October	2007	December	2007
MH24+53.33	October	2007	December	2007
BOSTON WATERSHED				
Boston PS SSO	February	2009	Still	Active
Boston PS Discharge	February	2009	Still	Active

Meter Name: Boston PS Discharge
Monitor Start: February 2009
Monitor End: Still Active

Meter Name: Boston PS SSO
Monitor Start: February 2009
Monitor End: Still Active

Boston Pump Station

Versailles

Alpsville

South Versailles Twp

Coulters

EXHIBIT 16

542-04

ELIZABETH

SEWICKLEY

FORWARD

ROSTRAVER

KLH ENGINEERS, INC.
5173 Campbells Run Road
Pittsburgh, PA 15205
Phone: 412-494-0510
Fax: 412-494-0426
www.klhengineers.com

Legend

- Flow Meter Locations
- STP
- Pump Station
- Force Main
- Sanitary Manhole
- Sanitary Pipe
- Boston Sewershed
- Buena Vista Sewershed
- Elizabeth Sewershed

ELIZABETH TOWNSHIP

ALLEGHENY COUNTY PENNSYLVANIA

Boston Flow Meter Locations

0 500 1,000
Feet

Author: RS
Date: 1/26/2017
NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
Projection: Lambert Conformal Conic

S:\Active Clients\542 Elizabeth Township Sanitary\Act 537\Elizabeth_Township_Boston Meter Locations.mxd

Meter Name: MH24+53.33
Monitor Start: October 2007
Monitor End: December 2007

Meter Name: WWTP SSO
Monitor Start: May 2005
Monitor End: Still Active

Meter Name: Elway
Monitor Start: November 2008
Monitor End: May 2009

Meter Name: Elway and Kratt
Monitor Start: November 2008
Monitor End: May 2009

Meter Name: Standpipe
Monitor Start: November 2008
Monitor End: May 2009

Meter Name: Kites MH1
Monitor Start: October 2007
Monitor End: January 2008

Buena Vista STP

Buena Vista Pump Station

Meter Name: Industry Road
Monitor Start: November 2008
Monitor End: May 2009

Meter Name: Blythedale
Monitor Start: January 2008
Monitor End: May 2009

Meter Name: Kites Hollow SSO
Monitor Start: February 2008
Monitor End: Still Active

Duncan Pump Station

Meter Name: Duncan Station SSO
Monitor Start: November 2008
Monitor End: Still Active

Meter Name: Wildcat Hollow
Monitor Start: April 2008
Monitor End: May 2009

Meter Name: Dad's Lane
Monitor Start: October 2007
Monitor End: December 2007

Meter Name: 908-1898
Monitor Start: February 2015
Monitor End: June 2015

Meter Name: Duncan Station PS Flow
Monitor Start: November 2008
Monitor End: May 2009

Meter Name: MH 53+27.04
Monitor Start: October 2007
Monitor End: August 2008

Meter Name: Rock Run GC
Monitor Start: December 2007
Monitor End: August 2008

Meter Name: Greenock BV Road
Monitor Start: November 2008
Monitor End: May 2009

Meter Name: Henderson
Monitor Start: November 2008
Monitor End: May 2009

Meter Name: Boyd's Hollow
Monitor Start: March 2008
Monitor End: May 2009

Meter Name: 908-1816
Monitor Start: February 2015
Monitor End: June 2015

Meter Name: Mt. Vernon
Monitor Start: December 2007
Monitor End: May 2009

Meter Name: Broadlawn
Monitor Start: December 2007
Monitor End: May 2009

Meter Name: Bea Mar
Monitor Start: December 2007
Monitor End: May 2009

Meter Name: Simpson Howell PS Flow
Monitor Start: February 2008
Monitor End: May 2009

Meter Name: Lovedale PS Flow
Monitor Start: November 2008
Monitor End: May 2009

Simpson-Howell Pump Station

Meter Name: Simpson Howell SSO
Monitor Start: June 2009
Monitor End: Still Active

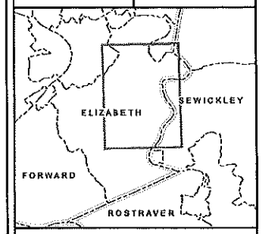
Meter Name: Lovedale SSO
Monitor Start: February 2008
Monitor End: Still Active

Lovedale Pump Station

S:\Active Clients\542 Elizabeth Township Sanitary\Act 537\Elizabeth_Township_BV Meter Locations.mxd

EXHIBIT 15

542-04



KLH ENGINEERS, INC
5173 Campbells Run Road
Pittsburgh, PA 15205
Phone: 412-494-0510
Fax: 412-494-0426
www.klhengineers.com

Legend

- Flow Meter Locations
- STP
- Pump Station
- Force Main
- Sanitary Manhole
- Sanitary Pipe
- Boston Sewershed
- Buena Vista Sewershed
- Elizabeth Sewershed

ELIZABETH TOWNSHIP

ALLEGHENY COUNTY
PENNSYLVANIA

Buena Vista Flow Meter Locations

0 1,000 2,000
Feet

Author: RS
Date: 1/26/2017
NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
Projection: Lambert Conformal Conic

Projected Required Capacities

The following are the projected requirements for the new Buena Vista Pump Station.

Table 12: Buena Vista Pump Station Projected Flows

Flow Component	Flow Rate [MGD]
2-yr, 24-hr Flow Rate	6.50
Pump Station Overflows	0.61
Future Growth	0.31
Total Design Capacity	**7.42**

While the total capacity is estimated at 7.42 MGD, only 2.7 MGD will be conveyed to the Boston Pump Station, with the remaining captured in equalization basins.

The following are the projected requirements for the new Boston Pump Station.

Table 13: Boston Pump Station Projected Flows

Flow Component	Flow Rate [MGD]
2-yr, 24-hr Flow Rate	14.77
Buena Vista PS Flow	2.70
Total Design Capacity	**17.47**

Based on the existing flow agreement between McKeesport and Elizabeth, which McKeesport facilities were designed and constructed, the Boston Pump Station will have the capacity to convey the 2-year, 24-hour design storm as well as the planned flow from Buena Vista.

The 2-year, 24- hour design storm was chosen as the minimum design standard since this has been approved for the ALCOSAN planning basin for Allegheny County, as well as other sewersheds in Allegheny County. The winter design storms governing this sewershed are due to the higher ground water table and increased infiltration during this time period.

IV.B.2 Land Use Designations Established Under the Pennsylvania Municipalities Planning Code

The land use designations within Elizabeth Township are discussed in Section IV.A.1. The Buena Vista sewershed contains primarily Suburban Residential and Rural Residential zoning districts. The Boston Sewershed contains primarily Light Industrial, Suburban Residential and Medium Density Residential zoning districts. The portions along Boston Hollow Road are zoned for Highway Commercial, Suburban Residential and Special Conservation. There are

small areas of Riverfront Conservation, Local Commercial, Special Conservation and Multifamily Residential.

IV.B.3 Future Growth Areas and Population Projections

The areas zoned as Local Commercial, Medium Density Residential and Multifamily Residential are primarily built out. Growth in these areas is limited. A majority of the expected growth will likely occur in the Suburban Residential, Rural Residential and Special Conservation zoning districts. Due to the zoning restrictions, the primary development in these areas would be single family houses and some two family houses.

The Boston sewershed is highly developed. Most of the growth within Elizabeth Township is expected to occur in the Buena Vista sewershed.

For purposes of this Plan Update, KLH has elected to adopt the Senate Plan population projections, due to the fact that development has ceased since the original Consent Order issuance in 2008. Therefore, it is expected that a lot of the planned developable areas then are still applicable.

The total of these developable areas equate to an additional 761 EDUs, estimated at 400 GPD/EDU for planning design purposes. Therefore,

Future Flow = 761 EDU x 400 GPD/EDU = **0.31 MGD**

Future growth within the Boston sewershed, while limited, will be accommodated by future I&I reductions.

IV.B.4 Limitations for Use of Land and Water Resources

There are no expected impacts on land use and water resources including public ground or surface water supplies, recreational water use areas, groundwater recharge areas, industrial water use, and wetlands. All proposed sewer system upgrades will follow the provisions set forth in the land use classifications, comprehensive plans and ordinances of Elizabeth Township and Allegheny County.

IV.B.5 Sewage Planning for Future Growth

Future growth affects design flows which contain capacity to serve future development throughout a planning area. Design flows must incorporate flows from existing development, planned development and future growth. The improvements proposed herein will contain the capacity to handle all existing and projected sewage needs of Elizabeth Township beyond the five and ten-year planning periods.

V. IDENTIFICATION OF ALTERNATIVES TO PROVIDE NEW OR IMPROVED WASTEWATER DISPOSAL FACILITIES

V.A. CONVENTIONAL COLLECTION, CONVEYANCE, TREATMENT AND DISCHARGE ALTERNATIVES

There are three (3) main alternatives being considered in this Act 537 Plan Update. All three (3) are in accordance with the stipulations of the COA, and involve decommissioning of the existing Buena Vista WTP and conveyance of those flows to the MACM WPCP for treatment. The only difference between alternatives is the alignment.

Common Alternative Work

In all three (3) alternatives, the Buena Vista Pump Station will be upgraded to convey up to 2.7 MGD and retain any additional flow in equalization basins. In addition, all alternatives include Boston Pump Station upgrades to convey up to 17.5 MGD.

The Lovedale Pump Station is located in the Wylie Run watershed. Diversion of flow from the Lovedale Pump Station to the Elizabeth Borough sewershed was approved by the PADEP in a letter dated December 4, 2004. Additionally, the Simpson Howell Pump Station is located in close proximity for connection to Elizabeth Borough sewershed. The Township will continue to evaluate the feasibility of the diversion of flow from the Lovedale and Simpson Howell Pump Stations to a proposed interceptor along Lovedale Hollow Road (Wylie Run) to the Wylie Run Pump Station, and then to the Elizabeth Borough STP for treatment. This will allow reduced flows in the Buena Vista sewershed. However, the Borough does not currently have the capacity to treat these flows.

Alternative 1 – Great Allegheny Passage Force Main (aka Senate Alignment)

Alternative 1 is similar to the original Senate Engineering design reflected in the Act 537 Plan in that the alignment follows the Great Allegheny Passage. However, design modifications were required to accommodate updated 2016 flow estimates. The following is a comparison table between the original Senate 2008 recommended alternative and the proposed KLH 2016 Alternative 1.

Table 14: Comparison of Alternatives

	Senate 2008 Plan		KLH 2016 Plan	
Watershed	**Proposed Upgrades**	**Planning Size**	**Proposed Upgrades**	**Planning Size**
Buena Vista	New Pump Station	10 MGD	New Pump Station	2.7 MGD
	Equalization Basins	---	Equalization Basins	2.8 MG
	Force Main	12-inch and 18-inch	Force Main	14-inch
Boston	Existing Pump Station	---	Existing Pump Station	2.6 MGD
	New Pump Station	4.5 MGD	New Pump Station	17.5 MGD
	Force Main	12-inch and 24-inch	Force Main	24-inch
Elizabeth Borough	Remove Lovedale and Simpson Howell PS	Yes	Remove Lovedale and Simpson Howell PS	No

In this alternative, a new sewage force main begins at the site of the decommissioned Buena Vista STP. The force main will enter the Great Allegheny Passage (Rail Trail) at Fellabaum Street and follow the entire length of the Rail Trail until it reaches the Boston Pump Station. The Boston Pump Station will be upgraded to add wet weather pumping capacity. A force main will be constructed along the Great Allegheny Passage to the existing pipe junction valve vault connection to MACM. Alternative 1 is conceptually shown on Exhibit 11 in Appendix H.

Alternative 2 – Elizabeth Force Main (aka Gateway Alignment 1)

Alternative 2 is similar to the proposed Gateway Engineering Act 537 Option 2, Alternate 2 for the Buena Vista Watershed.

This alternative consists of a new sewage force main, new gravity sewer and the replacement of existing gravity sewer. A new sewage force main begins at the site of the Buena Vista STP where it will enter Fellabaum Street and the Rail Trail to Industry Road. The force main will then run up Greenock Buena Vista Road to the valley just north of Broadlawn Drive. At Broadlawn Drive an intermediate pump station is needed to boost the sewage flow at that elevation. The new force main will continue up the valley to Ridge Road and discharge into a new sewage manhole. From there a new gravity sewer is proposed heading down to Boston Hollow Road through an existing drainage hollow and then along Boston Hollow Road to an existing sanitary sewer line at Pitt Street. The gravity sewer continues along the stream and crosses Smithfield Street and connects directly to the Boston Pump Station. The existing gravity Sewer will need to be upsized to accommodate the additional Buena Vista Flow. The Boston Pump Station will be upgraded to add wet weather pumping capacity. A force main will be constructed along the Great Allegheny Passage to the existing pipe junction valve vault connection to MACM. Alternative 2 is conceptually shown on Exhibit 12 in Appendix H.

Alternative 3 – Elizabeth Extended Force Main (aka Gateway Alignment 2)

Alternative 3 is similar to the proposed Gateway Engineering Act 537 Option 2, Alternate 3 for the Buena Vista Watershed.

This alternative consists of a new sewage force main, new gravity sewer and the replacement of existing gravity sewer. The new sewage force main begins at the site of the Buena Vista STP where it will enter Fellabaum Street and the Rail Trail to Industry Road. The force main will then run up Greenock Buena Vista Road to the valley just north of Broadlawn Drive. At Broadlawn Drive an intermediate pump station is needed to boost the sewage flow at that elevation. The new force main will turn and continue along Broadlawn Drive, turn north before the intersection with Ridge Road, continue to the intersection of Ridge Road and Mansfield Road. This is the highest point on the route where the force main will discharge into a new manhole. From there a new gravity sewer is proposed heading down to Boston Hollow Road to an existing sanitary sewer line at Pitt Street. The gravity sewer continues along the stream and crosses Smithfield Street and connects directly to the Boston Pump Station. The existing gravity Sewer will need to be upsized to accommodate the additional Buena Vista Flow. The Boston Pump Station will be upgraded to add wet weather pumping capacity. A force main will be constructed along the Great Allegheny Passage to the existing pipe junction valve vault connection to MACM. Alternative 3 is conceptually shown on Exhibit 13 in Appendix H.

In alternative 3, it is estimated that an additional 32 new customers can be connected into the public sewage system.

V.A.1 Potential for Regional Wastewater Treatment

In accordance with the Township's COA, all alternatives bring the sewage from the Buena Vista Sewershed into a single treatment plant in McKeesport via force main. The PADEP indicated this is preferable as a regional approach to the treatment of municipal sewage.

V.A.2 Potential for Extension of Existing Sewage Facilities

Future consideration may be given to rerouting the Lovedale Pump Station and Simpson Howell Pump Station to Elizabeth Borough for treatment. Removing this flow from the Buena Vista Sewershed would open up areas for development along Lovedale Road. However, at this time, Elizabeth Borough does not have the capacity to accept these flows.

There is a possibility that homes along Mansfield Road will tie into the facilities proposed herein if Alternative 3 is selected. Approximately 32 homes would tie in.

V.A.3 Potential for Continued Use of Existing Municipal or Non-Municipal Sewage Facilities

In accordance with the Township's COA, Elizabeth Township has developed a new Operation and Maintenance (O&M) Plan for both the Buena Vista and Boston sanitary sewer systems. The O&M Plan requires cleaning, CCTV inspection and repairs on a cyclic basis for all lines within the municipality. This will allow the Township to continue to use the existing collection system. All repairs conducted as a result of this work will maintain the system in a serviceable condition for the foreseeable future.

The Township has continued efforts to reduce infiltration and inflow in the existing collection system. These tasks have included the following:

- Physical survey and visual inspection
- Sewer cleaning and closed circuit television (CCTV) inspection
- Flow monitoring
- Sewer system mapping
- Dye testing
- Correction of system deficiencies including repair/rehab work
- Hydraulic capacity evaluation
- SSO response plan (Emergency spill response)
- Data collection and submission
- Operation and Maintenance Program

The flow analysis for this sewershed was prepared from flow monitoring data obtained since flow reduction work was completed and accounts for that reduction.

Alternatives 2 and 3 will require upgrading some existing gravity sewers to accommodate additional Buena Vista flows. Elizabeth Township is currently investigating the possibility of upsizing sewer lines to correct capacity issues in conveyance lines in the Buena Vista Sewershed.

Regardless of the chosen option, upgrades to the Boston Pump Station will be required. Structural defects were located in many manholes in the Boston Sewershed collection system. It was found that manholes were buried, paved over, or in need of raising based on low elevation near creek beds. There were manholes requiring grouting around the frame to prevent infiltration. Also, some frames and cone sections were in need of replacement, as well. Finally, manholes were found to have leaky walls which will require sealing. Elizabeth Township is currently cleaning and televising its lines as outlined in the corrective action plan, and plans to address all structural issues in the near future.

Regardless of the option chosen, upgrades to the Boston Pump Station will be required. In Option B, a cost to upgrade the Versailles interceptor to accommodate the wet weather flows

has been analyzed. The existing interceptor has minor surcharge issues but will not be able to handle flow from the upgraded Boston Pump Station without being upsized. The connection point to McKeesport has been designed to handle additional flow from the upgraded Boston Pump Station, however, the MACM pump station for the Versailles flows, has not.

V.A.4 Repair or Replacement of Existing Collection and Conveyance System Components

Elizabeth Township has completed the following repair work within the existing collection and conveyance system:

- Repair of all significant structural defects in existing manholes
- Watertight manhole covers have been installed on all manholes in areas prone to excessive influence from creeks
- Repair of NASSCO level 5 sewer defects
- Implementation of an Operation and Maintenance Plan to address future maintenance needs for the system

The Township will continue to complete rehabilitation work and I&I removal projects.

V.A.5 Need for Construction of New Community Sewage Systems

There is a need for the construction of new community sewage systems to accommodate existing and projected peak flows within the Boston and Buena Vista sewershed as documented herein.

V.A.6 Use of Innovative or Alternative Methods of Collection and Conveyance

There exists a need to develop alternative wastewater systems in areas where the implementation of conventional systems is impractical, uneconomical or unfeasible. Most wastewater collection systems rely on conventional gravity sewers. However, certain areas contain hilly terrain or shallow bedrock, resulting in high construction costs or limiting the feasibility of gravity sewer systems. These issues justify the need for alternative wastewater collection and conveyance systems in certain areas. Pressure sewers and vacuum sewers are often feasible alternatives.

However, extension of sewage service into areas of need is not a goal of this Act 537 Plan Update. Rather, this Plan Update was developed to evaluate conveyance system improvements resulting from the decommissioning of the Buena Vista STP and conveyance of those flows to the MACM WPCP for treatment. This will be accomplished through a combination of gravity sewer, force main, and pumping facilities improvements.

V.B. USE OF INDIVIDUAL SEWAGE DISPOSAL SYSTEMS

The Pennsylvania Code defines an individual sewage system as a system of piping, tanks or other facilities serving a single lot and collecting and disposing of sewage in whole or in part into the soil or into waters of the Commonwealth or by means of conveyance to another site for final disposal. Individual onsite wastewater treatment/disposal systems have evolved to provide installations that are capable of producing a disinfected effluent. Onsite system technologies are able to remove settleable solids, floatable grease and scum, nutrients and pathogens from wastewater. This capability outlines the importance of such systems to protect human health and environmental resources. However, system owners are often not likely to repair or replace older on-lot systems if sewage pollution is not evident on the property. This is a key concern of individual on-lot system installations.

The installation or repair of on-lot systems is not a goal of this Act 537 Plan Update, as it was developed to evaluate conveyance system improvements resulting from the decommissioning of the Buena Vista STP and conveyance of those flows to the MACM WPCP for treatment.

V.C. USE OF SMALL FLOW SEWAGE TREATMENT FACILITIES

A small flow sewage treatment facility (SFSTF) is designed to treat wastewater from a single-family residence. Like a full scale, community wide sewage treatment facility, SFSTF systems require an NPDES permit and must meet the limits of the permit before discharging treated effluent into a stream or other discharge point. They can treat up to 2,000 gpd. Small flow treatment facilities may only be used when on-lot disposal systems do not and cannot be expected to function satisfactorily because of soil, geologic and groundwater conditions, or there is no public sanitary sewage service availability in a municipality.

The use of small flow sewage treatment facilities was not considered in this Act 537 Plan Update, as it was developed to evaluate conveyance system improvements resulting from the decommissioning of the Buena Vista STP and conveyance of those flows to the MACM WPCP for treatment.

V.D. USE OF COMMUNITY LAND DISPOSAL ALTERNATIVES

Community land disposal alternatives are similar to individual on-lot sewage disposal systems, in that many of the same technologies exist on a larger scale to serve several homes or an entire community. They allow for primary settling in a community septic tank or tanks for the removal or solids and grit from the wastewater. However, when disposal beds become plugged by solids, there may be little or no room for expansion. Many of the same restrictions apply to community wide systems as they do to individual systems. Soil and site suitability must be met and hydrogeologic characteristics must be evaluated. Site suitability is an important factor in the consideration of a community land disposal alternative. It is often based on many soil, geologic, and topographic limitations. The majority of the areas are limited in size and not sufficiently large enough to serve an entire community's sewage disposal needs.

The use of community land disposal alternatives was not considered in this Act 537 Plan Update, as it was developed to evaluate conveyance system improvements resulting from the decommissioning of the Buena Vista STP and conveyance of those flows to the MACM WPCP for treatment.

V.E. USE OF RETAINING TANK ALTERNATIVES

Retaining tanks or holding tanks are designed and maintained on the basis of ultimate disposal of sewage at another site and can be installed as a short term solution to malfunctioning on-lot systems in either residential or commercial applications. They require a permit issued by a municipality's sewage enforcement officer (SEO) and require specified operation and maintenance activities to prevent public health or environmental hazards. The tanks require frequent pumping and cleaning, requiring property owners to contract with septage hauling companies to periodically pump their tanks. These companies use pumper trucks to haul the waste from the property and dispose of it at a site approved by the PADEP. Holding tanks must only be used when the construction of a municipal system is imminent and no other alternative exists to correct malfunctioning systems.

In regards to the use of retaining tanks in Elizabeth Township, the following regulations exist:

- The owner must provide records of pumping and disposal to the Township.
- Elizabeth Township has a Holding Tank Ordinance. The ordinance can be found in Elizabeth Township Code of Ordinances Chapter 18, Part 4, 400 – 410.
- Prior to being disbanded, the Elizabeth Township Sanitary Authority passed Resolution No. 02/10 establishing procedures for the use of low flow holding tanks in Elizabeth Township. The resolution requires homeowners to provide records for conveyance facilities, treatment facilities, and a bond in the amount of five thousand dollars ($5,000) for commercial properties and two thousand five hundred dollars ($2,500) for residential properties.

The use of retaining tank alternatives was not considered in this Act 537 Plan Update, as it was developed to evaluate conveyance system improvements resulting from the decommissioning of the Buena Vista STP and conveyance of those flows to the MACM WPCP for treatment.

V.F. SEWAGE MANAGEMENT PROGRAMS

Sewage Management Programs are developed for use in communities where on-lot sewage disposal systems are installed and regularly maintained. They set guidelines for the operation and maintenance requirements for on-lot systems to ensure the future operational ability of such systems. A sewage management program was not considered in this Act 537 Plan Update,

as it was developed to evaluate conveyance system improvements resulting from the decommissioning of the Buena Vista STP and conveyance of those flows to the MACM WPCP for treatment.

V.G. NON-STRUCTURAL COMPREHENSIVE PLANNING ALTERNATIVES

Non-structural comprehensive planning alternatives that can be undertaken to assist in meeting existing and future sewage disposal needs were not considered in this Act 537 Plan Update.

V.H. NO ACTION ALTERNATIVE

It can be assumed that the likelihood of contamination of ground water, surface waters, and the associated public health risks will increase if a no-action alternative is undertaken. Prevention of such scenarios is essential. The capacity issues at the existing Buena Vista STP, the Boston Pump Station, and the collection and conveyance facilities requires upgrades to prevent surcharging and overflows throughout both the Buena Vista and Boston sewersheds. Under a no-action alternative, these sanitary sewage discharges will have a negative impact on water quality of the Youghiogheny River and downstream communities.

A no-action alternative would limit any potential residential, commercial, or industrial growth within the Township. The upgrades identified herein will allow future growth within the Township. Potential growth will continue to be impacted if no action is taken due to a limitation placed on the number of new connections to the sewer system because of the COA. The result is an inherent impact on the community economic conditions of the Township.

A no-action alternative could decrease opportunities for recreational activity. A no-action alternative could lead to future manhole surcharging and overflows resulting in negative impacts on the environment and aesthetics of the Township. This inherently decreases opportunities for recreational activity.

Minimal impact on drinking water sources would occur if a no-action alternative was adopted, as Township residents are served by public water. The presence of fecal coliform or other types of bacteria in the surface waters and ground water makes the concern of waterborne disease a potential threat. Certain waterborne illnesses may be expected to affect citizens of the Township if a no-action alternative were selected.

A "No Action Alternative" is not available for consideration.

VI. EVALUATION OF ALTERNATIVES

VI.A. CONSISTENCY DETERMINATION

According to Act 537, all technically feasible sewage facility alternatives must be evaluated for consistency with certain acts, programs and policies. The alternatives identified herein are evaluated for consistency with the following Acts, programs and policies:

1. Consistency with Sections 4 and 5 of the Clean Streams Law or Section 208 of the Clean Water Act

The primary purpose of the Clean Streams Law is, "to preserve and improve the purity of the waters of the Commonwealth for the protection of public health, animal and aquatic life, and for industrial consumption and recreation." Sections 4 and 5 of the Clean Streams Law require that consideration be given to the following:

- Water quality management in a watershed as a whole
- Present and possible future uses of particular waters
- The feasibility of combined or joint facilities
- The state of scientific and technical knowledge
- Immediate and long-term economic impacts

Section 208 of the Clean Water Act requires the development of plans for the identification of treatment works necessary to meet anticipated municipal and industrial waste treatment needs of an area over a 20-year period. This includes the following:

- Requirements for the acquisition of land for treatment purposes
- Necessary wastewater collection and urban storm water runoff systems
- Programs to provide the necessary financial arrangements for the development of such treatment works
- Identification of open space and recreation opportunities that can be expected to result from improved water quality
- Consideration of potential use of lands associated with treatment works
- Increased access to water-based recreation

Through implementation of this Act 537 Plan Update, the objectives of Sections 4 and 5 of the Clean Streams Law and Section 208 of the Clean Water Act will be achieved. A major goal of this Plan Update is to promote water quality in the watershed. Evaluation of the technical alternatives discussed herein considers economic impacts on the communities served. There are no proposed changes to existing water use based on the recommendations of this Plan Update. Potential for pollution of the waters of the Commonwealth will be diminished by providing the necessary capacity to handle existing and projected wastewater loadings with prevention of sanitary sewage discharges. Implementation of the proposed upgrades provides a means for continued positive long-term economic growth and development throughout the

planning area. The water quality of the planning area will be improved and be protected for recreational activities for years to come. The system upgrades are consistent with Sections 4 and 5 of the Clean Streams Law and Section 208 of the Clean Water Act.

2. Consistency with Municipal Wasteload Management Corrective Action Plans or Annual Reports Under PA Code, Title 25, Chapter 94

The Buena Vista STP, Boston Pump Station, Versailles Pump Station and the collection and conveyance facilities within the Buena Vista and Boston sewersheds are hydraulically overloaded. Once the viable alternative is selected and these system capacity related issues are controlled, the Township will be in compliance with the Clean Streams Law and Municipal Wasteload Management under Chapter 94.

3. Consistency with Title II of the Clean Water Act or Titles II and VI of the Water Quality Act of 1987

Plans developed under Title II of the Clean Water Act contain information of waste treatment management plans and practices providing the following:

- The application of the best practicable waste treatment technology
- The confined disposal of pollutants so they will not migrate to cause water or other environmental pollution
- The consideration of advanced waste treatment techniques

The Clean Water Act requires restoration and maintenance of the chemical, physical and biological integrity of the Nation's water quality for the protection and propagation of fish, shellfish, wildlife and recreation in and on the water. The alternatives identified herein were developed with these goals in mind. This Act 537 Plan Update is consistent with the objectives of the Clean Water Act and the Water Quality Act of 1987.

4. Consistency with Comprehensive Plans Developed Under the Pennsylvania Municipalities Planning Code

There is a very close relationship between the content of a municipality's Comprehensive Plan developed under the Pennsylvania Municipalities Planning Code and the official Sewage Facilities Plan in regards to the provision of adequate sewage service. When an official Sewage Facilities Plan update is being developed, the Comprehensive Plan must be closely evaluated to assure the sewage facilities being proposed are consistent with the land uses contained in the Comprehensive Plan. The comprehensive plan for Elizabeth Township is the Twin Rivers Council of Governments Comprehensive Plan from December of 2003. This Act 537 Plan is consistent with the Twin Rivers Plan.

5. Consistency with Antidegradation Requirements as Contained in PA Code, Title 25, Chapters 93, 95 and 102

All alternatives are consistent with the antidegradation requirements set forth in Chapter 93 (Water Quality Standards), Chapter 95 (Wastewater Treatment Requirements), and in Chapter 102 (Soil Erosion and Sedimentation Control). The receiving waters of the Commonwealth will be protected by the identified alternative, so the project will meet the requirements of Chapter 93. Furthermore, erosion and sedimentation pollution control measures will be rendered in accordance with and approved by the Allegheny County Conservation District prior to any construction activity. Compliance with Chapter 102 is required during the design phase as a prerequisite of submittal of a Part II WQM Permit in accordance with Chapter 95.

6. Consistency with State Water Plans Developed Under the Water Resources Planning Act

The State Water Plan, last revised in January 2009, was developed to guide conservation, development and administration of the Commonwealth's water and related land resources. The goal of the State Water Plan is to enhance and protect the waters of the Commonwealth of Pennsylvania.

Agriculture, mining, development, stormwater runoff and wastewater treatment facilities result in pollution of the waters of the Commonwealth. Siltation, sedimentation, metals and increases in nutrient levels are major polluters. The goal of this Act 537 Plan Update is to improve and protect the waters of the Commonwealth through the elimination of sanitary sewage overflows. This Plan Update is consistent with the State Water Plan.

7. Consistency with the Pennsylvania Prime Agricultural Land Policy

Pennsylvania's Prime Agricultural Land Policy orders and directs the prevention of irreversible conversion of prime agricultural land to uses that result in its loss as an environmental or essential food production resource. Prime farmlands are important to examine for scenarios in which development is expected to occur because of the protective measures in existence to preserve this important resource.

It is important to note that there are soil areas classified as prime farmland and farmland of statewide importance within the planning area. While the soils are classified as prime farmlands, work will occur in previously developed sites that are not used for agricultural purposes. There will be no impacts on prime agricultural lands through the implementation of this Act 537 Plan Update. This Plan Update is consistent with the Pennsylvania Prime Agricultural Land Policy.

8. Consistency with County Stormwater Management Plans Approved by the PADEP Under the Stormwater Management Act

Inadequate management of accelerated runoff of stormwater resulting from development throughout a watershed increases flood flows and velocities, contributes to erosion and sedimentation overloads the carrying capacity of streams and storm sewers, greatly increases the cost of public facilities to manage and control stormwater, undermines flood plain management and flood control efforts in downstream communities, reduces groundwater recharge, and threatens public health and safety.

Stormwater management has been traditionally defined as measures used by property owners and local governments to limit the amount of stormwater runoff from urban development and to control the path of runoff. Stormwater management has also recently included water quality considerations. Concerns of flooding and accelerated erosion are introduced through land development from a permeable, vegetated condition to an impervious, paved condition. The major goal of stormwater management is to protect health, safety and other property from damage. The Stormwater Management Act of 1978, Act 167, as amended, encourages planning and management of stormwater runoff in each watershed which is consistent with sound water and land use practices.

The Allegheny County Stormwater Management Plan was developed under Act 167 for the control of stormwater runoff throughout the county. The recommendations of this Act 537 Plan Update are consistent with the Allegheny County Act 167 Stormwater Management Plan. All local, county and state regulations regarding sotmwater management will be met.

9. Consistency with Wetlands Protection

Wetland areas are considered to be a valuable public water resource and are subjected to strict conservative practices. They provide an environment for valuable aquatic, waterfowl and wildlife habitat. Many endangered plant species are thought to exist in wetlands, and wetlands are essential for the maintenance of surface water quality and quantity. The Commonwealth has established an intensified effort to protect these natural resources.

There are minimal wetland areas in the planning area classified as riverine along the Youghiogheny River. A detailed wetlands delineation analysis to determine the extent of jurisdictional wetlands would be required should any proposed construction encroach on areas conducive to the presence of wetlands. This will be completed during the permitting phase of the project should it become necessary. The Township will continually make all attempts to minimize the impact on ecologically sensitive areas during any construction activities. All construction work associated with the chosen alternative will be consistent with all applicable state and federal regulations regarding wetlands, but implementation of this Act 537 Plan Update is not expected to affect wetlands in any way.

10. Consistency with Protection of Rare, Endangered or Threatened Plant and Animal Species as Identified by the Pennsylvania Natural Diversity Inventory (PNDI)

There is an increasing effort to protect the habitat of rare, endangered and threatened species. As per the Pennsylvania Natural Heritage Program, the Act 537 planning process requires review by applicable environmental agencies in an effort to identify and protect environmental values within the project area. These agencies include the following:

- Department of Conservation and Natural Resources – Bureau of Forestry
- Pennsylvania Game Commission
- Pennsylvania Fish and Boat Commission
- U.S. Fish and Wildlife Service

The PNDI Project Environmental Review Receipt for the planning area is included in Appendix K and indicates that there are no known impacts associated with the proposed projects. This Act 537 Plan Update is consistent with the protection of rare, endangered or threatened plant and animal species.

11. Consistency with Historical and Archaeological Resource Protection in Conjunction with the Pennsylvania Historical and Museum Commission (PHMC)

The Pennsylvania Historical Preservation Act of 1978 requires full cooperation with the Pennsylvania Historical and Museum Commission (PHMC) for the preservation, protection and investigation of archaeological resources. A preliminary review by PHMC indicates that there are no known historical structures or archaeological artifacts located within the planning area. The proposed projects are consistent with historical and archaeological resource protection. General correspondence with PHMC is included in Appendix L.

VI.B. RESOLUTION OF INCONSISTENCIES

There are no expected inconsistencies associated with the identified project. The sewage facility technologies identified herein are consistent with the following Acts, programs and policies, and do not require resolution during this planning phase of the project:

- Sections 4 and 5 of the Clean Streams Law
- Section 208 of the Clean Water Act
- Municipal Wasteload Management Under PA Code, Title 25, Chapter 94
- Title II of the Clean Water Act
- Titles II and VI of the Water Quality Act of 1987
- Comprehensive Plans developed under the Pennsylvania Municipalities Planning Code
- Antidegradation requirements as contained in PA Code, Title 25, Chapters 93, 95 and 102
- State Water Plan developed under the Water Resources Planning Act
- Pennsylvania Prime Agricultural Land Policy

- Allegheny County Stormwater Management Plan
- Wetlands Protection
- Protection of rare, endangered or threatened plant and animal species as identified by the Pennsylvania Natural Diversity Inventory (PNDI)
- Historical and archaeological resource protection relating to cooperation with public officials with the Pennsylvania Historical and Museum Commission (PMHC)

Additional action may be required to demonstrate consistency with the above named acts, programs and policies. This will occur during the design and permitting phases upon implementation of the selected sewage facilities alternatives. The flowing actions may be required:

- Preparation of E&S Control Plans for the construction of the new facilities. These plans will be reviewed by the Allegheny County Conservation District. The construction will require more than one acre of earth disturbance, so the issuance of a General NPDES Permit will be required. Additional permits will be required, including a Part II Water Quality Management Permit. E&S plans will be required to incorporate Best Management Practices to demonstrate compliance with Chapter 102.

- The submission of the Part II Permit will require the preparation of a Design Engineer's Report documenting compliance with applicable PADEP design standards.

- If the proposed layout crosses as streams or rivers in the planning areas, a Utilities Stream Crossing Permit (GP-5) will need to be acquired prior to construction.

- A detailed wetlands evaluation may be required during the permitting phase of the project should any proposed construction encroach on areas conducive to the presence of wetlands. Appropriate PADEP or Army Corps of Engineers (ACOE) permitting will be performed as necessary. However, this may not be required if it is determined that there are no wetlands within the vicinity of the project areas, as was determined during the preliminary investigation within this Act 537 Plan Update.

VI.C. EVALUATION OF ALTERNATIVES WITH RESPECT TO APPLICABLE WATER QUALITY STANDARDS, EFFLUENT LIMITATIONS OR OTHER TECHNICAL, LEGISLATIVE OR LEGAL REQUIREMENTS

The alternatives presented within this Plan Update were developed on the basis of achieving compliance with all applicable water quality standards, effluent limitations or other technical, legislative or legal requirements.

VI.D. COST ESTIMATES & PRESENT WORTH ANALYSIS

Cost estimates were developed for the alternatives identified herein. The cost estimates are included in Appendix M. A summary of the estimated project costs for each of the alternatives is included in Table 15.

Table 15: Estimated Alternative Project Costs

Alternative	Estimated Project Cost
1	$ 23,022,200
2	$ 22,037,800
3	$ 23,969,500

A 30-year present worth analysis was completed for ongoing administration, operation and maintenance, as well as annual debt service, for each of the alternatives identified and evaluated herein. The present worth analysis, included in Appendix N, was developed assuming bond financing over 30 years at and interest rate of 4.0%. The present worth of each alternative is shown in Table 16.

Table 16: Alternative Present Worth

Alternative	Present Worth
1	$ 142,320,000
2	$ 153,060,000
3	$ 156,070,000

A user rate analysis was also completed for each alternative. The user rate analysis is included in Appendix O. The projected rates were calculated based on annual debt service payments and projected operation and maintenance (O&M) costs. The following is a summary of the projected monthly user rates for each alternative, including the current estimated delinquency rate of 14%.

Table 17: Monthly User Rates

Alternative	Monthly User Rate
1	$ 76.00
2	$ 80.00
3	$ 81.00

While Alternative 1 has a project cost which is $984,400 more than Alternative 2, the yearly O&M costs of Alternative 2 cause a higher present worth and monthly user rate. The difference in O&M cost can be attributed to the additional intermediate pump station. This pump station is projected to cost an additional $232,000 per year in electricity alone. Therefore, the additional capital cost for Alternative 1 will be paid by the O&M savings in less than 10-years.

VI.E. ANALYSIS OF FUNDING METHODS

Various funding methods must be examined to determine which is most appropriate and cost effective for a project. The source of funding will affect the repayment term and interest rate of the loan, which will ultimately affect the user rates. The following paragraphs discuss the funding methods considered.

- **Pennsylvania Infrastructure Investment Authority (PENNVEST)**

  PENNVEST funding is available for financing costs associated with capital projects, engineering fees, legal fees and right-of-way acquisitions. However, prior to receiving any loan or grant money, all permits necessary for construction activities must be approved by the associated regulatory agency. All fees associated with the permitting and design phase must be financed upfront by the municipality.

  The typical life of a PENNVEST loan is 20 years. Total project funding is capped at $11.0 Million per project if one municipality is served, and may rise to as much as $20.0 Million if more than one municipality is served. In the event the total project cost is above the PENNVEST cap, additional financing alternatives will be necessary. The interest rate of the loan ranges from 1.387% in years 1 through 5 to 2.177% in years 6 through 20 in Allegheny County. In some cases the term of the loan may be extended beyond 20 years to as long as 30 years if needed to keep the user fees in line with other similar system user rates. The construction period is added to this term in order to allow for an interest only period. Principal and interest repayments begin after final inspection.

  The first step in the PENNVEST application process is to participate in a planning consultation meeting. At the meeting, the financial status of the client will be evaluated to determine if any grant funding may be issued in the funding package available for the

potential client. A grant will be considered only when the PENNVEST Board determines that the applicant's financial condition indicates that the loan repayment is unlikely. If no grant funding can be issued, the potential funding package will be given based upon certain information provided at the meeting.

- **Bond Issuance**

  Bond financing is a form of borrowing that involves an interest-bearing certificate for sale to prospective investors. System owners with taxing power, for example, are authorized to issue general obligation bonds to fund their projects. Secured by the capacity to raise taxes or user fees to meet payment obligation, this class of bonds is capable of attracting investors at lower costs to the borrower. The appeal of a general obligation bond as a financing instrument is offset, to some degree, by stipulations governing their use. Their issuance may require voter and/or legislative approval and, given the existence of state-established debt limits for most governmental units, the issuance of bonds for other purpose projects may be substantially reduced.

  All tax exempt bond issuers are encouraged to consider loans from bond pools as a source of funding for capital projects for amounts greater than $2 Million. Bond pools that contain funds created from tax-exempt revenue bonds are issued for the purpose of third-party borrowing. Advantages of pool loans are that the application consists of standardized forms, there are moderate up-front financing costs, they offer lower interest rates with flexible terms, they allow a finance term length of 10 to 30 years, and they permit projects to progress more rapidly by providing variable rate start-up financing that may be converted to a fixed permanent rate. Pool loans generally require the credit enhancement of bond issuance or a letter of credit from a qualified bank.

  Bond proceeds, if selected as the primary financing alternative, will be used for construction costs, capitalized interest on bonds, and paying all costs and expenses incident to the issuance and sale of the bonds. This Act 537 Plan Update assumes an interest rate of 4.0% over a 30-year term for bond financing.

- **Grants (Federal, State, and County)**

  In effort to receive adequate funding for the identified projects, the Township will apply for various federal, state, and county level construction grants.

VI.F. ANALYSIS OF NEED FOR IMMEDIATE OR PHASED IMPLEMENTATION OF ALTERNATIVES

All improvements recommended by this plan are required to be completed within 750 days of the issuance of Part II permits. The only phased implementation will be the required Buena Vista conveyance upgrades to eliminate system overflows. Additional flow monitoring is

required to properly address these overflows, and these upgrades are required to be completed within 24 months after the completion of the improvements in this Plan. Part of this evaluation will depend on Elizabeth Borough's planning and ability to take additional flows.

The sequence of construction for the recommended alternative is as follows.

1. Construction of Boston Pump Station improvements and force main to MACM
2. Construction of Buena Vista Pump Station and force main to Boston
3. Decommissioning of existing WWTP

Much of the work can be done concurrently, but Buena Vista cannot be connected until the Boston upgrades are complete, and the WWTP cannot be decommissioned until the Buena Vista upgrades are complete.

VI.G. EVALUATION OF ADMINISTRATIVE ORGANIZATIONS AND LEGAL AUTHORITY NECESSARY FOR PLAN IMPLEMENTATION

Elizabeth Township has the legal authority necessary for financing, permitting and construction of the proposed improvements.

VII. INSTITUTIONAL EVALUATION

VII.A. Analysis of Existing Wastewater Treatment Authorities

VII.A.1 Financial and Debt Status

Elizabeth Township is in good financial standing. The Township is responsible for setting the user rates in order to support debt service and O&M costs. Rates charged by the Township currently generate sufficient revenue to cover operating expenses, other expenses, and budgeted capital expenditures.

The former Elizabeth Township Sanitary Authority obtained Revenue Bonds to finance the Consent Order work and the Act 537 Plan implementation in the amount of $35,885,000 (of which approximately $28,805,000 is still outstanding). Those bonds are now in the name of Elizabeth Township. There remains approximately $13,500,000 in Bond funds that will be directed toward the projects identified within this Act 537 Plan Update. The Township is working on a bond refinancing plan to reduce payments on existing debt and to borrow additional funds for this project.

VII.A.2 Available Staff and Administrative Resources

Elizabeth Township currently has in place staffing to handle the normal day to day operations of the sewage collection system. The Elizabeth Township Board of Commissioners consists of 7

elected officials which make all major and financial decisions. In addition, the Township employs a manager dedicated to handling sanitary business.

The Township currently has in place staffing to handle the normal day to day operations of the sewage collection system through a contract with Veolia Water North America. All tasks above and beyond the staffing capabilities of the Authority's Agreement with Veolia are contracted to various outside contractors. All three options would not require any additional staffing.

VII.A.3 Existing Legal Authority

Elizabeth Township has the legal authority to implement the wastewater planning recommendations, including carrying out system-wide operation and maintenance activities, setting user fees, purchasing equipment and supplies, enforcing sewer ordinances, negotiating agreements with other parties, and raising capital for normal system operations and periodic improvement projects. The Township can finance the improvements and pay off the debt using tapping fee revenue from new sewer customers, as well as sewer service charge revenues from new and existing system users. The Township also has the legal authority to take enforcement actions against ordinance violators.

VII.B. ANALYSIS OF INSTITUTIONAL ALTERNATIVES NECESSARY FOR IMPLEMENTATION

VII.B.1 Need for New Municipal Departments or Municipal Authorities

There is no need for new municipal department or municipal Authorities. The Township has the full capability to implement the alternatives proposed herein.

VII.B.2 Functions of Existing and Proposed Organizations

The Township will continue to own, operate and maintain the sewerage facilities upon completion of the improvement projects.

VII.B.3 Cost of Administration, Implementability and the Capability to React to Future Needs

The implementation of the technical alternatives proposed in this Act 537 Plan Update will not affect the Township's administrative costs. The Township has the full capability to implement the proposed alternatives and react to future needs of its customer base.

VII.C. ADMINISTRATIVE AND LEGAL ACTIVITIES NECESSARY FOR IMPLEMENTATION

VII.C.1 Incorporation of Authorities or Agencies

There are no activities requiring the incorporation of authorities or agencies as part of this Plan Update.

VII.C.2 Development of Ordinances, Regulations, Standards and Inter-municipal Agreements

Elizabeth Township will maintain the existing agreement with the Municipal Authority of the City of McKeesport upon implementation of this Plan Update. The alternatives evaluated herein were developed based on the existing agreement.

VII.C.3 Activities Required to Provide Rights-of-way, Easements and Land Transfers

The construction of the improvements proposed in this Act 537 Plan Update may occur on private property. Rights-of-way, easements or land transfers may be required for implementation. This will occur during the design phase of the improvement projects.

VII.C.4 Adoption of Other Municipal Sewage Facilities Plans

No additional Municipal Sewage Facilities Plans are required to be adopted under this Plan Update.

VII.C.5 Other Legal Documents

There are currently no other legal documents necessary to ensure the implementation of the alternatives recommended herein.

VII.C.6 Timeframes for Implementation of Institutional Alternatives

The Act 537 Plan Update will be implemented according to the implementation schedule established herein. The institutional arrangements will be completed as necessary.

VII.D. PROPOSED INSTITUTIONAL ALTERNATIVE

There are no significant administrative issues, organizational needs or deficiencies in legal authority. Therefore, the improvements proposed within this Plan Update will be implemented under the existing authority of Elizabeth Township. Elizabeth Township will maintain the existing agreement with the Municipal Authority of the City of McKeesport.

VIII. IMPLEMENTATION SCHEDULE AND JUSTIFICATION FOR SELECTED TECHNICAL & INSTITUTIONAL ALTERNATIVES

VIII.A. BEST TECHNICAL ALTERNATIVE

In order to address the capacity issues identified in the Buena Vista and Boston sewersheds, to abate critical public health hazards, and to comply with the COA, the following projects, identified herein as Alternative 1, are recommended for implementation:

- Decommission the existing Buena Vista STP
- Construct a pump station and equalization tank at the site of the Buena Vista STP
- Construct a single force main along the Great Allegheny Passage (Rail Trail) to the Boston Pump Station
- Upgrade the Boston Pump Station
- Pump from the Boston Pump Station through a single force main to a point of connection with MACM near the CSX Railroad Bridge over the Youghiogheny River
- Upgrade Buena Vista sewershed pump stations, Lovedale and Simpson Howell, to address overflows and get all flow to the new Buena Vista Pump Station

The Township will continue to evaluate the feasibility of the diversion of flow from the Lovedale and Simpson Howell Pump Stations to a proposed interceptor along Lovedale Hollow Road (Wylie Run) to the Wylie Run Pump Station, and then to the Elizabeth Borough STP for treatment. This will allow reduced flows in the Buena Vista sewershed. However, the Borough does not currently have the capacity to treat these flows.

The Township is committed to meeting the requirements of the COA to bring the sewer system into compliance with the Clean Water Act. In addition to the technical alternatives identified above, the Township will complete the following administrative and operational tasks:

- Continue flow monitoring in the system to measure volume, duration and dates of all sanitary sewer overflow (SSO) events
- Eliminate any remaining SSOs after completion of Elizabeth to McKeesport project through I&I removal and/or system improvements
- Implement the newly developed Operation and Maintenance Plan
- Submit annual Tap Control Plans to the PADEP
- Submit semi-annual progress reports to the PADEP
- Continue to implement yearly Contracts for televising, cleaning, and repairs of the sewers

The Act 537 Sewage Facilities Plan Update recommends flows in both the Boston and Buena Vista sewershed be conveyed to McKeesport for treatment. The PADEP indicated this is preferable as a regional approach to the treatment of municipal sewage, and it is required under the most recent Consent Order.

The total estimated project cost of the implementation of Alternative 1 is $23,022,200. This will result in user cost of approximately $76 / month per customer, or $910 / year per customer.

Current rates result in an average monthly user cost of $55. However, based upon the Year 2015 budget in the annual CE report, and consistent with the annual audit, the Authority was projecting a yearly deficit at the current rate structure. The Authority was looking into a rate increase to cover current bond obligations and operating expenses. It is estimated that, after this rate increase, the average monthly user cost would need to be $69.

Therefore, this project will realistically result in a user cost comparable to what is currently required to finance the existing sanitary operation. However, the total impact to the customer will be about $21 / month due to current revenue shortfalls.

Elizabeth Township currently has in place staffing to handle the normal day to day operations of the sewage collection system. The Elizabeth Township Board of Commissioners consists of 7 elected officials which make all major and financial decisions. In addition, the Township employs a manager dedicated to handling sanitary business.

The Township currently has in place staffing to handle the normal day to day operations of the sewage collection system through a contract with Veolia Water North America. All tasks above and beyond the staffing capabilities of the Authority's Agreement with Veolia are contracted to various outside contractors. All three options would not require any additional staffing.

VIII.B. CAPITAL FINANCING PLAN CHOSEN FOR IMPLEMENTATION

The former Elizabeth Township Sanitary Authority obtained Revenue Bonds to finance the Consent Order work and the Act 537 Plan implementation in the amount of $35,885,000 (of which approximately $28,805,000 is still outstanding). Those bonds are now in the name of Elizabeth Township. There remains approximately $13,500,000 in Bond funds that will be directed toward the projects identified within this Act 537 Plan Update. The Township is working on a bond refinancing plan to reduce payments on existing debt and to borrow additional funds for this project.

The Township will need to obtain additional financing to complete the proposed project. It is anticipated that this funding will come from additional Revenue Bonds.

VIII.C. IMPLEMENTATION SCHEDULE

The anticipated schedule of implementation of the Act 537 Sewage Facilities Plan Update, contingent upon receiving favorable funding, is included in Table 18.

Table 18: Schedule of Implementation

Activity	Completion Date
Submit the Plan Update to the PADEP	November 9, 2016 *
PADEP Review and Approval of the Plan Update	December 31, 2016
Complete Design	December 31, 2016
Submit Necessary WQM Part II Permits	January 8, 2017 **
Obtain Construction Financing	July 15, 2017
Begin Construction	September 1, 2017
Decommission BVSTP	April 1, 2018 ***
Complete Construction	May 1, 2018 ****

* Within 180 days of May 13, 2016 Consent Order and Agreement
** Within 45 days of Plan approval, or 240 days after execution of COA, whichever is later
*** Within 24 months of the execution of COA – May 13, 2018 deadline
****Within 750 days of issuance of Part II Permits (assumed to be March 2017)

IX. ENVIRONMENTAL REPORT GENERATED FROM THE UNIFORM ENVIRONMENTAL REVIEW (UER) PROCESS

The Uniform Environmental Review (UER) process is intended to standardize the process for documenting the environmental impacts of proposed drinking water and wastewater infrastructure projects requesting financial assistance from various federal funding sources in the Commonwealth of Pennsylvania. The UER is intended to streamline and coordinate the environmental review of proposed projects to avoid major inconsistencies or duplication of effort. The UER can be utilized by the following specific financial assistance programs and agencies:

- The Clean Water Revolving Fund (PENNVEST, DEP, EPA)
- The Drinking Water State Revolving Fund (PENNVEST, DEP, EPA)
- The RUS Water and Waste Disposal Grant and Loan Program (USDA-RD)
- The Community Development Block Grant Program (DCED, HUD)
- Other Federal Funding Efforts (EPA)

The UER contains a project description and identifies the need for the project. It identifies and compares the technical alternatives considered. It also discusses the various environmental consequences of the selected alternative. Finally, the UER provides a summary of mitigation, if necessary, and discusses efforts for public participation. The UER for this Act 537 Sewage Facilities Plan Update is included in Appendix A.

APPENDIX A

Uniform Environmental Review (UER)

ELIZABETH TOWNSHIP

Uniform Environmental Review

November 2016

KLH
ENGINEERS, INC.
5173 CAMPBELLS RUN ROAD
PITTSBURGH, PA 15205-9733

ELIZABETH TOWNSHIP
ALLEGHENY COUNTY, PENNSYLVANIA

UNIFORM ENVIRONMENTAL REVIEW

Table of Contents

1.0 PROJECT DESCRIPTION AND NEED 1

1.1 Purpose of and Need for Project 1
1.2 Project Description 1

2.0 SUMMARY OF REASONABLE ALTERNATIVES CONSIDERED 2

2.1 Alternatives Considered 2
2.2 Comparison of Alternatives 4

3.0 ENVIRONMENTAL CONSEQUENCES OF THE SELECTED ALTERNATIVE 5

3.1 Land Use/Important Farmland/Formally Classified Lands 5
3.2 Floodplains 6
3.3 Wetlands 7
3.4 Historic Resources 7
3.5 Sensitive Biological Resources 8
3.6 Water Quality Issues 8
3.7 Coastal Resources 9
3.8 Socio-Economic Issues 9
3.9 Air Quality 9
3.10 Transportation 9
3.11 Noise Abatement and Control 10
3.12 Wild and Scenic Rivers 10
3.13 Miscellaneous Environmental Considerations 10

4.0 SUMMARY OF MITIGATION 10

5.0 PUBLIC PARTICIPATION 10

6.0 EXHIBITS/ATTACHMENTS 11

TABLES

1 Comparison of Alternatives 3
2 Estimated Alternative Project Costs 4
3 Present Worth 5

ATTACHMENTS

Attachment A: Exhibits
Attachment B: Pennsylvania Historical and Museum Commission Correspondence
Attachment C: Pennsylvania Natural Diversity Inventory Results

ELIZABETH TOWNSHIP
ALLEGHENY COUNTY, PENNSYLVANIA

UNIFORM ENVIRONMENTAL REVIEW

1.0 PROJECT DESCRIPTION AND NEED

1.1 Purpose of and Need for Project

On August 26, 2015, the Pennsylvania Department of Environmental Protection (PADEP) issued an Administrative Order to Elizabeth Township and the Elizabeth Township Authority requiring the Township to abandon the Buena Vista Sewage Treatment Plant (STP), implement a project to convey the Boston and Buena Vista sewershed flows to McKeesport, and apply to transfer the Part II Permits to the Township. The Township and the Authority would later appeal the August 2015 Administrative Order. However, the appeal was retracted after the Township Board of Commissioners voted to terminate and disband the Authority in March 2016. The Township assumed sole ownership and operation of the sanitary sewerage facilities and agreed to submit an all inclusive Act 537 Sewage Facilities Plan Update recommending flows in both the Boston and Buena Vista sewershed be conveyed to McKeesport for treatment. This Uniform Environmental Review (UER) was developed as part of the Act 537 Plan Update which meets the requirement established in the Township's Consent Order and Agreement (COA) with the PADEP.

The existing Buena Vista STP and the Boston Pump Station have exceeded their useful lifespan due to capacity-related issues. The capacity of these facilities is exceeded under peak flow conditions during major rainfall events resulting in overflows into the Youghiogheny River and its tributaries. Overflows have also occurred at all of the existing pump stations in the Buena Vista sewershed, including the Buena Vista, Lovedale, Duncan and Simpson Howell Pump Stations, and within specific collection and conveyance sewers in the Buena Vista and Boston sewersheds. Additional problems exist along the conveyance lines through Versailles, to which the Boston Pump Station currently discharges, including confirmed manhole surcharging due to the inflow and infiltration entering the system during rainfall events. It is believed that the lack of capacity to handle existing and projected peak flows will cause additional problems resulting in critical public health concerns.

In order to address the capacity issues identified in the Buena Vista and Boston sewersheds, to abate critical public health hazards, and to comply with the COA, the Act 537 Plan Update was prepared to evaluate alternatives to meet these objectives.

1.2 Project Description

In order to address the capacity issues identified in the Buena Vista and Boston sewersheds, to abate critical public health hazards, and to comply with the COA, the following projects are recommended for implementation:

- Decommission the existing Buena Vista STP.
- Construct a pump station and equalization tank at the site of the Buena Vista STP.
- Construct a single force main along the Great Allegheny Passage (Rail Trail) to the Boston Pump Station. The force main will enter the Rail Trail at Fellabaum Street and follow the entire length of the Rail Trail until it reaches the Boston Pump Station.
- Upgrade the Boston Pump Station to add wet weather pumping capacity.
- Pump from the Boston Pump Station through a single force main to a point of connection with MACM near the CSX Railroad Bridge over the Youghiogheny River
- Upgrade Buena Vista sewershed pump stations, Lovedale and Simpson Howell, to address overflows and get all flow to the new Buena Vista Pump Station

The project is conceptually shown on Exhibit 10 in Attachment A.

2.0 SUMMARY OF REASONABLE ALTERNATIVES CONSIDERED

2.1 Alternatives Considered

Three (3) main alternatives were considered. All three (3) are in accordance with the stipulations of the COA, and involve decommissioning of the existing Buena Vista WTP and conveyance of those flows to the MACM WPCP for treatment. The only difference between alternatives is the alignment.

Common Alternative Work

In all three (3) alternatives, the Buena Vista Pump Station will be upgraded to convey up to 2.7 MGD and retain any additional flow in equalization basins. In addition, all alternatives include Boston Pump Station upgrades to convey up to 17.5 MGD.

Alternative 1 – Great Allegheny Passage Force Main (aka Senate Alignment)

Alternative 1 is similar to the original Senate Engineering design reflected in the Act 537 Plan in that the alignment follows the Great Allegheny Passage. However, design modifications were required to accommodate updated 2016 flow estimates. The following is a comparison table between the original Senate 2008 recommended alternative and the proposed KLH 2016 Alternative 1.

Table 1: Comparison of Alternatives

	Senate 2008 Plan		KLH 2016 Plan	
Watershed	**Proposed Upgrades**	**Planning Size**	**Proposed Upgrades**	**Planning Size**
Buena Vista	New Pump Station	10 MGD	New Pump Station	2.7 MGD
	Equalization Basins	---	Equalization Basins	2.8 MG
	Force Main	12-inch and 18-inch	Force Main	14-inch
Boston	Existing Pump Station	---	Existing Pump Station	2.6 MGD
	New Pump Station	4.5 MGD	New Pump Station	17.5 MGD
	Force Main	12-inch and 24-inch	Force Main	24-inch
Elizabeth Borough	Remove Lovedale and Simpson Howell PS	Yes	Remove Lovedale and Simpson Howell PS	No

In this alternative, a new sewage force main begins at the site of the decommissioned Buena Vista STP. The force main will enter the Great Allegheny Passage (Rail Trail) at Fellabaum Street and follow the entire length of the Rail Trail until it reaches the Boston Pump Station. The Boston Pump Station will be upgraded to add wet weather pumping capacity. A force main will be constructed along the Great Allegheny Passage to the existing pipe junction valve vault connection to MACM. Alternative 1 is conceptually shown on Exhibit 10 in Attachment A.

<u>Alternative 2 – Elizabeth Force Main (aka Gateway Alignment 1)</u>

Alternative 2 is similar to the proposed Gateway Engineering Act 537 Option 2, Alternate 2 for the Buena Vista Watershed.

This alternative consists of a new sewage force main, new gravity sewer and the replacement of existing gravity sewer. A new sewage force main begins at the site of the Buena Vista STP where it will enter Fellabaum Street and the Rail Trail to Industry Road. The force main will then run up Greenock Buena Vista Road to the valley just north of Broadlawn Drive. At Broadlawn Drive an intermediate pump station is needed to boost the sewage flow at that elevation. The new force main will continue up the valley to Ridge Road and discharge into a new sewage manhole. From there a new gravity sewer is proposed heading down to Boston Hollow Road through an existing drainage hollow and then along Boston Hollow Road to an existing sanitary sewer line at Pitt Street. The gravity sewer continues along the stream and crosses Smithfield Street and connects directly to the Boston Pump Station. The existing gravity Sewer will need to be upsized to accommodate the additional Buena Vista Flow. The Boston Pump Station will be upgraded to add wet weather pumping capacity. A force main will be constructed along the Great Allegheny Passage to the existing pipe junction valve vault connection to MACM. Alternative 2 is conceptually shown on Exhibit 11 in Attachment A.

Alternative 3 – Elizabeth Extended Force Main (aka Gateway Alignment 2)

Alternative 3 is similar to the proposed Gateway Engineering Act 537 Option 2, Alternate 3 for the Buena Vista Watershed.

This alternative consists of a new sewage force main, new gravity sewer and the replacement of existing gravity sewer. The new sewage force main begins at the site of the Buena Vista STP where it will enter Fellabaum Street and the Rail Trail to Industry Road. The force main will then run up Greenock Buena Vista Road to the valley just north of Broadlawn Drive. At Broadlawn Drive an intermediate pump station is needed to boost the sewage flow at that elevation. The new force main will turn and continue along Broadlawn Drive, turn north before the intersection with Ridge Road, continue to the intersection of Ridge Road and Mansfield Road. This is the highest point on the route where the force main will discharge into a new manhole. From there a new gravity sewer is proposed heading down to Boston Hollow Road to an existing sanitary sewer line at Pitt Street. The gravity sewer continues along the stream and crosses Smithfield Street and connects directly to the Boston Pump Station. The existing gravity Sewer will need to be upsized to accommodate the additional Buena Vista Flow. The Boston Pump Station will be upgraded to add wet weather pumping capacity. A force main will be constructed along the Great Allegheny Passage to the existing pipe junction valve vault connection to MACM. Alternative 3 is conceptually shown on Exhibit 12 in Attachment A.

2.2 Comparison of Alternatives

The alternatives were evaluated on the basis of affordability in the present, long-term present worth, constructability, and potential for new customers. The alternatives are evaluated as follows:

Cost estimates were developed for each alternative. A summary of the estimated project costs for each alternative is included in Table 2.

Table 2: Estimated Alternative Project Costs

Alternative	Estimated Project Cost
1	$ 23,022,200
2	$ 22,037,800
3	$ 23,969,500

In addition to the immediate capital cost, the costs for ongoing administration, operation and maintenance of the alternatives, annual debt service charges, in addition to interest charges for

financing, must be considered. A present worth analysis was completed for the alternatives considered. The present worth of each alternative is shown in Table 3. Alternative 1 has the lowest present worth and is the most economical alternative.

Table 3: Present Worth

Alternative	Present Worth
1	$ 142,320,000
2	$ 153,060,000
3	$ 156,070,000

While Alternative 1 has a project cost which is $984,400 more than Alternative 2, the yearly O&M costs of Alternative 2 cause a higher present worth and monthly user rate. The difference in O&M cost can be attributed to the additional intermediate pump station. This pump station is projected to cost an additional $232,000 per year in electricity alone. Therefore, the additional capital cost for Alternative 1 will be paid by the O&M savings in less than 10-years.

3.0 ENVIRONMENTAL CONSEQUENCES OF THE SELECTED ALTERNATIVE

Alternative 1 was selected for implementation. The following sections analyze the impacts of the project on various environmental resources of the planning area.

3.1 Land Use/Important Farmland/Formally Classified Lands

The proposed project is consistent with local land use planning and agricultural preservation interests.

Land Use

Elizabeth Township consists of primarily residential areas with several commercial establishments, institutional establishments and small industrial properties located throughout the Township. The project will not change land use in the Township.

Prime Agricultural Land

Agricultural areas, as defined by the Pennsylvania Code, are areas used primarily for the production of crops and where the soil is without vegetative cover during certain periods of the year. Prime farmland is land that has the best physical and chemical characteristics for the production of food, feed and forage, fiber, and oil seed crops. Pennsylvania's Prime Agricultural Land Policy orders and directs the prevention of irreversible conversion of prime

agricultural land to uses that result in its loss as an environmental or essential food production resource. Prime farmlands are important to examine for scenarios in which future development is expected to occur because of the protective measures in existence to preserve this important resource.

It is important to note that there are soil areas classified as prime farmland and farmland of statewide importance in the planning area. However, all construction will occur in previously developed areas or the impacted areas will be restored to existing conditions post construction. There will be no lasting impacts on prime agricultural lands.

Formally Classified Lands

There will be no lasting impacts on national or state parks, forests or trails. While construction will occur along the Rail Trail, the trail will be restored post construction. There will be no impacts on registered and eligible national monuments or landmarks.

3.2 Floodplains

A flood occurs when the capacity of a stream channel to convey flow within its banks is exceeded and water flows out of the main channel onto and over the adjacent land. This adjacent land is known as the floodplain. In regulating floodplains, the standard is the 100-year flood, the flood that is defined as having a 1% chance of being equaled or exceeded during a given year. Pennsylvania Code regulations set forth limitations related to floodplains. These regulations prohibit encroachments and obstructions, including structures, in the regulated floodway without first obtaining a state Water Obstruction and Encroachment permit. The floodway is the portion of the floodplain adjoining the stream required to carry the 100-year flood event with no more than one (1) foot increase in the 100-year flood level due to encroachment in the floodplain outside the floodway. Floodplain regulations, such as elevating a first floor level above the 100-year floodplain and obtaining necessary local, state and federal permits for construction in these areas, exist for the preservation of citizen well being. Floodplain resources are of significant importance and are vital for maintaining the floodplain ecosystem, and the primary environmental policy in regards to floodplains is the protection of floodplain resource values. Floodplain management focuses on preventative and corrective measures to reduce flood damage.

A review of the floodplain mapping on Exhibit 7 in Attachment A reveals that there are floodplains located within the planning area. Site plans of the Boston Pump Station and the Buena Vista STP sites, which depict floodplains, are shown on Exhibits 8 and 9.

Direct, Indirect, and Cumulative Effects

Design requirements for wastewater facilities are contained in the PADEP's *Domestic Wastewater Facilities Manual*. All design requirements in regards to flood protection will be met during

design of the proposed facility improvements. Impacts on floodplains will be minimized to the greatest extent possible, and all construction activities will follow all local, state, and federal regulations regarding floodplains during any proposed upgrades.

3.3 Wetlands

Wetlands are areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions including swamps, marshes, bogs and similar areas. Wetland areas are considered to be a valuable public water resource and are subject to strict conservation regulations. They provide an environment and habitat for aquatic life including fish, amphibians and waterfowl. Additionally, many endangered plant species are thought to exist in wetlands, and wetlands are essential for the maintenance of surface water quality and quantity. Due to these characteristics and the additional permitting and mitigation that may be required, it is important to identify wetlands during the planning phase of a project.

Hydric soils are formed in conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. Hydric soils contain the characteristics necessary for potential wetland existence and may indicate the presence of a wetland area. The planning phase should, therefore, also consider hydric soil conditions.

Exhibit 5 in Attachment A contains National Wetlands Inventory (NWI) mapping and hydric soils mapping of the planning area. The mapping indicates that there are very few wetlands within the planning area. The only identified wetlands that may impact the proposed projects are located along the Youghiogheny River, which is classified as riverine. Additionally, there are soils within the planning area that are classified as all hydric or partially hydric.

Direct, Indirect, and Cumulative Effects

Based on the wetlands and hydric soils mapping, there are no expected impacts on wetlands. The Authority will make all attempts to minimize the impact on any ecologically sensitive areas during any construction activities. All work associated with the project will be consistent with all applicable state and federal regulations regarding wetlands.

3.4 Historic Resources

The Pennsylvania Historical Preservation Act of 1978 requires full cooperation with the Pennsylvania Historical and Museum Commission (PHMC) for the preservation, protection and investigation of archaeological resources. A preliminary review by PHMC indicates that there are no known historical structures or archaeological artifacts located within the planning area. The proposed projects are consistent with historical and archaeological resource protection. General correspondence with PHMC is included in Attachment B.

Direct, Indirect, and Cumulative Effects

This project is expected to have no impacts on any historic resources.

3.5 Sensitive Biological Resources

There is an increasing effort to protect the habitat of rare, endangered and threatened species. As per the Pennsylvania Natural Heritage Program, the project planning process requires review by applicable environmental agencies in an effort to identify and protect environmental values within the project area. These agencies include the following:

- Department of Conservation and Natural Resources – Bureau of Forestry
- Pennsylvania Game Commission
- Pennsylvania Fish and Boat Commission
- U.S. Fish and Wildlife Service

The PNDI Project Environmental Review Receipt for the planning area is included in Attachment C and indicates that there are no known impacts associated with the proposed projects. This project is consistent with the protection of rare, endangered or threatened plant and animal species.

Direct, Indirect, and Cumulative Effects

This project is expected to have no impacts on any sensitive biological resources.

3.6 Water Quality Issues

Consideration must be given to the environmental impacts of land development activities throughout a watershed. Urbanization has the potential to degrade environmental values of watersheds with protected streams. For this reason, it is important to identify the physical characteristics of an area during the planning phase to ensure protection for important environmental resources.

The planning area for this project lies within the Youghiogheny River Watershed. The Pennsylvania Code, Title 25, Chapter 93 (Water Quality Standards) contains classifications of every stream in Pennsylvania and orders and promotes their protection. The Youghiogheny River is classified as a warm water fishery (WWF) under Chapter 93 regulations, as shown on Exhibit 2 in Attachment A. Chapter 93 defines a WWF as a stream used for the maintenance and propagation of fish species and additional flora and fauna that are indigenous to a warm water habitat.

Additional protection measures exist for waters classified as high quality (HQ) or exceptional value (EV). HQ and EV waters or watersheds have excellent quality and features that require

special water quality protection measures. It is important to note that the Youghiogheny River is not classified as HQ or EV, but a major goal of this project is to protect the waters of the Commonwealth through the preservation of the overall Youghiogheny River drainage basin to support aquatic life.

Direct, Indirect, and Cumulative Effects

The project will directly improve/protect the water quality of the Youghiogheny River drainage basin, and thereby have a cumulative effect of improving the waters of the Commonwealth.

3.7 Coastal Resources

The project is not located in a coastal zone management area. Therefore, it will have no impact on coastal resources.

Direct, Indirect, and Cumulative Effects

This project will not impact coastal resources.

3.8 Socio-Economic Issues

The project will not impose any disproportionate adverse effects on minority and/or disadvantaged populations. It is the Township's policy to treat all of its customers equally and to evaluate wastewater service with no regards to socio-economic status.

Direct, Indirect, and Cumulative Effects

This project will not disproportionably impact minority and/or disadvantaged populations.

3.9 Air Quality

The only potential for impacts on air quality resulting from this project may be emissions from construction equipment during construction and fugitive dust from construction activities. The contract documents for the project will include provisions requiring the contractors to control dust and mud as required by local ordinances and best management practices.

Direct, Indirect, and Cumulative Effects

This project will not negatively impact air quality.

3.10 Transportation

There will be minimal increase in traffic from construction vehicles in the project area during the construction period. It is not anticipated that this additional traffic will have any adverse

impacts on the project area. After construction is completed, there will be no additional traffic as a result of this project.

Direct, Indirect, and Cumulative Effects

As a result of the construction there will be minimal impact on nearby residents.

3.11 Noise Abatement and Control

There will be additional noise from construction activities during the construction period. The contract documents will contain provisions limiting the construction activities to approved hours as established by local ordinance.

Direct, Indirect, and Cumulative Effects

This project will not impact noise levels other than temporary increase during construction activities.

3.12 Wild and Scenic Rivers

The project will not affect any wild or scenic rivers. The project will improve/protect the water quality of the Youghiogheny River drainage basin.

Direct, Indirect, and Cumulative Effects

This project will not impact any wild or scenic rivers.

3.13 Miscellaneous Environmental Considerations

This project is not anticipated to have any additional miscellaneous environmental impacts.

4.0 SUMMARY OF MITIGATION

No mitigation is required for this project other than what would be considered routine as part of a project of this nature. For instance, implementation of Erosion and Sedimentation plans, stormwater management plans, and implementing procedures to ensure compliance with all permits during construction.

5.0 PUBLIC PARTICIPATION

A public notice describing the project and announcing the Act 537 Plan Update will be available for review and comment during a 30-day public comment period will be advertised in the local newspaper.

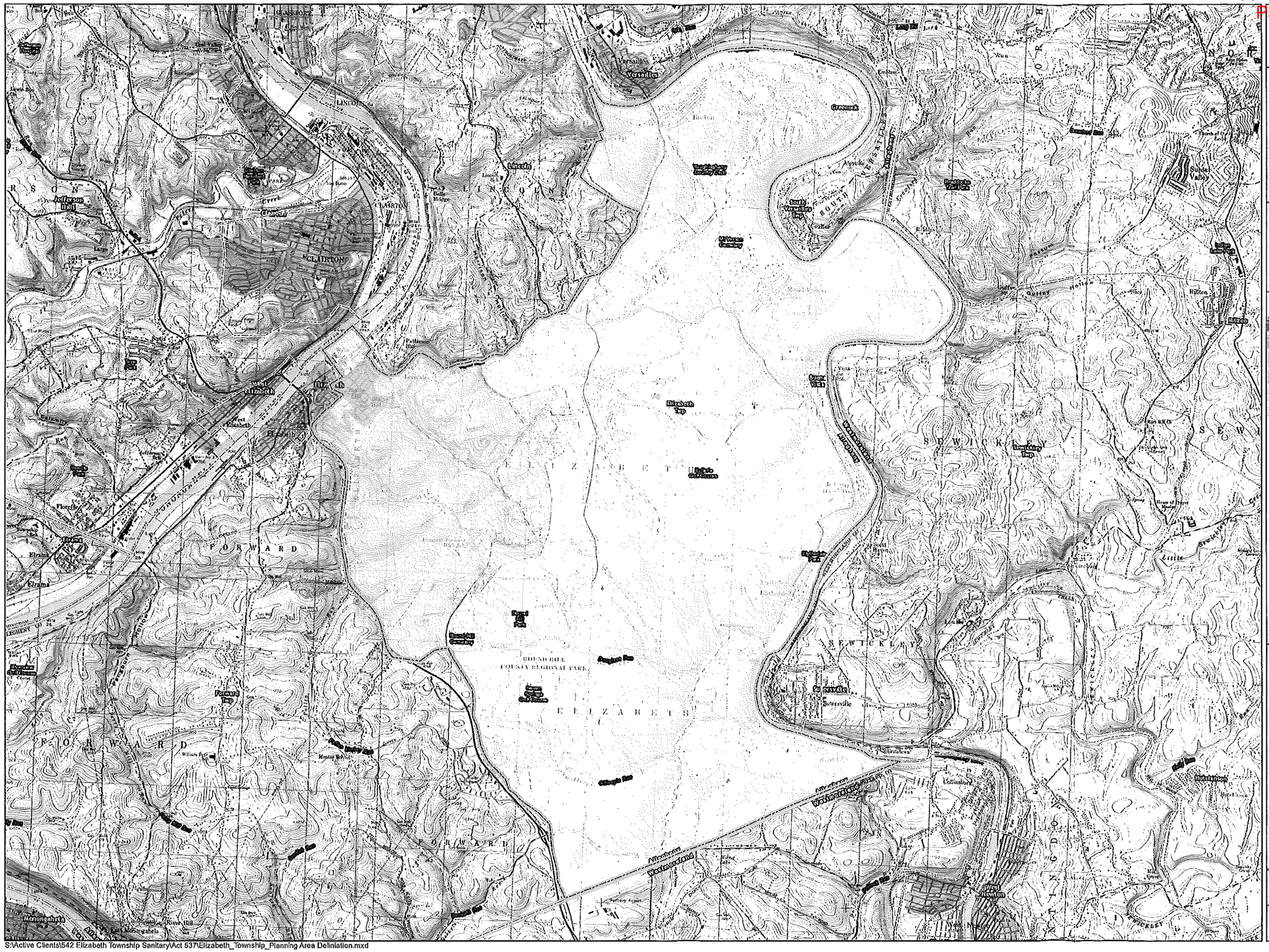
6.0 EXHIBITS/ATTACHMENTS

The Exhibits and Attachments included within this Uniform Environmental Review (UER) were taken directly from the Act 537 Plan Update and include the following:

- Attachment A: Exhibits
  - Exhibit 1 – Planning Area Delineation
  - Exhibit 2 – Stream Designated Uses
  - Exhibit 3 – Soils and Farmland Evaluation
  - Exhibit 4 – Geologic Features
  - Exhibit 5 – Wetlands and Hydric Soil Conditions
  - Exhibit 6 – Existing Sewage Facilities
  - Exhibit 7 – Floodplain Mapping
  - Exhibit 8 – Buena Vista Site Plan
  - Exhibit 9 – Boston Pump Station Site Plan
  - Exhibit 10 – Planning Area Delineation of Alternatives
  - Exhibit 11 – Alternative 1 Conceptual Layout
  - Exhibit 12 – Alternative 2 Conceptual Layout
  - Exhibit 13 – Alternative 3 Conceptual Layout
  - Exhibit 14 – Alternative 3 Additional Customers
- Attachment B: Pennsylvania Historical and Museum Commission Correspondence
- Attachment C: Pennsylvania Natural Diversity Inventory Results

ATTACHMENT A

Exhibits


EXHIBIT 1
542-04
KLH
ENGINEERS, INC
5173 Campbells Run Road
Pittsburgh, PA 15205
Phone: 412-494-0510
Fax: 412-494-0426
www.klhengineers.com
Legend
Elizabeth Township Boundary
Municipal Boundaries
County Boundaries
Boston Sewershed
Buena Vista Sewershed
Elizabeth Sewershed
ELIZABETH
TOWNSHIP
ALLEGHENY COUNTY
PENNSYLVANIA
Planning Area
Deliniation
0
2,700
5,400
Feet
Author: RS
Date: 6/10/2016
NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
Projection: Lambert Conformal Conic
S:\Active Clients\542 Elizabeth Township Sanitary\Act 537\Elizabeth_Township_Planning Area Deliniation.mxd

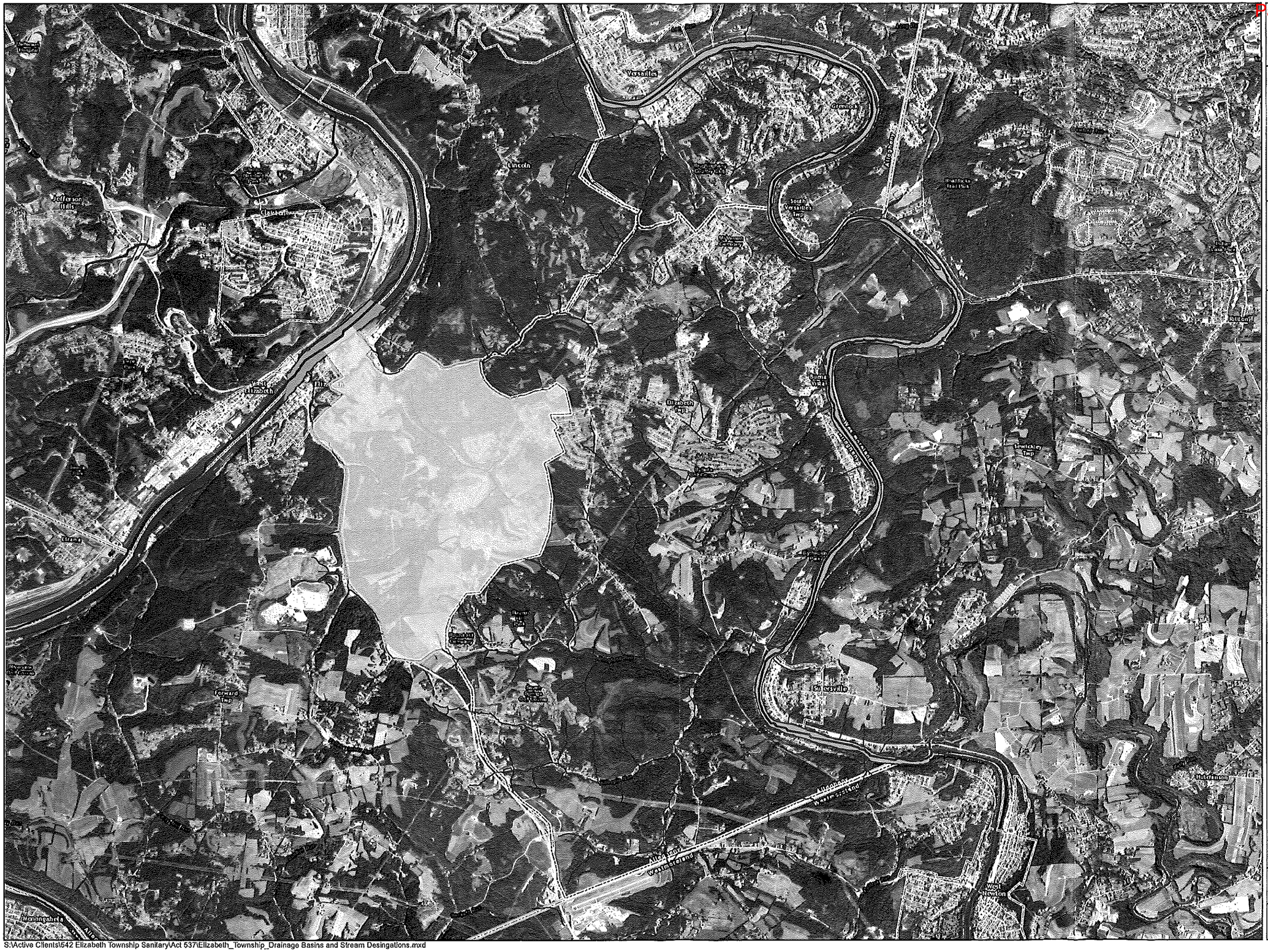


EXHIBIT 2

542-04

KLH ENGINEERS, INC
5173 Campbells Run Road
Pittsburgh, PA 15205
Phone: 412-494-0510
Fax: 412-494-0426
www.klhengineers.com

Legend

- Warm Water Fish
- Streams
- Small Water Body
- Elizabeth Township Boundary
- Municipal Boundaries
- County Boundaries
- Planning Area

ELIZABETH TOWNSHIP

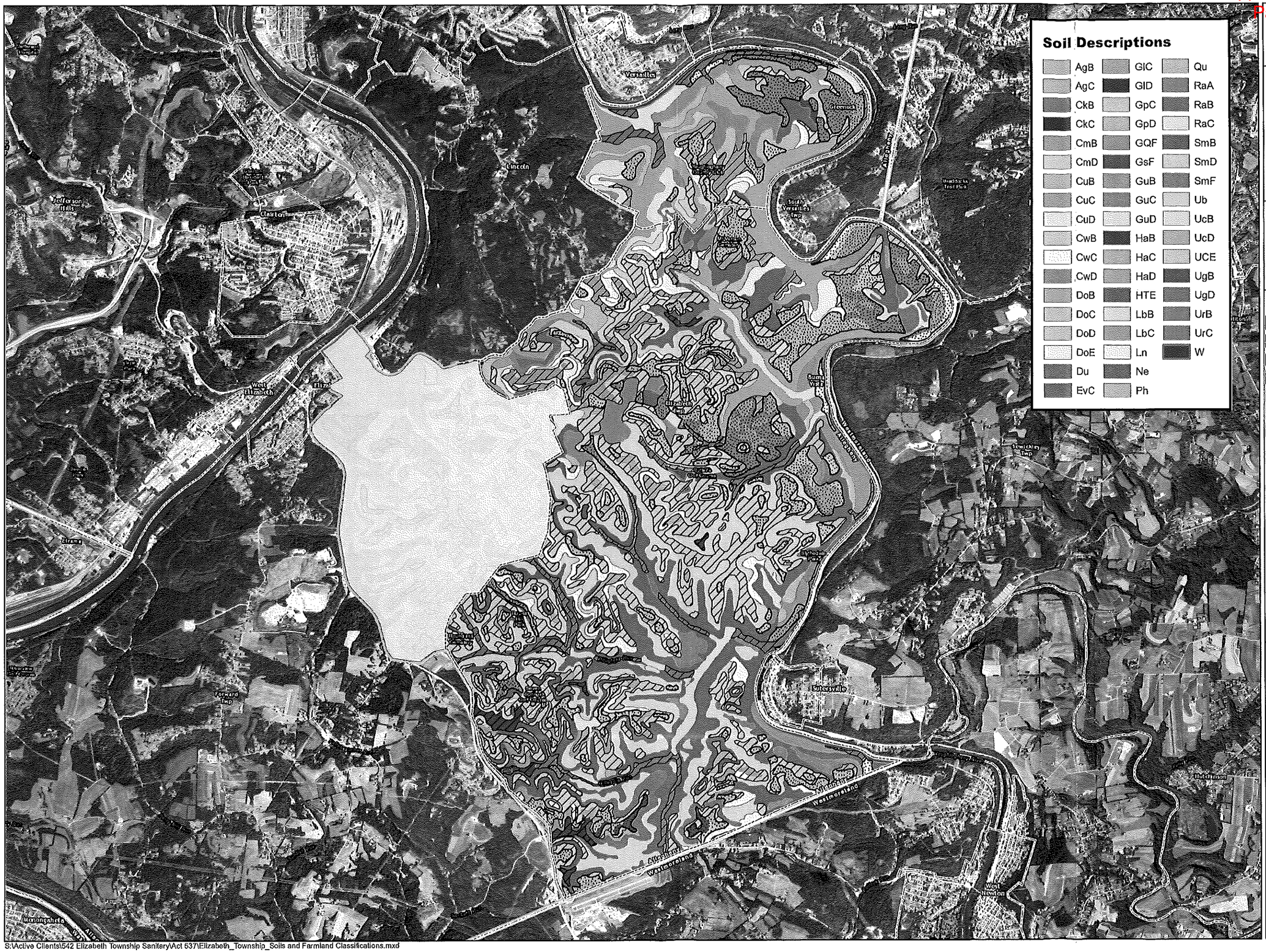
ALLEGHENY COUNTY PENNSYLVANIA

Drainage Basins and Stream Designations

0 2,700 5,400
Feet

Author: RS
Date: 8/10/2016
NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
Projection: Lambert Conformal Conic

S:\Active Clients\542 Elizabeth Township Sanitary\Act 537\Elizabeth_Township_Drainage Basins and Stream Designations.mxd



Soil Descriptions

AgB	GlC	Qu			
AgC	GlD	RaA			
CkB	GpC	RaB			
CkC	GpD	RaC			
CmB	GQF	SmB			
CmD	GsF	SmD			
CuB	GuB	SmF			
CuC	GuC	Ub			
CuD	GuD	UcB			
CwB	HaB	UcD			
CwC	HaC	UCE			
CwD	HaD	UgB			
DoB	HTE	UgD			
DoC	LbB	UrB			
DoD	LbC	UrC			
DoE	Ln	W			
Du	Ne				
EvC	Ph				

EXHIBIT 3

542-04

KLH ENGINEERS, INC
5173 Campbells Run Road
Pittsburgh, PA 15205
Phone: 412-494-0510
Fax: 412-494-0426
www.klhengineers.com

Legend

- All areas are prime farmland
- Farmland of statewide importance
- Not prime farmland
- Elizabeth Township Boundary
- Municipal Boundaries
- County Boundaries
- Planning Area

ELIZABETH TOWNSHIP

ALLEGHENY COUNTY PENNSYLVANIA

Soil and Farmland Classification

0 2,700 5,400
Feet

Author: RS
Date: 8/10/2015
NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
Projection: Lambert Conformal Conic

S:\Active Clients\542 Elizabeth Township Sanitery\Act 537\Elizabeth_Township_Soils and Farmland Classifications.mxd

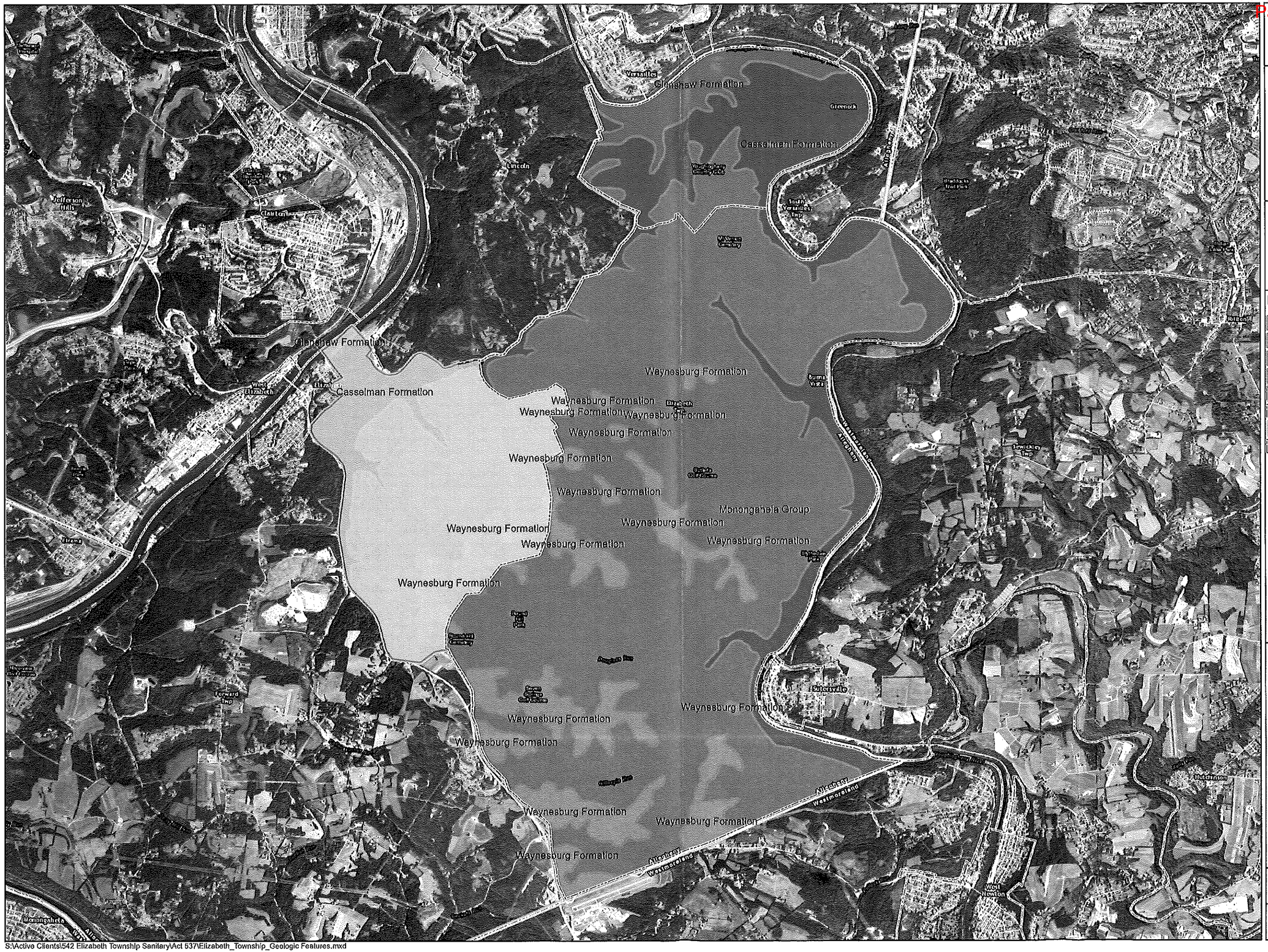

Glenshaw Formation
Casselman Formation
Waynesburg Formation
Monongahela Group
Glenshaw Formation
Casselman Formation
Waynesburg Formation
Waynesburg Formation
Waynesburg

EXHIBIT 5

542-04

KLH ENGINEERS, INC
5173 Campbells Run Road
Pittsburgh, PA 15205
Phone: 412-494-0510
Fax: 412-494-0426
www.klhengineers.com

Legend

- Freshwater Pond
- Riverine
- All hydric
- Not hydric
- Partially hydric
- Elizabeth Township Boundary
- Municipal Boundaries
- County Boundaries
- Planning Area

ELIZABETH TOWNSHIP

ALLEGHENY COUNTY PENNSYLVANIA

Wetlands and Hydric Conditions

0 2,700 5,400
Feet

Author: RS
Date: 8/10/2016
NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
Projection: Lambert Conformal Conic

S:\Active Clients\542 Elizabeth Township Sanitary\Act 537\Elizabeth_Township_Wetlands and Hydric Conditions.mxd

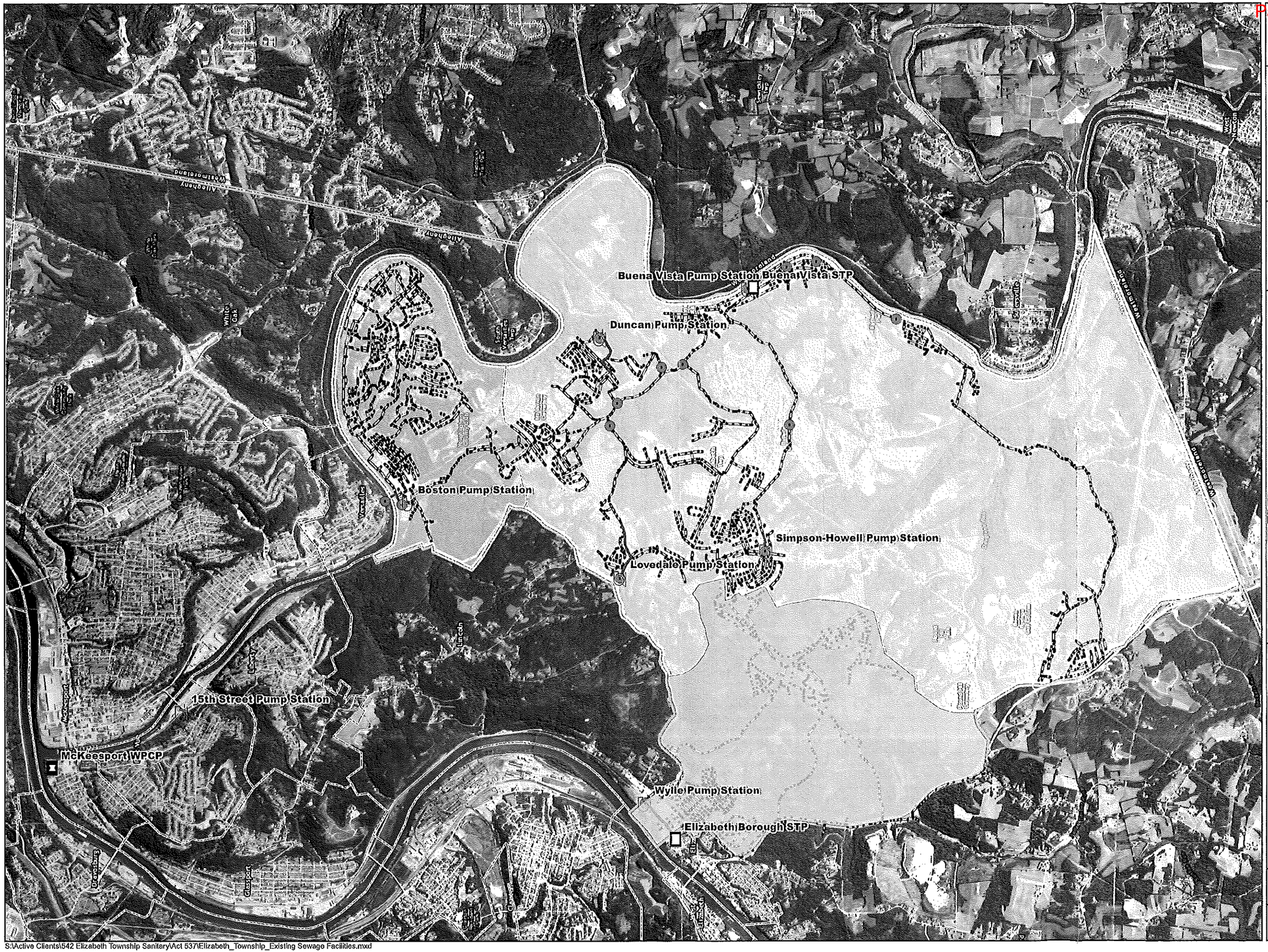


EXHIBIT 6

542-04

KLH ENGINEERS, INC
5173 Campbells Run Road
Pittsburgh, PA 15205
Phone: 412-494-0510
Fax: 412-494-0426
www.klhengineers.com

Legend

- WPCP
- STP
- Pump Station
- MeterLocations
- Force Main
- Sanitary Manhole
- Sanitary Pipe
- Boston Sewershed
- Buena Vista Sewershed
- Elizabeth Sewershed
- Planning Area
- Elizabeth Township Boundary
- Municipal Boundaries
- County Boundaries

ELIZABETH TOWNSHIP

ALLEGHENY COUNTY
PENNSYLVANIA

Existing Sewage Facilites

0 2,500 5,000
Feet

Author: RS
Date: 2/11/2016
NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
Projection: Lambert Conformal Conic

S:\Active Clients\542 Elizabeth Township Sanitary\Act 537\Elizabeth_Township_Existing Sewage Facilities.mxd

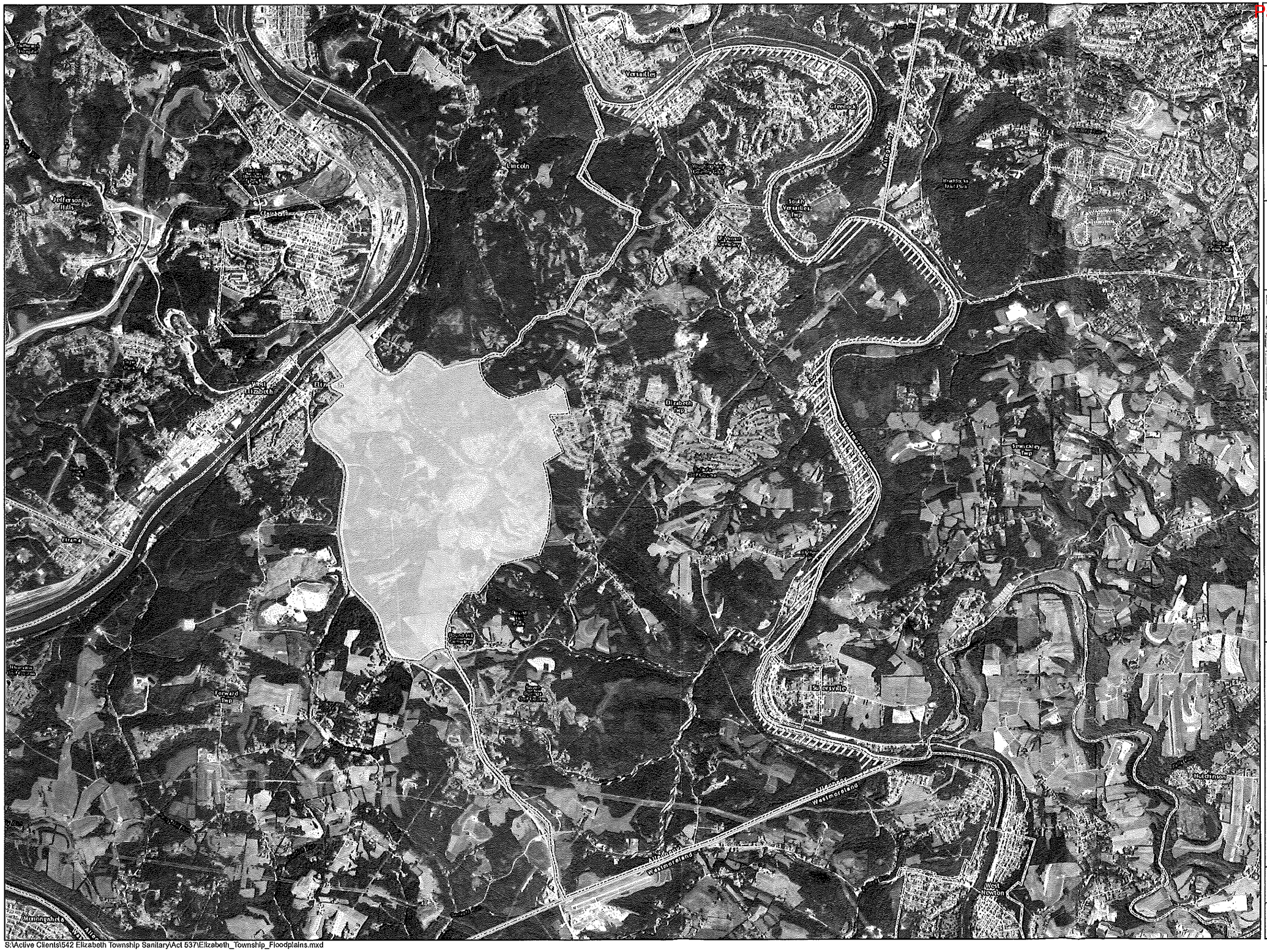
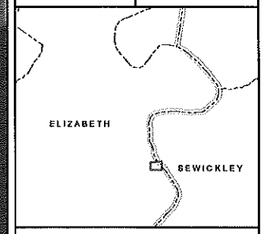

Versailles
Lincoln
Jefferson Hills
Clairton
West Elizabeth
Elizabeth
Elizabeth Twp
Forward Twp
Buena Vista
Monongahela
Allegheny
Westmoreland
West Newton
Washington
Versailles Twp
Greenock
Monessen Cemetery
Union Cemetery
Irish Cemetery
Mt Olivet Cemetery
Rostraver Twp
Rostraver Cemetery
Rostraver Memorial Park
Rostraver Memorial Gardens



EXHIBIT 8

542-04



KLH ENGINEERS, INC
5173 Campbells Run Road
Pittsburgh, PA 15205
Phone: 412-494-0510
Fax: 412-494-0426
www.klhengineers.com

Legend

- STP
- Proposed Force Main
- Buena Vista EQ Tank
- Proposed Buena Vista Pump Station
- Floodway
- Floodplain
- Freshwater Pond
- Riverine
- Planning Area
- Elizabeth Township Boundary
- Municipal Boundary
- Municipal Boundaries

ELIZABETH TOWNSHIP

ALLEGHENY COUNTY PENNSYLVANIA

Buena Vista Site Plan

0 40 80
Feet

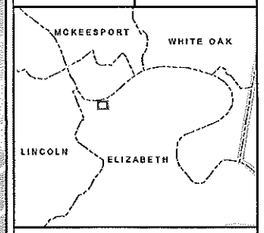
Author: RS
Date: 9/14/2016
NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
Projection: Lambert Conformal Conic

S:\Active Clients\542 Elizabeth Township Sanitary\Act 537\Elizabeth_Township_Buena Vista Site Plan.mxd



EXHIBIT 9

542-04



KLH ENGINEERS, INC
5173 Campbells Run Road
Pittsburgh, PA 15205
Phone: 412-494-0510
Fax: 412-494-0426
www.klhengineers.com

Legend

- Existing Pump Station
- Boston Proposed Force Main
- Proposed Boston Pump Station
- Freshwater Pond
- Riverine
- All hydric
- Not hydric
- Partially hydric
- Floodway
- Elizabeth Township Floodplains

ELIZABETH TOWNSHIP

ALLEGHENY COUNTY
PENNSYLVANIA

Boston PS Site Plan

0 30 60
Feet

Author: RS
Date: 9/14/2018
NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
Projection: Lambert Conformal Conic

S:\Active Clients\542 Elizabeth Township Sanitary\Act 537\Elizabeth_Township_Boston Site Plan.mxd

EXHIBIT 10

542-04

KLH
ENGINEERS, INC
5173 Campbells Run Road
Pittsburgh, PA 15205
Phone: 412-494-0510
Fax: 412-494-0426
www.klhengineers.com

Legend

- Alternative 1
- Alternative 2
- Alternative 3
- Elizabeth Township Boundary
- Municipal Boundaries
- County Boundaries
- Boston Sewershed
- Buena Vista Sewershed
- Elizabeth Sewershed

ELIZABETH TOWNSHIP

ALLEGHENY COUNTY
PENNSYLVANIA

Planning Area Deliniation Alternatives

0 2,700 5,400
Feet

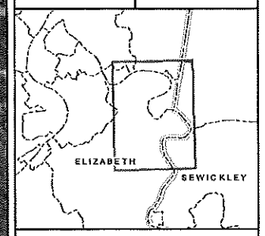
Author: RS
Date: 9/14/2016
NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
Projection: Lambert Conformal Conic

S:\Active Clients\542 Elizabeth Township SanitaryAct 537\Elizabeth_Township_Planning Area Deliniation Alternatives.mxd



EXHIBIT 11

542-04



KLH
ENGINEERS, INC
5173 Campbells Run Road
Pittsburgh, PA 15205
Phone: 412-494-0510
Fax: 412-494-0426
www.klhengineers.com

Legend

- Existing Pump Station
- Alternative I Conceptual Layout
- Sanitary Manhole
- Sanitary Pipe
- Boston Sewershed
- Buena Vista Sewershed
- Elizabeth Sewershed

ELIZABETH TOWNSHIP

ALLEGHENY COUNTY PENNSYLVANIA

Alternative 1 Conceptual Layout

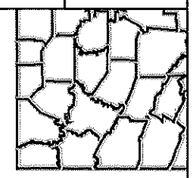
0 1,000 2,000
Feet

Author: RS
Date: 11/6/2016
NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
Projection: Lambert Conformal Conic

S:\Active Clients\542 Elizabeth Township Sanitary\Act 537\Elizabeth_Township_Alternative 1 Conceptual Layout.mxd

EXHIBIT 12

542-04



KLH ENGINEERS, INC
5173 Campbells Run Road
Pittsburgh, PA 15205
Phone: 412-494-0510
Fax: 412-494-0426
www.klhengineers.com

Legend

- Existing Pump Station
- Proposed Pump Station
- Alternative 2 Conceptual Layout
- Sanitary Manhole
- Sanitary Pipe
- Boston Sewershed
- Buena Vista Sewershed
- Elizabeth Sewershed

ELIZABETH TOWNSHIP

ALLEGHENY COUNTY
PENNSYLVANIA

Alternative 2
Conceptual Layout

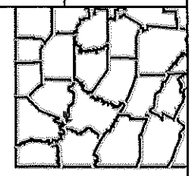
0 840 1,680
Feet

Author: RS
Date: 9/14/2016
NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
Projection: Lambert Conformal Conic

S:\Active Clients\542 Elizabeth Township Sanitary\Act 537\Elizabeth_Township_Alternative 2 Conceptual Layout.mxd

EXHIBIT 13

542-04



KLH ENGINEERS, INC
5173 Campbells Run Road
Pittsburgh, PA 15205
Phone: 412-494-0510
Fax: 412-494-0426
www.klhengineers.com

Duncan Pump Station

Alternate - 3 Forcemain

Intermediate Pump Station

Boston Pump Station

Alternate - 3 Gravity

Simpson-Howell Pump Station

Buena Vista Pump Station

Legend

- Existing Pump Station
- Proposed Pump Station
- Alternative 3 Conceptual Layout
- Sanitary Manhole
- Sanitary Pipe
- Boston Sewershed
- Buena Vista Sewershed
- Elizabeth Sewershed

ELIZABETH TOWNSHIP

ALLEGHENY COUNTY
PENNSYLVANIA

Alternative 3
Conceptual Layout

0 840 1,680
Feet

Author: RS
Date: 8/14/2016
NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
Projection: Lambert Conformal Conic

S:\Active Clients\542 Elizabeth Township Sanitary\Act 537\Elizabeth_Township_Alternative 3 Conceptual Layout.mxd

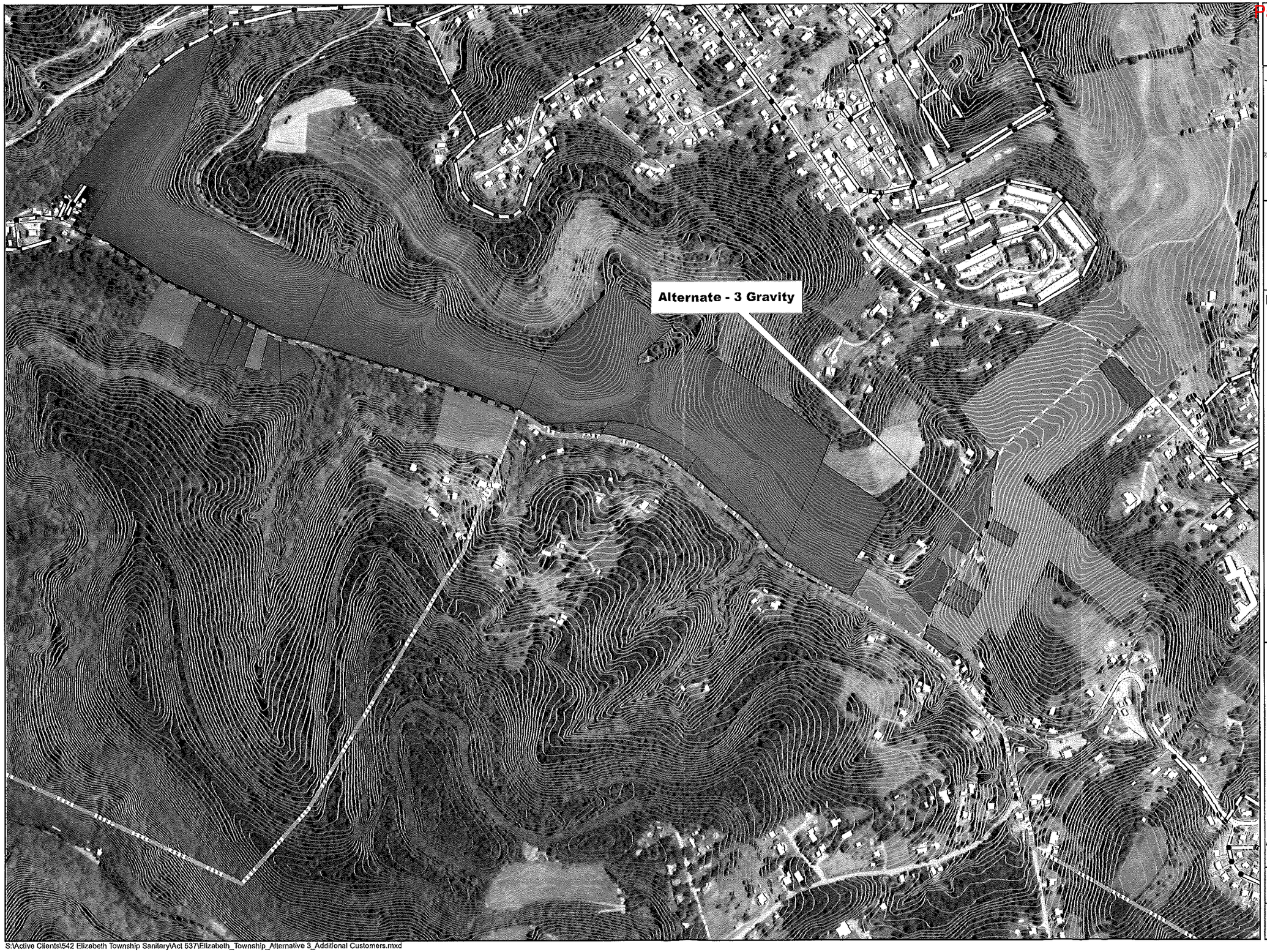
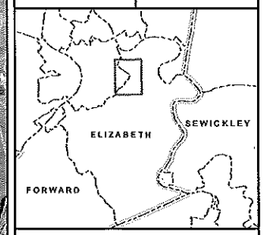


EXHIBIT 13

542-04



KLH ENGINEERS, INC
5173 Campbells Run Road
Pittsburgh, PA 15205
Phone: 412-494-0510
Fax: 412-494-0426
www.klhengineers.com

Legend

ELIZABETH TOWNSHIP

ALLEGHENY COUNTY
PENNSYLVANIA

Alternative 3
Additional Customers

0 350 700
Feet

Author: RS
Date: 9/14/2010
NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
Projection: Lambert Conformal Conic

S:\Active Clients\542 Elizabeth Township Sanitary\Act 537\Elizabeth_Township_Alternative 3_Additional Customers.mxd

ATTACHMENT B

Pennsylvania Historical and Museum
Commission Correspondence

Pennsylvania State Historic Preservation Office
PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

8 September 2016

RECEIVED
SEP 16 2016
By

Samuel Gibson
KLH Engineers, Inc.
5173 Campbells Run Road
Pittsburgh, PA 15205

RE: ER 2015-1706-003-E
DEP: Cultural Resource Notice, Boston and Buena Vista Sewersheds Act 537
Sewage Faculties Plan Update, Elizabeth Township, Allegheny County

Dear Mr. Gibson:

Thank you for submitting information concerning the above referenced project. The Pennsylvania State Historic Preservation Office reviews projects in accordance with state and federal laws. Section 106 of the National Historic Preservation Act of 1966, and the implementing regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation, is the primary federal legislation. The Environmental Rights amendment, Article 1, Section 27 of the Pennsylvania Constitution and the Pennsylvania History Code, 37 Pa. Cons. Stat. Section 500 et seq. (1988) is the primary state legislation. These laws include consideration of the project's potential effects on both historic and archaeological resources.

Archaeology
Alternative 1
Based on our records Alternative 1 for this project has been previously investigated for archaeological resources. No resources were identified and a Record of Disturbance Form was submitted to our office for review. If the project area for this alignment option has not changed no additional archaeological investigation is needed. If the area of disturbance has expanded beyond the previously considered area, our office should be notified as additional archaeological survey for this alignment may be needed.

All Other Alternatives
Based on an evaluation by our staff, there is a high probability that significant archaeological sites are located in this project area. These resources could be adversely affected by project activities. Although there are no recorded archaeological sites within the project boundaries, the soil type, topographic setting, slope direction, and distance to water of the project area are similar to the settings of known archaeological sites in the vicinity. A Phase I archaeological survey of the project area is required to locate potentially significant archaeological resources. Guidelines and instructions for conducting Phase I surveys are available on our web site or from our office upon request.

Above Ground Resources
Based on the information provided, the Pittsburgh and Lake Erie Railroad (Key No. 116800), a resource eligible for the National Register of Historic Places, is located near the project area. In our opinion, the activity described in your proposal will have no effect on such resources. Should the scope and/or nature of the project activities change, the PA SHPO should be contacted immediately.

If you need further information regarding archaeological resources, please contact Kira Heinrich at kiheinrich@pa.gov or at (717) 705-0700. If you need further information concerning above ground resources, please contact Barbara Frederick at bafrederic@pa.gov or at (717) 772-0921.

Sincerely,

Douglas C. McLearen, Chief
Division of Archaeology & Protection

KLH
ENGINEERS, INC.

August 10, 2016
Ref. No. 542-04

Pennsylvania Historical and Museum Commission
Bureau of Historic Preservation
400 North Street, Second Floor
Harrisburg, PA 17120-0093

CERTIFIED RETURN RECEIPT

To Whom It May Concern:

Elizabeth Township
Act 537 Sewage Facilities Plan Update
Cultural Resource Notice

On behalf of Elizabeth Township, KLH Engineers, Inc. is providing this Cultural Resource Notice for approval. This is being done in an effort to complete the planning required in preparation of the Act 537 Sewage Facilities Plan Update. Your response is greatly appreciated. The following attachments are included in this submission:

- Cultural Resource Notice
- USGS 7.5-minute topographic map showing the planning area and alternative alignments

The capacity of the sewerage facilities in the Boston and Buena Vista sewersheds is exceeded under peak flow conditions during major rainfall events resulting in sanitary sewer overflows into the Youghiogheny River and its tributaries. The Act 537 Sewage Facilities Plan Update is being developed to evaluate alternative sewer alignments to convey flow from these two sewersheds to McKeesport for treatment.

The planning area is shown on the attached USGS 7.5-minute topographic map. The Plan proposes pump station upgrades as well as the installation of force main and gravity sewers to convey flows from the Buena Vista sewershed to the Boston Pump Station. The Boston Pump Station will be upgraded and flow ultimately conveyed to McKeesport.

Three separate alignments are being evaluated as shown on the attached exhibit. They are as follows:

- Alternative 1 force main alignment follows the Great Allegheny Passage (Rail Trail) the entire length of the Rail Trail from a Buena Vista until it reaches the Boston Pump Station. The total length of the Alternative 1 alignment is approximately 45,700 LF. Assuming a 4' wide trench, the total earth disturbance for Alternative 1 is approximately 4.2 acres.

- Alternative 2 force main alignment follows Greenock Buena Vista Road to a new pump station near the intersection of Greenock Buena Vista Road and Broadlawn Drive. A

- force main continues into Mt. Vernon. A gravity sewer follows an existing drainage hollow to Boston Hollow Road. The gravity sewer follows Boston Hollow Road until it reaches the Boston Pump Station. The total length of the Alternative 2 alignment is approximately 21,500 LF. Assuming a 4' wide trench, the total earth disturbance for Alternative 2 is approximately 2.0 acres.

- Alternative 3 force main alignment follows Greenock Buena Vista Road to a new pump station near the intersection of Greenock Buena Vista Road and Broadlawn Drive. A force main continues along Broadlawn Drive. A gravity sewer follows Mansfield Road to Boston Hollow Road. The gravity sewer follows Boston Hollow Road until it reaches the Boston Pump Station. The total length of the Alternative 3 alignment is approximately 24,600 LF. Assuming a 4' wide trench, the total earth disturbance for Alternative 3 is approximately 2.3 acres.

Please feel free to contact our office should you have any questions or concerns.

Sincerely,

KLH ENGINEERS, INC.

Samuel R. Gibson, E.I.T.

Enclosure

0120-PM-PY0003 Rev. 5/2006
NOTICE

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

CULTURAL RESOURCE NOTICE

DEP USE ONLY
Date Received

Read the instructions before completing this form.

SECTION A. APPLICANT IDENTIFIER

Applicant Name	Elizabeth Township				
Street Address	522 Rock Run Road				
City	Elizabeth	State	PA	Zip	15037
Telephone Number	412-751-2880				
Project Title	Act 537 Sewage Facilities Plan Update				

SECTION B. LOCATION OF PROJECT

Municipality: Elizabeth Township | County Name: Allegheny | DEP County Code: 02

SECTION C. PERMITS OR APPROVALS

Name of Specific DEP Permit or Approval Requested: Act 537

Anticipated federal permits:

- ☐ Surface Mining
- ☐ Army Corps of Engineers
- ☐ 401 Water Quality Certification
- ☐ 404 Water Quality Permit
- ☐ Federal Energy Regulatory Commission
- ☐ Other:

SECTION D. GOVERNMENT FUNDING SOURCES

- ☒ State: (Name) PENNVEST
- ☐ Federal: (Name)
- ☐ Local: (Name)
- ☐ Other: (Name)

SECTION E. RESPONSIBLE DEP REGIONAL, CENTRAL, DISTRICT MINING or OIL & GAS MGMT OFFICE

DEP Regional Office Responsible for Review of Permit Application

- ☐ Central Office (Harrisburg)
- ☐ Southeast Regional Office (Norristown)
- ☐ Northeast Regional Office (Wilkes-Barre)
- ☐ Southcentral Regional Office (Harrisburg)
- ☐ Northcentral Regional Office (Williamsport)
- ☒ Southwest Regional Office (Pittsburgh)
- ☐ Northwest Regional Office (Meadville)
- ☐ District Mining Office:
- ☐ Oil & Gas Office:

SECTION F. RESPONSIBLE COUNTY CONSERVATION DISTRICT, if applicable.

County Conservation District	Telephone Number, if known
Allegheny County Conservation District	412-241-7645

SECTION G. CONSULTANT

Consultant, if applicable	KLH Engineers, Inc.				
Street Address	5173 Campbells Run Road				
City	Pittsburgh	State	PA	Zip	15205
Telephone Number	412-494-0510				

SECTION H. PROJECT BOUNDARIES AND DESCRIPTION	
REQUIRED Indicate the total acres in the property under review. Of this acreage, indicate the total acres of earth disturbance for the proposed activity. Attach a 7.5' U.S.G.S. Map indicating the defined boundary of the proposed activity. Attach photographs of any building over 50 years old. Indicate what is to be done to all buildings in the project area. Attach a narrative description of the proposed activity. Attach the return receipt of delivery of this notice to the Pennsylvania Historical and Museum Commission. **REQUESTED** Attach photographs of any building over 40 years old. Attach site map, if available.	
SECTION I. SIGNATURE BLOCK	
Applicant's Signature	8/10/2016 Date of Submission of Notice to PHMC

EXHIBIT 11

542-04

KLH
5173 Campbells Run Road
Pittsburgh, PA 15205
Phone: 412-494-0510
Fax: 412-494-0426
www.klhengineers.com

Legend

- Alternative 1
- Alternative 2
- Alternative 3
- Elizabeth Township Boundary
- Municipal Boundaries
- County Boundaries
- Boston Sewershed
- Buena Vista Sewershed
- Elizabeth Sewershed

ELIZABETH TOWNSHIP

ALLEGHENY COUNTY
PENNSYLVANIA

Planning Area Deliniation Alternatives

0 2,700 5,400
Feet

Area 68
Date: 4-10-2014
NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
Projection: Lambert Conformal Conic

S:\Active Clients\542 Elizabeth Township Sanitary\Act 537\Elizabeth_Township_Planning Area Deliniation Alternatives.mxd

ATTACHMENT C

Pennsylvania Natural Diversity Inventory Results

1. PROJECT INFORMATION

Project Name: **Elizabeth Township Act 537 Plan Update**
Date of Review: **8/10/2016 10:06:35 AM**
Project Category: **Waste Transfer, Treatment, and Disposal, Liquid waste/Effluent, Sewage module/Act 537 plan**
Project Area: **97.23 acres**
County(s): **Allegheny**
Township/Municipality(s): **ELIZABETH; LINCOLN**
ZIP Code: **15018; 15037; 15133; 15135**
Quadrangle Name(s): **MC KEESPORT**
Watersheds HUC 8: **Youghiogheny**
Watersheds HUC 12: **Pollack Run-Youghiogheny River**
Decimal Degrees: **40.280693, -79.809034**
Degrees Minutes Seconds: **40° 16' 50.4953" N, 79° 48' 32.5216" W**

2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	No Known Impact	No Further Review Required
PA Department of Conservation and Natural Resources	No Known Impact	No Further Review Required
PA Fish and Boat Commission	No Known Impact	No Further Review Required
U.S. Fish and Wildlife Service	No Known Impact	No Further Review Required

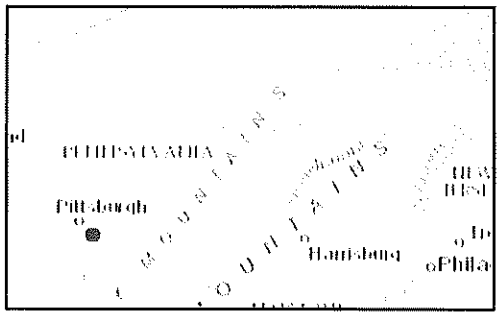
As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate no known impacts to threatened and endangered species and/or special concern species and resources within the project area. Therefore, based on the information you provided, no further coordination is required with the jurisdictional agencies. This response does not reflect potential agency concerns regarding impacts to other ecological resources, such as wetlands.

Elizabeth Township Act 537 Plan Update



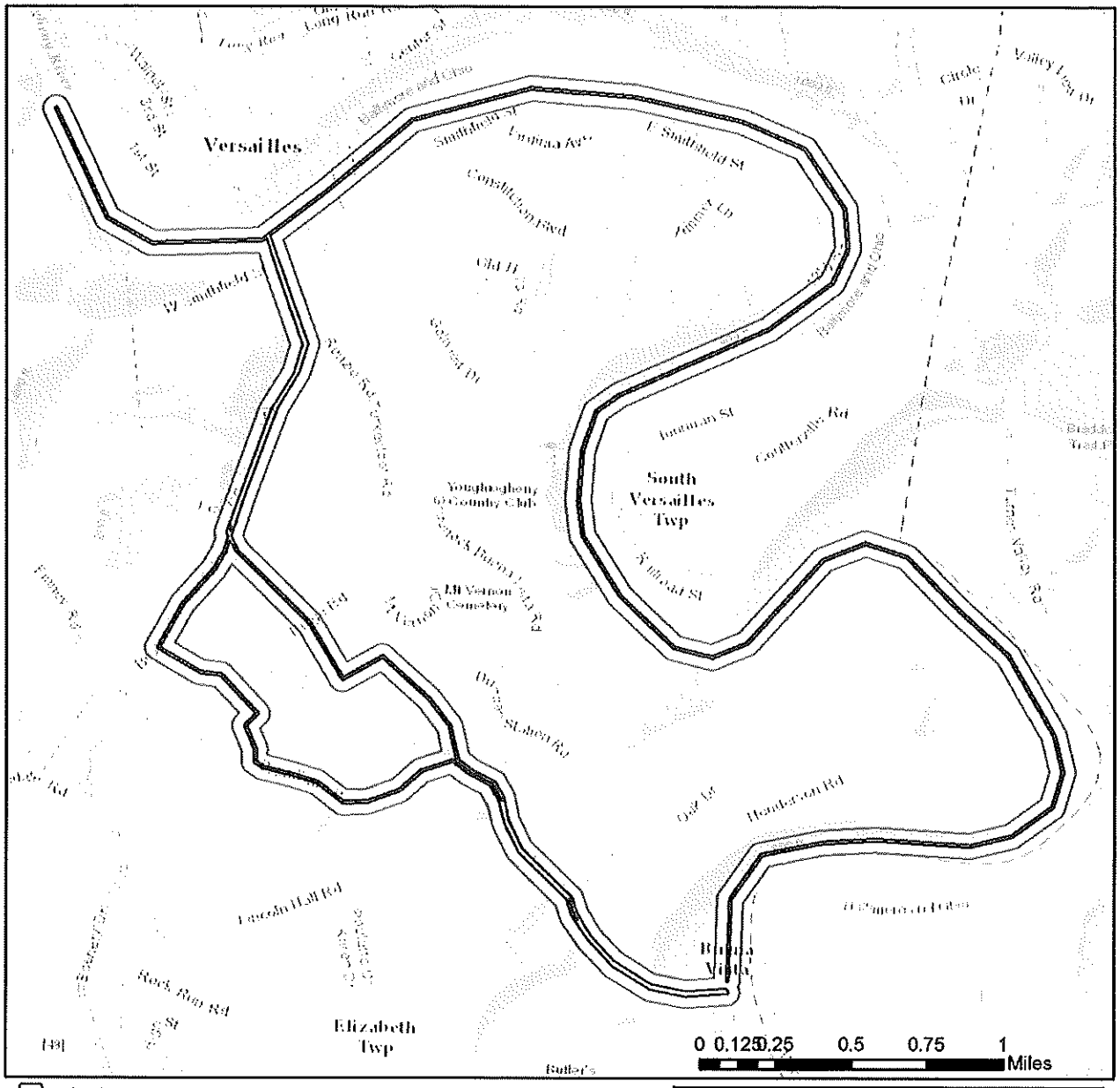
Project Boundary

Buffered Project Boundary



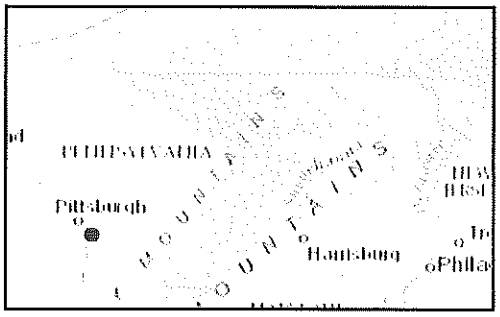
Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA,

Elizabeth Township Act 537 Plan Update



Project Boundary

Buffered Project Boundary



Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jursidictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

PA Game Commission
RESPONSE:
No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Department of Conservation and Natural Resources
RESPONSE:
No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Fish and Boat Commission
RESPONSE:
No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

U.S. Fish and Wildlife Service
RESPONSE:
No impacts to **federally** listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq. is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other authorities.

4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. Two review options are available to permit applicants for handling PNDI coordination in conjunction with DEP's permit review process involving either T&E Species or species of special concern. Under sequential review, the permit applicant performs a PNDI screening and completes all coordination with the appropriate jurisdictional agencies prior to submitting the permit application. The applicant will include with its application, both a PNDI receipt and/or a clearance letter from the jurisdictional agency if the PNDI Receipt shows a Potential Impact to a species or the applicant chooses to obtain letters directly from the jurisdictional agencies. Under concurrent review, DEP, where feasible, will allow technical review of the permit to occur concurrently with the T&E species consultation with the jurisdictional agency. The applicant must still supply a copy of the PNDI Receipt with its permit application. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. The applicant and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at https://conservationexplorer.dcnr.pa.gov/content/resources.

5. ADDITIONAL INFORMATION

The PNDI environmental review website is a preliminary screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

6. AGENCY CONTACT INFORMATION

PA Department of Conservation and Natural Resources
Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552
Harrisburg, PA 17105-8552
Email: RA-HeritageReview@pa.gov
Fax:(717) 772-0271

U.S. Fish and Wildlife Service
Pennsylvania Field Office
Endangered Species Section
110 Radnor Rd; Suite 101
State College, PA 16801
NO Faxes Please

PA Fish and Boat Commission
Division of Environmental Services
450 Robinson Lane, Bellefonte, PA 16823
Email: RA-FBPACENOTIFY@pa.gov

PA Game Commission
Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA 17110-9797
Email: RA-PGC_PNDI@pa.gov
NO Faxes Please

7. PROJECT CONTACT INFORMATION

Name: Sam Gibson
Company/Business Name: KLH Engineers, Inc.
Address: 5173 Campbells Run Rd.
City, State, Zip: Pittsburgh, PA 15205
Phone:(412) 494-0510 Fax:(412) 494-0426
Email: sgibson@klhengineers.com

8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

applicant/project proponent signature

8/10/16
date

APPENDIX B

Act 537 Plan Content and Environmental Assessment Checklist

3850-FM-BCW0003 6/2016
Instructions

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CLEAN WATER

INSTRUCTIONS FOR COMPLETING ACT 537 PLAN CONTENT AND ENVIRONMENTAL ASSESSMENT CHECKLIST

Remove and recycle these instructions prior to submission.

CHECKLIST INSTRUCTIONS

These instructions are designed to assist the applicant in completing the *Act 537 Plan Content and Environmental Assessment Checklist.*

This checklist is composed of three parts: one for "General Information," one for "Administrative Completeness," and one for "General Plan Content". A plan must be ***administratively complete*** in order to be formally reviewed by the Department of Environmental Protection (DEP). The "General Plan Content" portion of the checklist identifies each of the issues that must be addressed in your Act 537 Plan Update based on the pre-planning meeting between you and/or your consultant and DEP.

Use the right-hand column blanks in the checklist to identify the page in the plan on which each planning issue is found or to reference a previously approved update or special study (title and page number).

If you determine a planning issue is not applicable even though it was previously thought to be needed, please explain your decision within the text of the plan (or as a footnote) and indicate the page number where this documentation is found.

When information required as part of an official plan update revision has been developed separately or in a previous update revision, incorporate the information by reference to the planning document and page.

For specific details covering the Act 537 planning requirements, refer to 25 *Pa. Code* Chapters 71 and 73 of DEP's regulations.

Wastewater projects proposing funding through the following sources must prepare an "Environmental Report" as described in the Uniform Environmental Review (UER) process and include it with the plan submission designated as "Plan-Appendix A". The following funding programs use the UER process.

- The Clean Water State Revolving Loan Fund (PENNVEST, DEP, EPA)
- The RUS Water and Waste Disposal Grant and Loan Program (USDA-RD)
- The Community Development Block Grant Program (DCED, HUG)
- Other Federal Funding Efforts (EPA)

The checklist items or portions of checklist items required in the Act 537 Plan Update revision and that are also included in the UER process are indicated by shading. Most of the "Environmental Report" document may be constructed from the Act 537 Official Plan Update revision by using "copy & paste" techniques. The technical guidance document *Guidelines for the Uniform Environmental Review Process in Pennsylvania* (381-5511-111) is available electronically in DEP's eLibrary online at www.dep.pa.gov.

After Municipal Adoption by Resolution, submit 3 copies of the plan, any attachments or addenda and this checklist to DEP.

A copy of this completed checklist must be included with your Act 537 plan. DEP will use the "DEP USE ONLY" column during the completeness evaluation of the plan. This column may also be used by DEP during the pre-planning meeting with the municipality to identify planning elements that are not required to be included in the plan.

3850-FM-BCW0003 6/2016
Checklist

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CLEAN WATER

ACT 537 PLAN CONTENT AND ENVIRONMENTAL ASSESSMENT CHECKLIST

PART 1 GENERAL INFORMATION

A. Project Information

1. Project Name Elizabeth Township Act 537 Sewage Facilities Plan Update

2. Brief Project Description The Act 537 Sewage Facilities Plan Update was prepared to evaluate sewage facilities alternatives to handle existing and future wastewater flows in the Boston and Buena Vista sewersheds in Elizabeth Township, Allegheny County, Pennsylvania.

B. Client (Municipality) Information

Municipality Name	County	City	Boro	Twp
Elizabeth Township	Allegheny	☐	☐	☒

Municipality Contact Individual - Last Name	First Name	MI	Suffix	Title
Zang	Lauren			Office Manager
Additional Individual Last Name	First Name	MI	Suffix	Title

Municipality Mailing Address Line 1	Mailing Address Line 2
522 Rock Run Road	

Address Last Line -- City	State	ZIP+4
Elizabeth	PA	15037

Phone + Ext.	FAX (optional)	Email (optional)
412-751-2880	412-751-6002	lzang@elizabethtwppa.com

C. Site Information

Site (or Project) Name	(Municipal Name) Act 537 Plan
Elizabeth Township Act 537 Sewage Facilities Plan Update	

Site Location Line 1	Site Location Line 2
Elizabeth Township	

D. Project Consultant Information

Last Name	First Name	MI	Suffix
Churilla	Bryan	M	

Title	Consulting Firm Name
Vice President	KLH Engineers, Inc.

Mailing Address Line 1	Mailing Address Line 2
5173 Campbells Run Road	

Address Last Line – City	State	ZIP+4	Country
Pittsburgh	PA	15205	USA

Email	Phone + Ext.	FAX
bchurilla@klhengineers.com	412-494-0510 ext. 126	412-494-0426

PART 2 ADMINISTRATIVE COMPLETENESS CHECKLIST

DEP Use Only	Indicate Page #(s) in Plan	In addition to the main body of the plan, the plan must include items one through eight listed below to be accepted for formal review by DEP. Incomplete plans may be ***denied*** unless the municipality is clearly requesting an advisory review.
_____	i	1. **Table of Contents**
		2. **Plan Summary**
_____	1	A. Identify the proposed service areas and major problems evaluated in the plan. (Reference - 25 *Pa. Code* §71.21(a)(7)(i)).
_____	2	B. Identify the alternative(s) chosen to solve the problems and serve the areas of need identified in the plan. Also, include any institutional arrangements necessary to implement the chosen alternative(s). (Reference - 25 *Pa. Code* §71.21(a)(7)(ii)).
_____	3	C. Present the estimated cost of implementing the proposed alternative (including the user fees) and the proposed funding method to be used. (Reference - 25 *Pa. Code* §71.21(a)(7)(ii)).
_____	3	D. Identify the municipal commitments necessary to implement the Plan. (Reference - 25 *Pa. Code* §71.21(a)(7)(iii)).
_____	6	E. Provide a schedule of implementation for the project that identifies the ***major*** milestones with dates necessary to accomplish the project to the point of operational status. (Reference - 25 *Pa. Code* §71.21(a)(7)(iv)).
_____	5	3. **Municipal Adoption:** ***Original***, signed and sealed Resolution of Adoption by the municipality which contains, at a minimum, alternatives chosen and a commitment to implement the Plan in accordance with the implementation schedule. (Reference - 25 *Pa. Code* §71.31(f)) Section V.F. of the Planning Guide.
_____	5	4. **Planning Commission / County Health Department Comments**: Evidence that the municipality has requested, reviewed and considered comments by appropriate official planning agencies of the municipality, planning agencies of the county, planning agencies with area wide jurisdiction (where applicable), and any existing county or joint county departments of health. (Reference - 25 *Pa. Code* §71.31(b)) Section V.E.1 of the Planning Guide.
_____	5	5. **Publication:** Proof of Public Notice which documents the proposed plan adoption, plan summary, and the establishment and conduct of a 30-day comment period. (Reference - 25 *Pa. Code* §71.31(c)) Section V.E.2 of the Planning Guide.
_____	5	6. **Comments and Responses:** Copies of ***all*** written comments received and municipal response to ***each*** comment in relation to the proposed plan. (Reference - 25 *Pa. Code* §71.31(c)) Section V.E.2 of the Planning Guide.
_____	6	7. **Implementation Schedule:** A complete project implementation schedule with milestone dates specific for each existing and future area of need. Other activities in the project implementation schedule should be indicated as occurring a finite number of days from a major milestone. (Reference - 25 *Pa. Code* §71.31(d)) Section V.F. of the Planning Guide. Include dates for the future initiation of feasibility evaluations in the project's implementation schedule for areas proposing completion of sewage facilities for planning periods in excess of five years. (Reference - 25 *Pa. Code* §71.21(c)).
_____	6	8. **Consistency Documentation:** Documentation indicating that the appropriate agencies have received, reviewed and concurred with the method proposed to resolve identified inconsistencies within the proposed alternative and consistency requirements in 25 *Pa. Code* §71.21.(a)(5)(i-iii). (Reference - 25 *Pa. Code* §71.31(e)). Appendix B of the Planning Guide.

PART 3 GENERAL PLAN CONTENT CHECKLIST

DEP Use Only	Indicate Page #(s) in Plan		Item Required
____	7	I.	**Previous Wastewater Planning**
			A. Identify, describe and briefly analyze all past wastewater planning for its impact on the current planning effort:
____	7		1. Previously undertaken under the Pennsylvania Sewage Facilities Act (Act). (Reference - Act 537, 35 P.S. §750.5(d)(1)).
____	8		2. Has not been carried out according to an approved implementation schedule contained in the plans. (Reference - 25 *Pa. Code* §71.21(a)(5)(i)(A-D)). Section V.F of the Planning Guide.
____	9		3. Is anticipated or planned by applicable sewer authorities or approved under a Chapter 94 Corrective Action Plan. (Reference - 25 *Pa. Code* §71.21(a)(5)(i)(A&B)). Section V.D. of the Planning Guide.
____	10		4. Through planning modules for new land development, planning "exemptions" and addenda. (Reference - 25 *Pa. Code* §71.21(a)(5)(i)(A)).
____	10	II.	**Physical and Demographic Analysis utilizing written description and mapping** (All items listed below require maps, and all maps should show all current lots and structures and be of appropriate scale to clearly show significant information).
____	10		A. Identification of planning area(s), municipal boundaries, Sewer Authority/Management Agency service area boundaries. (Reference – 25 *Pa. Code* §71.21(a)(1)(i)).
____	10		B. Identification of physical characteristics (streams, lakes, impoundments, natural conveyance, channels, drainage basins in the planning area). (Reference - 25 *Pa. Code* §71.21(a)(1)(ii)).
____	11		C. Soils - Analysis with description by soil type and soils mapping for areas not presently served by sanitary sewer service. Show areas suitable for in-ground onlot systems, elevated sand mounds, individual residential spray irrigation systems (IRSIS), and areas unsuitable for soil dependent systems. (Reference - 25 *Pa. Code* §71.21(a)(1)(iii)). Show Prime Agricultural Soils and any locally protected agricultural soils. (Reference - 25 *Pa. Code* §71.21(a)(1)(iii)).
____	12		D. Geologic Features - (1) Identification through analysis, (2) mapping and (3) their relation to existing or potential nitrate-nitrogen pollution and drinking water sources. Include areas where existing nitrate-nitrogen levels are in excess of 5 mg/L. (Reference - 25 *Pa. Code* §71.21(a)(1)(iii)).
____	13		E. Topography - Depict areas with slopes that are suitable for conventional systems; slopes that are suitable for elevated sand mounds and slopes that are unsuitable for onlot systems. (Reference - 25 *Pa. Code* §71.21(a)(1)(ii)).
____	13		F. Potable Water Supplies - Identification through mapping, description and analysis. Include public water supply service areas and available public water supply capacity and aquifer yield for groundwater supplies. (Reference - 25 *Pa. Code* §71.21(a)(1)(vi)). Section V.C. of the Planning Guide.
____	13		G. Wetlands-Identify wetlands as defined in 25 *Pa. Code* Chapter 105 by description, analysis and mapping. Include National Wetland Inventory mapping and potential wetland areas per the United States Department of Agricultural (USDA) Natural Resources Conservation Service (NRCS) mapped hydric soils. Proposed collection, conveyance and treatment facilities and lines must be located and labeled, along with the identified wetlands, on the map. (Reference - 25 *Pa. Code* §71.21(a)(1)(v)). Appendix B, Section II.I of the Planning Guide.

14 **III. Existing Sewage Facilities in the Planning Area - Identifying the Existing Needs**

A. Identify, map and describe municipal and non-municipal, individual and community sewerage systems in the planning area including:

14 1. Location, size and ownership of treatment facilities, main intercepting lines, pumping stations and force mains including their size, capacity, point of discharge. Also include the name of the receiving stream, drainage basin, and the facility's effluent discharge requirements. (Reference - 25 *Pa. Code* §71.21(a)(2)(i)(A)).

15 2. A narrative and schematic diagram of the facility's basic treatment processes including the facility's National Pollutant Discharge Elimination System (NPDES) permitted capacity, and the Clean Streams Law permit number. (Reference - 25 *Pa. Code* §71.21(a)(2)(i)(A)).

16 3. A description of problems with existing facilities (collection, conveyance and/or treatment), including existing or projected overload under 25 *Pa. Code* Chapter 94 (relating to municipal wasteload management) or violations of the NPDES permit, Clean Streams Law permit, or other permit, rule or regulation of DEP. (Reference - 25 *Pa. Code* §71.21(a)(2)(i)(B)).

18 4. Details of scheduled or in-progress upgrading or expansion of treatment facilities and the anticipated completion date of the improvements. Discuss any remaining reserve capacity and the policy concerning the allocation of reserve capacity. Also discuss the compatibility of the rate of growth to existing and proposed wastewater treatment facilities. (Reference - 25 *Pa. Code* §71.21(a)(4)(i & ii)).

18 5. A detailed description of the municipality's operation and maintenance (O & M) requirements for small flow treatment facility systems, including the status of past and present compliance with these requirements and any other requirements relating to sewage management programs (SMPs). (Reference – 25 *Pa. Code* §71.21(a)(2)(i)(C)).

18 6. Disposal areas, if other than stream discharge, and any applicable groundwater limitations. (Reference - 25 *Pa. Code* §71.21(a)(4)(i & ii)).

18 B. Using DEP's publication titled *Act 537 Sewage Disposal Needs Identification* (3800-BK-DEP1949), identify, map and describe areas that utilize individual and community onlot sewage disposal and, unpermitted collection and disposal systems ("wildcat" sewers, borehole disposal, etc.) and retaining tank systems in the planning area including:

18 1. The types of onlot systems in use. (Reference - 25 *Pa. Code* §71.21(a)(2)(ii)(A)).

18 2. A sanitary survey complete with description, map and tabulation of documented and potential public health, pollution, and operational problems (including malfunctioning systems) with the systems, including violations of local ordinances, the Act, the Clean Stream Law or regulations promulgated thereunder. (Reference - 25 *Pa. Code* §71.21(a)(2)(ii)(B)).

19 3. A comparison of the types of onlot sewage systems installed in an area with the types of systems which are appropriate for the area according to soil, geologic conditions, topographic limitations sewage flows, and 25 *Pa. Code* Chapter 73 (relating to standards for sewage disposal facilities). (Reference - 25 *Pa. Code* §71.21(a)(2)(ii)(C)).

19 4. An individual water supply survey to identify possible contamination by malfunctioning onlot sewage disposal systems consistent with DEP's *Act 537 Sewage Disposal Needs Identification* publication. (Reference – 25 *Pa. Code* §71.21(a)(2)(ii)(B)).

19 5. Detailed description of O & M requirements of the municipality for individual and small volume community onlot systems, including the status of past and present compliance with these requirements and any other requirements relating to SMPs. (Reference - 25 *Pa. Code* §71.21(a)(2)(i)(C)).

19 C. Identify wastewater sludge and septage generation, transport and disposal methods. Include this information in the sewage facilities alternative analysis including:

19 1. Location of sources of wastewater sludge or septage (Septic tanks, holding tanks, wastewater treatment facilities). (Reference – 25 *Pa. Code* §71.71).

19 2. Quantities of the types of sludges or septage generated. (Reference - 25 *Pa. Code* §71.71).

20 3. Present disposal methods, locations, capacities and transportation methods. (Reference - 25 *Pa. Code* §71.71).

21 **IV. Future Growth and Land Development**

A. Identify and briefly summarize all municipal and county planning documents adopted pursuant to the Pennsylvania Municipalities Planning Code (Act 247) including:

21 1. All land use plans and zoning maps that identify residential, commercial, industrial, agricultural, recreational and open space areas. (Reference - 25 *Pa. Code* §71.21(a)(3)(iv)).

21 2. Zoning or subdivision regulations that establish lot sizes predicated on sewage disposal methods. (Reference – 25 *Pa. Code* §71.21(a)(3)(iv)).

21 3. All limitations and plans related to floodplain and stormwater management and special protection (25 *Pa. Code* Chapter 93) areas. (Reference - 25 *Pa. Code* §71.21(a)(3)(iv)) Appendix B, Section II.F of the Planning Guide.

23 B. Delineate and describe the following through map, text and analysis.

23 1. Areas with existing development or plotted subdivisions. Include the name, location, description, total number of equivalent dwelling units (EDUs) in development, total number of EDUs currently developed and total number of EDUs remaining to be developed (include time schedule for EDUs remaining to be developed). (Reference - 25 *Pa. Code* §71.21(a)(3)(i)).

26 2. Land use designations established under the Pennsylvania Municipalities Planning Code (35 P.S. 10101-11202), including residential, commercial and industrial areas. (Reference - 25 *Pa. Code* §71.21(a)(3)(ii)). Include a comparison of proposed land use as allowed by zoning and existing sewage facility planning. (Reference - 25 *Pa. Code* §71.21(a)(3)(iv)).

27 3. Future growth areas with population and EDU projections for these areas using historical, current and future population figures and projections of the municipality. Discuss and evaluate discrepancies between local, county, state and federal projections as they relate to sewage facilities. (Reference - 25 *Pa. Code* §71.21(a)(1)(iv) and (a)(3)(iii)).

27 4. Zoning, and/or subdivision regulations; local, county or regional comprehensive plans; and existing plans of any other agency relating to the development, use and protection of land and water resources with special attention to: (Reference - 25 *Pa. Code* §71.21(a)(3)(iv)).

--public ground/surface water supplies
--recreational water use areas
--groundwater recharge areas
--industrial water use
--wetlands

27 5. Sewage planning necessary to provide adequate wastewater treatment for 5 and 10-year future planning periods based on projected growth of existing and proposed wastewater collection and treatment facilities. (Reference - 25 *Pa. Code* §71.21(a)(3)(v)).

28 **V. Identify Alternatives to Provide New or Improved Wastewater Disposal Facilities**

A. Conventional collection, conveyance, treatment and discharge alternatives including:

30 1. The potential for regional wastewater treatment. (Reference - 25 *Pa. Code* §71.21(a)(4)).

30 2. The potential for extension of existing municipal or non-municipal sewage facilities to areas in need of new or improved sewage facilities. (Reference - 25 *Pa. Code* §71.21(a)(4)(i)).

31 3. The potential for the continued use of existing municipal or non-municipal sewage facilities through one or more of the following: (Reference - 25 *Pa. Code* §71.21(a)(4)(ii)).

31 a. Repair. (Reference - 25 *Pa. Code* §71.21(a)(4)(ii)(A)).

31 b. Upgrading. (Reference - 25 *Pa. Code* §71.21(a)(4)(ii)(B)).

31 c. Reduction of hydraulic or organic loading to existing facilities. (Reference - 25 *Pa. Code* §71.71).

31 d. Improved O & M. (Reference - 25 *Pa. Code* §71.21(a)(4)(ii)(C)).

31 e. Other applicable actions that will resolve or abate the identified problems. (Reference - 25 *Pa. Code* §71.21(a)(4)(ii)(D)).

32 4. Repair or replacement of existing collection and conveyance system components. (Reference - 25 *Pa. Code* §71.21(a)(4)(ii)(A)).

32 5. The need for construction of new community sewage systems including sewer systems and/or treatment facilities. (Reference - 25 *Pa. Code* §71.21(a)(4)(iii)).

32 6. Use of innovative/alternative methods of collection/conveyance to serve needs areas using existing wastewater treatment facilities. (Reference - 25 *Pa. Code* §71.21(a)(4)(ii)(B)).

33 B. The use of individual sewage disposal systems including IRSIS systems based on:

NA 1. Soil and slope suitability. (Reference - 25 *Pa. Code* §71.21(a)(2)(ii)(C)).

NA 2. Preliminary hydrogeologic evaluation. (Reference - 25 *Pa. Code* §71.21(a)(2)(ii)(C)).

NA 3. The establishment of a SMP. (Reference - 25 *Pa. Code* §71.21(a)(4)(iv)). See also Part "F" below.

NA 4. The repair, replacement or upgrading of existing malfunctioning systems in areas suitable for onlot disposal considering: (Reference - 25 *Pa. Code* §71.21(a)(4)).

NA a. Existing technology and sizing requirements of 25 *Pa. Code* Chapter 73. (Reference - 25 *Pa. Code* §73.31-§73.72).

NA b. Use of expanded absorption areas or alternating absorption areas. (Reference - 25 *Pa. Code* §73.16).

NA c. Use of water conservation devices. (Reference - 25 *Pa. Code* §71.73(b)(2)(iii)).

_____	33	C. The use of small flow sewage treatment facilities or package treatment facilities to serve individual homes or clusters of homes with consideration of: (Reference - 25 *Pa. Code* §71.64(d)).
_____	NA	1. Treatment and discharge requirements. (Reference - 25 *Pa. Code* §71.64(d)).
_____	NA	2. Soil suitability. (Reference - 25 *Pa. Code* §71.64(c)(1)).
_____	NA	3. Preliminary hydrogeologic evaluation. (Reference - 25 *Pa. Code* §71.64(c)(2)).
_____	NA	4. Municipal, Local Agency or other controls over O & M requirements through a SMP. (Reference - 25 *Pa. Code* §71.64(d)). See Part "F" below.
_____	33	D. The use of community land disposal alternatives including:
_____	NA	1. Soil and site suitability. (Reference - 25 *Pa. Code* §71.21(a)(2)(ii)(C)).
_____	NA	2. Preliminary hydrogeologic evaluation. (Reference - 25 *Pa. Code* §71.21(a)(2)(ii)(C)).
_____	NA	3. Municipality, Local Agency or other controls over O & M requirements through a SMP. (Reference - 25 *Pa. Code* §71.21(a)(2)(ii)(C)). See Part "F" below.
_____	NA	4. The rehabilitation or replacement of existing malfunctioning community land disposal systems. (See Part "V", B, 4, a, b, c above). See also Part "F" below.
_____	34	E. The use of retaining tank alternatives on a temporary or permanent basis including: (Reference - 25 *Pa. Code* §71.21(a)(4)).
_____	NA	1. Commercial, residential and industrial use. (Reference - 25 *Pa. Code* §71.63(e)).
_____	NA	2 Designated conveyance facilities (pumper trucks). (Reference - 25 *Pa. Code* §71.63(b)(2)).
_____	NA	3. Designated treatment facilities or disposal site. (Reference - 25 *Pa. Code* §71.63(b)(2)).
_____	NA	4. Implementation of a retaining tank ordinance by the municipality. (Reference - 25 *Pa. Code* §71.63(c)(3)). See Part "F" below.
_____	NA	5. Financial guarantees when retaining tanks are used as an interim sewage disposal measure. (Reference - 25 *Pa. Code* §71.63(c)(2)).
_____	34	F. SMPs to assure the future O & M of existing and proposed sewage facilities through:
_____	NA	1. Municipal ownership or control over the O & M of individual onlot sewage disposal systems, small flow treatment facilities, or other traditionally non-municipal treatment facilities. (Reference - 25 *Pa. Code* §71.21(a)(4)(iv)).
_____	NA	2. Required inspection of sewage disposal systems on a schedule established by the municipality. (Reference - 25 *Pa. Code* §71.73(b)(1)).
_____	NA	3. Required maintenance of sewage disposal systems including septic and aerobic treatment tanks and other system components on a schedule established by the municipality. (Reference - 25 *Pa. Code* §71.73(b)(2)).
_____	NA	4. Repair, replacement or upgrading of malfunctioning onlot sewage systems. (Reference - 25 *Pa. Code* §71.21(a)(4)(iv) and §71.73(b)(5)) through:
_____	NA	a. Aggressive pro-active enforcement of ordinances that require O & M and prohibit malfunctioning systems. (Reference - 25 *Pa. Code* §71.73(b)(5)).
_____	NA	b. Public education programs to encourage proper O & M and repair of sewage disposal systems.
_____	NA	5. Establishment of joint municipal SMPs. (Reference - 25 *Pa. Code*

§71.73(b)(8)).

NA 6. Requirements for bonding, escrow accounts, management agencies or associations to assure O & M for non-municipal facilities. (Reference - 25 *Pa. Code* §71.71).

35 G. Non-structural comprehensive planning alternatives that can be undertaken to assist in meeting existing and future sewage disposal needs including: (Reference - 25 *Pa. Code* §71.21(a)(4)).

1. Modification of existing comprehensive plans involving:

NA a. Land use designations. (Reference - 25 *Pa. Code* §71.21(a)(4)).

NA b. Densities. (Reference - 25 *Pa. Code* §71.21(a)(4)).

NA c. Municipal ordinances and regulations. (Reference - 25 *Pa. Code* §71.21(a)(4)).

NA d. Improved enforcement. (Reference - 25 *Pa. Code* §71.21(a)(4)).

NA e. Protection of drinking water sources. (Reference - 25 *Pa. Code* §71.21(a)(4)).

NA 2. Consideration of a local comprehensive plan to assist in producing sound economic and consistent land development. (Reference - 25 *Pa. Code* §71.21(a)(4)).

NA 3. Alternatives for creating or changing municipal subdivision regulations to assure long-term use of on-site sewage disposal that consider lot sizes and protection of replacement areas. (Reference - 25 *Pa. Code* §71.21(a)(4)).

NA 4. Evaluation of existing local agency programs and the need for technical or administrative training. (Reference - 25 *Pa. Code* §71.21(a)(4)).

35 H. A no-action alternative which includes discussion of both short-term and long-term impacts on: (Reference - 25 *Pa. Code* §71.21(a)(4)).

35 1. Water quality/public health. (Reference - 25 *Pa. Code* §71.21(a)(4)).

35 2. Growth potential (residential, commercial, industrial). (Reference - 25 *Pa. Code* §71.21(a)(4)).

35 3. Community economic conditions. (Reference - 25 *Pa. Code* §71.21(a)(4)).

35 4. Recreational opportunities. (Reference - 25 *Pa. Code* §71.21(a)(4)).

35 5. Drinking water sources. (Reference - 25 *Pa. Code* §71.21(a)(4)).

35 6. Other environmental concerns. (Reference - 25 *Pa. Code* §71.21(a)(4)).

36 **VI. Evaluation of Alternatives**

A. Technically feasible alternatives identified in Section V of this checklist must be evaluated for consistency with respect to the following: (Reference - 25 *Pa. Code* §71.21(a)(5)(i)).

36 1. Applicable plans developed and approved under **Sections 4 and 5 of the Clean Streams Law or Section 208 of the Clean Water Act** (33 U.S.C.A. 1288). (Reference - 25 *Pa. Code* §71.21(a)(5)(i)(A)). Appendix B, Section II.A of the Planning Guide.

37 2. Municipal wasteload management **Corrective Action Plans or Annual Reports** developed under 25 *Pa. Code* Chapter 94. (Reference - 25 *Pa. Code* §71.21(a)(5)(i)(B)). The municipality's recent Wasteload Management (25 *Pa. Code* Chapter 94) Reports should be examined to determine if the proposed alternative is consistent with the recommendations and findings of the report. Appendix B, Section II.B of the Planning Guide.

37 3. Plans developed under **Title II of the Clean Water Act** (33 U.S.C.A.

1281-1299) or **Titles II and VI of the Water Quality Act of 1987** (33 U.S.C.A 1251-1376). (Reference - 25 *Pa. Code* §71.21(a)(5)(i)(C)). Appendix B, Section II.E of the Planning Guide.

37 4. **Comprehensive plans** developed under the Pennsylvania Municipalities Planning Code. (Reference - 25 *Pa. Code* §71.21(a)(5)(i)(D)). The municipality's comprehensive plan must be examined to assure that the proposed wastewater disposal alternative is consistent with land use and all other requirements stated in the comprehensive plan. Appendix B, Section II.D of the Planning Guide.

38 5. **Antidegradation requirements** as contained in 25 *Pa. Code* Chapters 93, 95 and 102 (relating to water quality standards, wastewater treatment requirements and erosion control) and the Clean Water Act. (Reference - 25 *Pa. Code* §71.21(a)(5)(i)(E). Appendix B, Section II.F of the Planning Guide.

38 6. **State Water Plans** developed under the Water Resources Planning Act (42 U.S.C.A. 1962-1962 d-18). (Reference - 25 *Pa. Code* §71.21(a)(5)(i)(F)). Appendix B, Section II.C of the Planning Guide.

38 7. **Pennsylvania Prime Agricultural Land Policy** contained in Title 4 of the Pennsylvania Code, Chapter 7, Subchapter W. Provide narrative on local municipal policy and an overlay map on prime agricultural soils. (Reference - 25 *Pa. Code* §71.21(a)(5)(i)(G)). Appendix B, Section II.G of the Planning Guide.

39 8. **County Stormwater Management Plans** approved by DEP under the Storm Water Management Act (32 P.S. 680.1-680.17). (Reference - 25 *Pa. Code* §71.21(a)(5)(i)(H)). Conflicts created by the implementation of the proposed wastewater alternative and the existing recommendations for the management of stormwater in the county Stormwater Management Plan must be evaluated and mitigated. If no plan exists, no conflict exists. Appendix B, Section II.H of the Planning Guide.

39 9. **Wetland Protection.** Using wetland mapping developed under Checklist Section II.G, identify and discuss mitigative measures including the need to obtain permits for any encroachments on wetlands from the construction or operation of any proposed wastewater facilities. (Reference - 25 *Pa. Code* §71.21(a)(5)(i)(I)) Appendix B, Section II.I of the Planning Guide.

40 10. **Protection of rare, endangered or threatened plant and animal species** as identified by the Pennsylvania Natural Diversity Inventory (PNDI). (Reference - 25 *Pa. Code* §71.21(a)(5)(i)(J)). Provide DEP with a copy of the completed *PNDI Manual Project Submission Form*. Also provide a copy of the response letters from the 4 jurisdictional agencies regarding the findings of the PNDI search. Appendix B, Section II.J of the Planning Guide.

40 11. **Historical and archaeological resource protection** under P.C.S. Title 37, Section 507 relating to cooperation by public officials with the Pennsylvania Historical and Museum Commission (PHMC). (Reference - 25 *Pa. Code* §71.21(a)(5)(i)(K)). Provide DEP with a completed copy of a *Cultural Resource Notice* and a return receipt for its submission to PHMC. Provide a copy of the response letter or review stamp from the Bureau of Historic Preservation (BHP) indicating the project will have no effect on, or that there may be potential impacts on, known archaeological and historical sites and any avoidance and mitigation measures required. Appendix B, Section II.K of the Planning Guide.

40 B. Provide for the resolution of any inconsistencies in any of the points identified in Section VI.A. of this checklist by submitting a letter from the appropriate agency stating that the agency has received, reviewed and concurred with the resolution of identified inconsistencies. (Reference - 25 *Pa. Code* §71.21(a)(5)(ii)). Appendix B of the Planning Guide.

41 C. Evaluate alternatives identified in Section V of this checklist with respect to applicable water quality standards, effluent limitations or other technical, legislative or legal requirements. (Reference - 25 *Pa. Code* §71.21(a)(5)(iii)).

42 D. Provide cost estimates using present worth analysis for construction, financing, ongoing administration, O & M and user fees for alternatives identified in Section V of this checklist. Estimates shall be limited to areas identified in the plan as needing improved sewage facilities within 5 years from the date of plan submission. (Reference - 25 *Pa. Code* §71.21(a)(5)(iv)).

43 E. Provide an analysis of the funding methods available to finance the proposed alternatives evaluated in Section V of this checklist. Also provide documentation to demonstrate which alternative and financing scheme combination is the most cost-effective; and a contingency financial plan to be used if the preferred method of financing cannot be implemented. The funding analysis shall be limited to areas identified in the plan as needing improved sewage facilities within 5 years from the date of the plan submission. (Reference - 25 *Pa. Code* §71.21(a)(5)(v)).

44 F. Analyze the need for immediate or phased implementation of each alternative proposed in Section V of this checklist including: (Reference - 25 *Pa. Code* §71.21(a)(5)(vi)).

44 1. A description of any activities necessary to abate critical public health hazards pending completion of sewage facilities or implementation of SMPs. (Reference - 25 *Pa. Code* §71.21(a)(5)(vi)(A)).

44 2. A description of the advantages, if any, in phasing construction of the facilities or implementation of a SMP justifying time schedules for each phase. (Reference - 25 *Pa. Code* §71.21(a)(5)(vi)(B)).

45 G. Evaluate administrative organizations and legal authority necessary for plan implementation. (Reference - 25 *Pa. Code* §71.21(a)(5)(vi)(D)).

45 **VII. Institutional Evaluation**

A. Provide an analysis of all existing wastewater treatment authorities, their past actions and present performance including:

45 1. Financial and debt status. (Reference - 25 *Pa. Code* §71.61(d)(2)).

45 2. Available staff and administrative resources. (Reference - 25 *Pa. Code* §71.61(d)(2))

46 3. Existing legal authority to:

46 a. Implement wastewater planning recommendations. (Reference - 25 *Pa. Code* §71.61(d)(2)).

46 b. Implement system-wide O & M activities. (Reference - 25 *Pa. Code* §71.61(d)(2)).

46 c. Set user fees and take purchasing actions. (Reference - 25 *Pa. Code* §71.61(d)(2)).

46 d. Take enforcement actions against ordinance violators. (Reference - 25 *Pa. Code* §71.61(d)(2)).

46 e. Negotiate agreements with other parties. (Reference - 25 *Pa. Code* §71.61(d)(2)).

46 f. Raise capital for construction and O & M of facilities. (Reference - 25 *Pa. Code* §71.61(d)(2)).

46 B. Provide an analysis and description of the various institutional alternatives necessary to implement the proposed technical alternatives including:

46 1. Need for new municipal departments or municipal authorities. (Reference - 25 *Pa. Code* §71.61(d)(2)).

46 2. Functions of existing and proposed organizations (sewer authorities, onlot maintenance agencies, etc.). (Reference - 25 *Pa. Code* §71.61(d)(2)).

46 3. Cost of administration, implementability, and the capability of the authority/agency to react to future needs. (Reference - 25 *Pa. Code* §71.61(d)(2)).

46 C. Describe all necessary administrative and legal activities to be completed and adopted to ensure the implementation of the recommended alternative including:

46 1. Incorporation of authorities or agencies. (Reference - 25 *Pa. Code* §71.61(d)(2)).

47 2. Development of all required ordinances, regulations, standards and inter-municipal agreements. (Reference - 25 *Pa. Code* §71.61(d)(2)).

47 3. Description of activities to provide rights-of-way, easements and land transfers. (Reference - 25 *Pa. Code* §71.61(d)(2)).

47 4. Adoption of other municipal sewage facilities plans. (Reference - 25 *Pa. Code* §71.61(d)(2)).

47 5. Any other legal documents. (Reference - 25 *Pa. Code* §71.61(d)(2)).

47 6. Dates or timeframes for items 1-5 above on the project's implementation schedule.

47 D. Identify the proposed institutional alternative for implementing the chosen technical wastewater disposal alternative. Provide justification for choosing the specific institutional alternative considering administrative issues, organizational needs and enabling legal authority. (Reference - 25 *Pa. Code* §71.61(d)(2)).

48 **VIII. Implementation Schedule and Justification for Selected Technical & Institutional Alternatives**

A. Identify the technical wastewater disposal alternative which best meets the wastewater treatment needs of each study area of the municipality. Justify the choice by providing documentation which shows that it is the best alternative based on:

48 1. Existing wastewater disposal needs. (Reference - 25 *Pa. Code* §71.21(a)(6)).

48 2. Future wastewater disposal needs. (5 and 10 year growth areas). (Reference - 25 *Pa. Code* §71.21(a)(6)).

48 3. O & M considerations. (Reference - 25 *Pa. Code* §71.21(a)(6)).

48 4. Cost-effectiveness. (Reference - 25 *Pa. Code* §71.21(a)(6)).

48 5. Available management and administrative systems. (Reference - 25 *Pa. Code* §71.21(a)(6)).

48 6. Available financing methods. (Reference - 25 *Pa. Code* §71.21(a)(6)).

48 7. Environmental soundness and compliance with natural resource planning and preservation programs. (Reference - 25 *Pa. Code* §71.21(a)(6)).

_____ 49 B. Designate and describe the capital financing plan chosen to implement the selected alternative(s). Designate and describe the chosen back-up financing plan. (Reference - 25 *Pa. Code* §71.21(a)(6))

_____ 50 C. Designate and describe the implementation schedule for the recommended alternative, including justification for any proposed phasing of construction or implementation of a SMP. (Reference – 25 *Pa. Code* §71.31(d))

_____ 51 **IX. Environmental Report (ER) generated from the UER Process**

_____ 51 A. Complete an ER as required by the UER process and as described in the DEP Technical Guidance (381-5511-111). Include this document as "Appendix A" to the Act 537 Plan Update Revision. ***Note: An ER is required only for Wastewater projects proposing funding through any of the funding sources identified in the UER.***

PENNVEST I.D. No. _____

DDITIONAL REQUIREMENTS FOR PENNVEST PROJECTS

Municipalities that propose to implement their official sewage facilities plan updates with PENNVEST funds must meet 6 additional requirements to be eligible for such funds. See *A Guide for Preparing Act 537 Update Revisions* (362-0300-003), Appendix N for greater detail or contact the DEP regional office serving your county listed in Appendix J of the same publication.

DEP Use Only	Indicate Page #(s) in Plan	Item Required
_____	51	1. Environmental Impact Assessment. (Planning Phase) The UER replaces the Environmental Impact Assessment that was a previous requirement for PENNVEST projects.
_____	42	2. Cost Effectiveness (Planning Phase) The cost-effectiveness analysis should be a present-worth (or equivalent uniform annual) cost evaluation of the principle alternatives using the interest rate that is published annually by the Water Resources Council. Normally, for PENNVEST projects the applicant should select the most cost-effective alternative based upon the above analysis. Once the alternative has been selected the user fee estimates should be developed based upon interest rates and loan terms of the selected funding method.
_____		3. Second Opinion Project Review. (Design Phase)
_____		4. Minority Business Enterprise/Women's Business Enterprise (Construction Phase)
_____		5. Civil Rights. (Construction Phase)
_____		6. Initiation of Operation/Performance Certification. (Post-construction Phase)

A TECHNOLOGIES

PARTIAL LISTING OF INNOVATIVE AND ALTERNATIVE TECHNOLOGIES

TREATMENT TECHNOLOGIES
Aquaculture
Aquifer Recharge
Biological Aerated Filters
Constructed Wetlands
Direct Reuse (NON-POTABLE)
Horticulture
Overland Flow
Rapid Infiltration
Silviculture
Microscreens
Controlled Release Lagoons
Swirl Concentrator

ENERGY RECOVERY TECHNOLOGIES
Anaerobic Digestion with more than 90 percent Methane Recovery
Cogeneration of Electricity
Self-Sustaining Incineration

SLUDGE TREATMENT TECHNOLOGIES

Aerated Static Pile Composting
Enclosed Mechanical Composting (In vessel)
Revegetation of Disturbed Land
Aerated Windrow Composting

INDIVIDUAL & SYSTEM-WIDE COLLECTION TECHNOLOGIES
Cluster Systems
Septage Treatment
Small Diameter Gravity Sewers
Step Pressure Sewers
Vacuum Sewers
Variable Grade Sewers
Septic Tank Effluent Pump with Pressure Sewers

APPENDIX C

Resolutions of Adoption

MUNICIPAL RESOLUTIONS

Elizabeth Township

The Plan was adopted by the Elizabeth Township Board of Commissioners via resolution on November 7, 2016. Please see attached.

Borough of Versailles

The Plan was sent to the Borough of Versailles on September 23, 2016. No action was taken in October 2016. The approval made the agenda on November 7, 2016 but there was not a quorum of the Board. The Plan is to be on the agenda for their November 14, 2016 meeting and the Resolution is expected to be adopted.

A copy of the original signed and sealed Resolution will be forwarded as soon as it is received.

Borough of Versailles

The Plan was sent to the Municipal Authority of the City of McKeesport on September 23, 2016. No action was taken in October 2016. It is anticipated that action will be taken to approve the Plan and adopt the Resolution by the end of November.

A copy of the original signed and sealed Resolution will be forwarded as soon as it is received.

RESOLUTION NO.: 2016-19

DATE ADOPTED: 11-7-16

**A RESOLUTION OF THE TOWNSHIP OF ELIZABETH
ALLEGHENY COUNTY, PENNSYLVANIA
FOR ACT 537 SEWAGE FACILITIES PLAN REVISION**

WHEREAS, Section 5 of the Act of January 24, 1966, P.L. 1535, known as the "Pennsylvania Sewage Facilities Act," as amended, and the Rules and Regulations of the Department of Environmental Protection (Department) adopted thereunder, Chapter 71 of Title 25 of the Pennsylvania Code, requires the municipality to adopt an Official Sewage Facilities Plan providing for sewage services adequate to prevent contamination of waters and/or environmental health hazards associated with sewage wastes, and to revise said plan whenever it is necessary to meet the sewage disposal needs of the municipality, and

WHEREAS, Elizabeth Township has prepared an Act 537 Sewage Facilities Plan Update to evaluate sewage facilities alternatives to handle existing and future wastewater flows in the Boston and Buena Vista sewersheds in Elizabeth Township, Allegheny County, Pennsylvania.

In order to address the capacity issues identified in the Buena Vista and Boston sewersheds, to abate critical public health hazards, and to comply with the Consent Order and Agreement, the following projects, identified as Alternative 1 within the Act 537 Sewage Facilities Plan Update, are recommended for implementation:

- Decommission the existing Buena Vista Sewage Treatment Plant
- Construct a pump station and equalization tank at the site of the Buena Vista Sewage Treatment Plant
- Construct a single force main along the Great Allegheny Passage (Rail Trail) to the Boston Pump Station
- Upgrade the Boston Pump Station

- Pump from the Boston Pump Station through a single force main to a point of connection with the Municipal Authority of the City of McKeesport near the CSX Railroad Bridge over the Youghiogheny River
- Upgrade Buena Vista sewershed pump stations, Lovedale and Simpson Howell, to address overflows and get all flow to the new Buena Vista Pump Station

The anticipated schedule upon which implementation of the Act 537 Sewage Facilities Plan Update will occur is as follows:

- Submit the Act 537 Sewage Facilities Plan Update to the Department – November 9, 2016
- Department review and approval of the Act 537 Sewage Facilities Plan Update – December 31, 2016
- Complete Design – December 31, 2016
- Submit Necessary WQM Part II Permits – January 8, 2017
- Obtain Construction Financing – July 15, 2017
- Begin Construction – September 1, 2017
- Complete Construction – May 1, 2018

WHEREAS, Elizabeth Township finds that the Act 537 Sewage Facilities Plan Update described above conforms to applicable zoning, subdivision, other municipal ordinances and plans, and to a comprehensive program of pollution control and water quality management.

NOW, THEREFORE, BE IT RESOLVED that Elizabeth Township hereby adopts and submits to the Department of Environmental Protection for its approval as a revision to the "Official Plan" of Elizabeth Township, the above referenced Act 537 Sewage Facilities Plan Update. Elizabeth Township hereby assures the Department of the complete and timely implementation of the said plan as required by law (Section 5, Pennsylvania Sewage Facilities Act as amended).

ADOPTED AND RESOLVED this 7th day of November, 2016.

SEAL

ELIZABETH TOWNSHIP

BY: Rob Rhoderick, Chairman

Rob Rhoderick, Chairman

ATTEST:

Lauren Zang, Secretary

I, Lauren Zang, Secretary of Elizabeth Township, Allegheny County, Pennsylvania, hereby certify that the attached is a true and correct copy of Resolution No. 2016-19 adopted November 7th, 2016.

SEAL

ELIZABETH TOWNSHIP

Lauren Zang, Secretary

BOROUGH *of* VERSAILLES

AGENDA
WORKSHOP MEETING
MONDAY, NOVEMBER 7, 2016 7:00 P.M.

1. Call meeting to order
2. Pledge of allegiance
3. Roll call
4. Elizabeth Twp Act 537 Sewage Facilities - Resolution Request Update
    - Sam Gibson from KLH Engineering may be in attendance
5. Upcoming Meetings / Workshops / Seminars / Training / Events
    - Allegheny County Borough Association Meeting - December 8th
      Free for Delegate and Alternate
      $25.00 per person / Respond by November 28th
6. Salt Spreader Purchase - $4,795.00
7. 420 Worthington / Inquiry about reverting to duplex
8. New employee update
9. Adjourn meeting

KLH
ENGINEERS, INC

September 23, 2016
Ref. No. 542-04

Borough of Versailles
5100 Walnut Street
McKeesport, PA 15132

CERTIFIED RETURN

To Whom It May Concern:

Elizabeth Township
Act 537 Sewage Facilities Plan Update

On behalf of Elizabeth Township, please find enclosed one (1) copy of the Act 537 Sewage Facilities Plan Update for your review. Act 537 planning requires the Township to request, review and consider comments by appropriate planning agencies when updating its Official Plan. In fulfillment of this requirement, we are providing the Plan for your review and comments. Planning agencies are typically allotted sixty (60) days to review and comment on the Plan. However, in order to meet the deadlines established in the Township's Consent Order and Agreement, we are requesting you review and comment as necessary by October 31, 2016.

Your complete and timely response is greatly appreciated and will assist in our efforts to meet the proposed implementation schedule for submission to the Pennsylvania Department of Environmental Protection. Thank you for your assistance.

If you have any questions or comments, please feel free to contact our office.

Very truly yours,

KLH ENGINEERS, INC.

Samuel R. Gibson, E.I.T.

Enclosure

cc: Elizabeth Township
Bryan Churilla, P.E.

5173 Campbells Run Road Pittsburgh, PA 15205 Phone: 412.494.0510 Fax: 412.494.0426 info@klhengineers.com
www.klhengineers.com

KLH ENGINEERS, INC.
DAILY SHIPMENT DETAIL REPORT
23-Sep-2016 - 3:24:51 PM

Pickup Date: 23-Sep-2016
Pickup Record No.: 6317 7826 34

UPS Account No.: 265479
Sorted By: Order of Shipment

All charges are in USD.

Name / Address	Shipment Detail		Charges:	Published Rate Charges	Negotiated Rate Charges
Ship To: Borough of Versailles 5100 Walnut Street MCKEESPORT PA 15132 United States	Service Type: Total Packages: Transportation:	GROUND 1 Shipper	Shipment Service Charge:	8.07	8.07
	Tracking No.: Package Type: Actual Wt: Billable Wt:	1Z2654790359078767 Package 4.0 lb 5.0 lb	Delivery Area Surcharge: Fuel surcharge: **UPS Total Charge:**	0.00 0.40 **8.47**	0.00 0.40 **8.47**
Ship To: Mr. Chuck Schultz MUN AUTH OF THE CITY OF MCKEESPORT 100 ATLANTIC AVENUE MCKEESPORT PA 15132-3807 United States	Service Type: Total Packages: Transportation:	GROUND 1 Shipper	Shipment Service Charge:	8.07	8.07
	Tracking No.: Package Type: Actual Wt: Billable Wt:	1Z2654790360540370 Package 4.0 lb 5.0 lb	Delivery Area Surcharge: Fuel surcharge: **UPS Total Charge:**	0.00 0.40 **8.47**	0.00 0.40 **8.47**
Ship To: Allegheny County Health Department 542 Fourth Avenue PITTSBURGH PA 15219 United States	Service Type: Total Packages: Transportation:	GROUND 1 Shipper	Shipment Service Charge:	8.07	8.07
	Tracking No.: Package Type: Actual Wt: Billable Wt:	1Z2654790361909588 Package 4.0 lb 5.0 lb	Delivery Area Surcharge: Fuel surcharge: **UPS Total Charge:**	0.00 0.40 **8.47**	0.00 0.40 **8.47**
Ship To: MR. MARK CHUCUDDY PETERS TOWNSHIP SANITARY AUTH 111 BELL DRIVE MCMURRAY PA 15317-3415 United States	Service Type: Total Packages: Transportation: Package Ref No.1:	GROUND 1 Shipper 264-104	Shipment Service Charge:	7.66	7.66
	Tracking No.: Package Type: Actual Wt: Billable Wt: Package Ref No.1:	1Z2654790360402395 Bubbler Mailer - medium 1.5 lb 2.0 lb 264-104	Delivery Area Surcharge: Fuel surcharge: **UPS Total Charge:**	0.00 0.38 **8.04**	0.00 0.38 **8.04**

Summary Totals:

Shipment Option	Shpts	Pkgs	Pub Charges	NR Charges
Package Option		Pkgs	Pub Charges	NR Charges

Billing Option	Shpts	Pkgs	Pub Charges	NR Charges
Prepaid	4	4	33.45	33.45
TOTAL CHARGES			33.45	33.45

4 Shipment(s)
4 Package(s)

All charges are in USD.
Your invoice may vary from the displayed rates.
* Indicates Shipper-Paid Declared Value

Proof of Delivery

Close Window

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

Tracking Number:	1Z2654790359078767
Service:	UPS Ground
Weight:	4.00 lbs
Shipped/Billed On:	09/23/2016
Delivered On:	09/26/2016 2:51 P.M.
Delivered To:	MCKEESPORT, PA, US
Received By:	LISA
Left At:	Office

Thank you for giving us this opportunity to serve you.

Sincerely,

UPS

Tracking results provided by UPS: 11/08/2016 1:07 P.M. ET

Print This Page Close Window

KLH
ENGINEERS, INC

September 23, 2016
Ref. No. 542-04

Mr. Chuck Schultz
Municipal Authority of the City of McKeesport
100 Atlantic Avenue
McKeesport, PA 15132

CERTIFIED RETURN

Dear Mr. Schultz:

Elizabeth Township
Act 537 Sewage Facilities Plan Update

On behalf of Elizabeth Township, please find enclosed one (1) copy of the Act 537 Sewage Facilities Plan Update for your review. Act 537 planning requires the Township to request, review and consider comments by appropriate planning agencies when updating its Official Plan. In fulfillment of this requirement, we are providing the Plan for your review and comments. Planning agencies are typically allotted sixty (60) days to review and comment on the Plan. However, in order to meet the deadlines established in the Township's Consent Order and Agreement, we are requesting you review and comment as necessary by October 31, 2016.

Your complete and timely response is greatly appreciated and will assist in our efforts to meet the proposed implementation schedule for submission to the Pennsylvania Department of Environmental Protection. Thank you for your assistance.

If you have any questions or comments, please feel free to contact our office.

Very truly yours,

KLH ENGINEERS, INC.

Samuel R. Gibson, E.I.T.

Enclosure

cc: Elizabeth Township
Bryan Churilla, P.E.

542 04_Act 537 trans to MACM_SRG 09 23 16.docx

5173 Campbells Run Road Pittsburgh, PA 15205 Phone: 412.494.0510 Fax: 412.494.0426 info@klhengineers.com
www.klhengineers.com

KLH ENGINEERS, INC.
DAILY SHIPMENT DETAIL REPORT
23-Sep-2016 - 3:24:51 PM

Pickup Date: 23-Sep-2016
Pickup Record No.: 6317 7826 34

UPS Account No.: 265479
Sorted By: Order of Shipment

* harges are in USD.

Name / Address	Shipment Detail		Charges:	Published Rate Charges	Negotiated Rate Charges
Ship To: Borough of Versailles 5100 Walnut Street MCKEESPORT PA 15132 United States	Service Type: Total Packages: Transportation:	GROUND 1 Shipper	Shipment Service Charge:	8.07	8.07
	Tracking No.: Package Type: Actual Wt: Billable Wt:	1Z2654790359078767 Package 4.0 lb 5.0 lb	Delivery Area Surcharge: Fuel surcharge: **UPS Total Charge:**	0.00 0.40 **8.47**	0.00 0.40 **8.47**
Ship To: Mr. Chuck Schultz MUN AUTH OF THE CITY OF MCKEESPORT 100 ATLANTIC AVENUE MCKEESPORT PA 15132-3807 United States	Service Type: Total Packages: Transportation:	GROUND 1 Shipper	Shipment Service Charge:	8.07	8.07
	Tracking No.: Package Type: Actual Wt: Billable Wt:	1Z2654790360540370 Package 4.0 lb 5.0 lb	Delivery Area Surcharge: Fuel surcharge: **UPS Total Charge:**	0.00 0.40 **8.47**	0.00 0.40 **8.47**
Ship To: Allegheny County Health Department 542 Fourth Avenue PITTSBURGH PA 15219 United States	Service Type: Total Packages: Transportation:	GROUND 1 Shipper	Shipment Service Charge:	8.07	8.07
	Tracking No.: Package Type: Actual Wt: Billable Wt:	1Z2654790361909588 Package 4.0 lb 5.0 lb	Delivery Area Surcharge: Fuel surcharge: **UPS Total Charge:**	0.00 0.40 **8.47**	0.00 0.40 **8.47**
Ship To: MR. MARK CHUCUDDY PETERS TOWNSHIP SANITARY AUTH 111 BELL DRIVE MCMURRAY PA 15317-3415 United States	Service Type: Total Packages: Transportation: Package Ref No.1:	GROUND 1 Shipper 264-104	Shipment Service Charge:	7.66	7.66
	Tracking No.: Package Type: Actual Wt: Billable Wt: Package Ref No.1:	1Z2654790360402395 Bubbler Mailer - medium 1.5 lb 2.0 lb 264-104	Delivery Area Surcharge: Fuel surcharge: **UPS Total Charge:**	0.00 0.38 **8.04**	0.00 0.38 **8.04**

Summary Totals:

Shipment Option	Shpts	Pkgs	Pub Charges	NR Charges
Package Option		Pkgs	Pub Charges	NR Charges

Billing Option	Shpts	Pkgs	Pub Charges	NR Charges
Prepaid	4	4	33.45	33.45
TOTAL CHARGES			33.45	33.45

4 Shipment(s)
4 Package(s)

All charges are in USD.
Your invoice may vary from the displayed rates.
* Indicates Shipper-Paid Declared Value

Proof of Delivery

Close Window

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

Tracking Number:	1Z2654790360540370
Service:	UPS Ground
Weight:	4.00 lbs
Shipped/Billed On:	09/23/2016
Delivered On:	09/26/2016 10:40 A.M.
Delivered To:	MCKEESPORT, PA, US
Received By:	TIM
Left At:	Office

Thank you for giving us this opportunity to serve you.

Sincerely,

UPS

Tracking results provided by UPS: 11/08/2016 1:08 P.M. ET

Print This Page Close Window

APPENDIX D

Planning Agency Correspondence

PLANNING APPROVALS

Elizabeth Township Planning Commission

The Plan was recommended for approval by the Elizabeth Township Planning Commission on October 19, 2016. Please see attached.

Allegheny County Health Department

The Plan was sent to the Allegheny County Health Department on September 23, 2016. No comment has yet been received. The 60-day comment period ends on November 22, 2016. If any comments are received prior to that date, they will be addressed and all correspondence will be forwarded to the Department.

KLH
ENGINEERS, INC

November 8, 2016
Ref. No. 542-04

Mr. Bryan Churilla
KLH Engineers, Inc.
5173 Campbells Run Road
Pittsburgh, PA 15205

Dear Mr. Churilla:

Elizabeth Township Planning Commission
Act 537 Sewage Facilities Plan Update

Please be advised that the Elizabeth Township Planning Commission has reviewed the subject Plan for consistency with Township Planning and Zoning Ordinances and determined that the Plan is consistent.

In accordance with the above, the Planning Commission took formal action at their October 19, 2016 meeting to recommend this Plan for approval to the Township Commissioners.

If you have any questions, please feel free to contact me.

Sincerely,

KLH ENGINEERS, INC.

Scott Hoffman, P.E.

Cc: John Snelson, Code Enforcement / Zoning Officer – Elizabeth Township

5173 Campbells Run Road Pittsburgh, PA 15205 Phone: 412.494.0510 Fax: 412.494.0426 info@klhengineers.com
www.klhengineers.com

KLH
ENGINEERS, INC

September 23, 2016
Ref. No. 542-04

Allegheny County Health Department
542 Fourth Avenue
Pittsburgh, PA 15219

CERTIFIED RETURN

To Whom It May Concern:

Elizabeth Township
Act 537 Sewage Facilities Plan Update

On behalf of Elizabeth Township, please find enclosed one (1) copy of the Act 537 Sewage Facilities Plan Update for your review. Act 537 planning requires the Township to request, review and consider comments by appropriate planning agencies when updating its Official Plan. In fulfillment of this requirement, we are providing the Plan for your review and comments. Planning agencies are typically allotted sixty (60) days to review and comment on the Plan. However, in order to meet the deadlines established in the Township's Consent Order and Agreement, we are requesting you review and comment as necessary by October 31, 2016.

Your complete and timely response is greatly appreciated and will assist in our efforts to meet the proposed implementation schedule for submission to the Pennsylvania Department of Environmental Protection. Thank you for your assistance.

If you have any questions or comments, please feel free to contact our office.

Very truly yours,

KLH ENGINEERS, INC.

Samuel R. Gibson, E.I.T.

Enclosure

cc: Elizabeth Township
Bryan Churilla, P.E.

542-04_Act 537 trans to ACHD_SRG_09 23 16.docx

COUNTY OF ALLEGHENY

RICH FITZGERALD
COUNTY EXECUTIVE

December 28, 2016

Ms. Lauren Zang, Manager
Ms. Joanne Beckowitz, President Board of Commissioners
Elizabeth Township
522 Rock Run Road
Elizabeth, PA 15037

RE: Elizabeth Township
Act 537 Sewage Facilities Plan Update
Boston and Buena Vista Sewersheds September 2016

Dear Officials,

The Allegheny County Health Department (ACHD) provides this letter as a response to the Act 537 Sewage Facilities Plan Update - Boston and Buena Vista Sewersheds September 2016, submitted by KLH Engineers, Inc.

The ACHD comments are as follows:

1. If the Rolling Hills Village Mobile Home Park Sewage Treatment Plant would be abandoned in the future, how could it connect to the proposed facilities?
2. Page 19, Section III.B discusses potentially failing on-lot systems and at least one known holding tank in the Boston sewershed. The 537 Plan Update mentions areas along Lincoln Hall Road and Mansfield Road, but states that it is not a goal of the Update to extend public sewage service into unsewered portions of the Township. A general plan to provide sewerage to these areas in the future should be included.
3. How will the single force main be maintained and what will happen if there is a break or malfunction of the single force main? Is there permanent access to the entire line?
4. Previous plan reviews indicated peak flow rates from the Boston Pump Station contributed to capacity issues in the conveyance lines through Versailles Borough. Will Versailles Borough have the opportunity to comment on how the recommended plan will affect their pipe sizing and capacities?
5. How will the potential purchase by PA American Water, of the Municipal Authority of the City of McKeesport facilities, affect the user rates?
6. There were no costs for pump station upgrades other than the Buena Vista and Boston pump stations. Will there still be overflows at the other pump stations if they are not upgraded?

KAREN HACKER, MD, MPH, DIRECTOR
ALLEGHENY COUNTY HEALTH DEPARTMENT
PUBLIC DRINKING WATER AND WASTE MANAGEMENT PROGRAM
3901 PENN AVENUE • BUILDING 5 • PITTSBURGH, PA 15224-1318
PHONE: 412.578.8040 • FAX: 412.578.8053 • WWW.ACHD.NET

Please include this letter and the response to the questions in the final version of the Act 537 Plan Update. Should you have any questions, feel free to contact me at 412-578-8382.

Sincerely,

Michael Moskorisin, Program Manager
Public Drinking Water & Waste Management

cc: Christopher Kriley, PADEP
Tom Flanagan, PADEP
Norma Ruffing, ACHD

KLH ENGINEERS, INC.
DAILY SHIPMENT DETAIL REPORT
23-Sep-2016 - 3:24:51 PM

Pickup Date: 23-Sep-2016
Pickup Record No.: 6317 7826 34

UPS Account No.: 265479
Sorted By: Order of Shipment

* harges are In USD.

Name / Address	Shipment Detail		Charges:	Published Rate Charges	Negotiated Rate Charges
Ship To: Borough of Versailles 5100 Walnut Street MCKEESPORT PA 15132 United States	Service Type: Total Packages: Transportation:	GROUND 1 Shipper	Shipment Service Charge:	8.07	8.07
	Tracking No.: Package Type: Actual Wt: Billable Wt:	1Z2654790359078767 Package 4.0 lb 5.0 lb	Delivery Area Surcharge: Fuel surcharge: **UPS Total Charge:**	0.00 0.40 **8.47**	0.00 0.40 **8.47**
Ship To: Mr. Chuck Schultz MUN AUTH OF THE CITY OF MCKEESPORT 100 ATLANTIC AVENUE MCKEESPORT PA 15132-3807 United States	Service Type: Total Packages: Transportation:	GROUND 1 Shipper	Shipment Service Charge:	8.07	8.07
	Tracking No.: Package Type: Actual Wt: Billable Wt:	1Z2654790360540370 Package 4.0 lb 5.0 lb	Delivery Area Surcharge: Fuel surcharge: **UPS Total Charge:**	0.00 0.40 **8.47**	0.00 0.40 **8.47**
Ship To: Allegheny County Health Department 542 Fourth Avenue PITTSBURGH PA 15219 United States	Service Type: Total Packages: Transportation:	GROUND 1 Shipper	Shipment Service Charge:	8.07	8.07
	Tracking No.: Package Type: Actual Wt: Billable Wt:	1Z2654790361909588 Package 4.0 lb 5.0 lb	Delivery Area Surcharge: Fuel surcharge: **UPS Total Charge:**	0.00 0.40 **8.47**	0.00 0.40 **8.47**
Ship To: MR. MARK CHUCUDDY PETERS TOWNSHIP SANITARY AUTH 111 BELL DRIVE MCMURRAY PA 15317-3415 United States	Service Type: Total Packages: Transportation: Package Ref No.1:	GROUND 1 Shipper 264-104	Shipment Service Charge:	7.66	7.66
	Tracking No.: Package Type: Actual Wt: Billable Wt: Package Ref No.1:	1Z2654790360402395 Bubbler Mailer - medium 1.5 lb 2.0 lb 264-104	Delivery Area Surcharge: Fuel surcharge: **UPS Total Charge:**	0.00 0.38 **8.04**	0.00 0.38 **8.04**

Summary Totals:

Shipment Option	Shpts	Pkgs	Pub Charges	NR Charges
Package Option		Pkgs	Pub Charges	NR Charges

Billing Option	Shpts	Pkgs	Pub Charges	NR Charges
Prepaid	4	4	33.45	33.45
TOTAL CHARGES			33.45	33.45

4 Shipment(s)
4 Package(s)

All charges are in USD.
Your invoice may vary from the displayed rates.
* Indicates Shipper-Paid Declared Value

Proof of Delivery

Close Window

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

Tracking Number:	1Z2654790361909588
Service:	UPS Ground
Weight:	4.00 lbs
Shipped/Billed On:	09/23/2016
Delivered On:	09/26/2016 2:20 P.M.
Delivered To:	PITTSBURGH, PA, US
Received By:	WRIGHT
Left At:	Receiver

Thank you for giving us this opportunity to serve you.

Sincerely,

UPS

Tracking results provided by UPS: 11/08/2016 1:09 P.M. ET

Print This Page Close Window

KLH
ENGINEERS, INC.

January 30, 2017
Ref. No. 542-04

Mr. Michael Moskorisin, Program Manager
Allegheny County Health Department
Public Drinking Water and Waste Management Program
3901 Penn Avenue - Building 5
Pittsburgh, PA 15224-1318

Dear Mr. Moskorisin:

Elizabeth Township
Act 537 Sewage Facilities Plan Update
ACHD Comment Letter Response

Pursuant to the attached Allegheny County Health Department (ACHD) comment letter dated December 28, 2016, KLH provides the following responses.

1. ***If the Rolling Hills Village Mobile Park Sewage Treatment Plant would be abandoned in the future, how could it connect to the proposed facilities?***

The Rolling Hills Village Mobile Park STP is a privately owned STP operating under NPDES permit number PA0095346. The facility is owned and maintained by Mr. William Fiore and has a permitted design capacity of 0.035 MGD. An exhibit has been included to show the location of the STP in relation to the Township's public sewer facilities.

The system is comprised of 8-inch diameter sewers and the STP. For purposes of this Plan, it is assumed that the STP will continue to be operated and maintained by the owner until such time that the PA DEP orders it closure. At that time, it will be the responsibility of the owner to connect the sewage to the nearest public facility.

Should this flow be connected to the Township's Buena Vista facilities, it is anticipated that there would be no issues handling the additional flow at the proposed Buena Vista Pump Station.

2. ***Page 19, Section III.B discussed potentially failing on-lot systems and at least one know holding tank in the Boston sewershed. The 537 Plan Update mentions areas along Lincoln Hall Road and Mansfield Road, but states that it is not a goal of the Update to extend public sewage service into unsewered portions of the Township. A general plan to provide sewerage to these areas in the future should be included.***

The intent of this Plan Update was to address the immediate concerns related the Buena Vista to McKeesport Project, as stipulated in the May 13, 2016 Consent Order and Agreement (COA). All information pertaining to existing on-lot systems and future sewer extensions was inherited from previous plans.

The Mansfield Road area of the Township was considered in one (1) of the alternatives of the Plan Update, however, it is was proven to be uneconomical within the goals of this project.

5173 Campbells Run Road Pittsburgh, PA 15205 Phone: 412.494.0510 Fax: 412.494.0426 info@klhengineers.com
www.klhengineers.com

The prior Authority had applied for Allegheny County CITF Grant funding for the extension of public sewers along Lincoln Hall Road to service thirteen (13) additional homes. The Township intends to continue to pursue grant funding for this project.

Elizabeth Township will continue to assess the need to extend public facilities to areas not currently served.

3. ***How will the single force main be maintained and what will happen if there is a break or malfunction of the single force main? Is there permanent access to the entire line?***

The Township will have permanent access to the entire force main through easements and right of occupancy agreements. Any malfunction of the force main will be treated as an emergency situation and immediately rehabilitated.

Force main malfunctions are typically identified by monitoring the performance of the pump station. The following is cited from the EPA Wastewater Technology Fact Sheet on Force Main Sewers (EPA 832-F-00-071, September 2000):

> The operation of force main-lift station systems is usually automated and does not require continuous on-site operator presence. However, annual force main route inspections are recommended to ensure normal functioning and to identify potential problems. Special attention is given to the integrity of the force main surface and pipeline connections, unusual noise, vibration, pipe and pipe joint leakage and displacement, valving arrangement and leakage, lift station operation and performance, discharge pump rates and pump speed, and pump suction and discharge pressures. Depending on the overall performance of the lift station-force main system, the extent of grease build-up and the need for pipeline pigging are also assessed. If there is an excessive increase in pump head and the headloss increase is caused by grease build-up, the pipeline is pigged. Corrosion is rarely a problem since pipes are primarily constructed of ductile iron or plastic, which are highly resistant to corrosion. Buildup can be removed by pigging the pipeline.

4. ***Previous plan reviews indicate peak flow rates from the Boston Pump Station contributed to capacity issues in the conveyance lines through Versailles Borough. Will Versailles Borough have the opportunity to comment on how the recommended Plan will affect their pipe sizing and capacities?***

Yes, the Plan was sent to the Borough for review and adoption. The Borough's engineer has reviewed the Plan and capacity considerations. Elizabeth Township and the Borough will be entering into a new service agreement which addresses future capacity and operation and maintenance considerations.

5. ***How will the potential purchase by PA American Water, of the Municipal Authority of the City of McKeesport facilities, affect the user rates?***

The purchase of the Municipal Authority of the City of McKeesport (MACM) facilities will require a revised service agreement between the Township, the MACM, and PA American Water. This service agreement will define the user rates and terms and conditions of the Township's flow contribution. It is not anticipated that initial user rates will impact the rates of this Plan. Future rate increases have been factored into the present worth analyses of this Plan.

6. ***There were no costs for pump station upgrades other than the Buena Vista and Boston pump stations. Will there still be overflows at the other pump stations if they are not upgraded?***

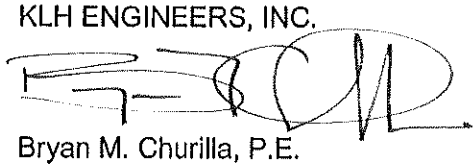
It is anticipated that the Lovedale and Duncan Station pump stations will require minor future upgrades to increase capacity to eliminate overflows. The additional flow from these pump stations tributary to the Buena Vista Pump Station were included in the planning numbers.

Preliminary planning depicts that the Duncan Pump Station will require an upgrade in capacity of approximately 0.2 MGD to eliminate overflows, while the Lovedale Pump Station will require an additional 0.4 MGD in pumping capacity. At this point, it is anticipated that the upgrades to the pump station capacity will be the only system modifications required to eliminate the overflows.

The intent of this Plan Update is to address specifically the Buena Vista to McKeesport sanitary sewer project. The Township, per the COA, has 24 months after the completion of the construction of the Elizabeth to McKeesport Project to submit a complete schedule to eliminate all remaining SSOs from the Buena Vista and Boston Sewer System.

Sincerely,

KLH ENGINEERS, INC.



Bryan M. Churilla, P.E.

Enclosure

cc: Elizabeth Township

COUNTY OF ALLEGHENY

RICH FITZGERALD
COUNTY EXECUTIVE

RECEIVED
JAN 03 2017
By

December 28, 2016

Ms. Lauren Zang, Manager
Ms. Joanne Beckowitz, President Board of Commissioners
Elizabeth Township
522 Rock Run Road
Elizabeth, PA 15037

RE: Elizabeth Township
Act 537 Sewage Facilities Plan Update
Boston and Buena Vista Sewersheds September 2016

Dear Officials,

The Allegheny County Health Department (ACHD) provides this letter as a response to the Act 537 Sewage Facilities Plan Update - Boston and Buena Vista Sewersheds September 2016, submitted by KLH Engineers, Inc.

The ACHD comments are as follows:

1. If the Rolling Hills Village Mobile Home Park Sewage Treatment Plant would be abandoned in the future, how could it connect to the proposed facilities?
2. Page 19, Section III.B discusses potentially failing on-lot systems and at least one known holding tank in the Boston sewershed. The 537 Plan Update mentions areas along Lincoln Hall Road and Mansfield Road, but states that it is not a goal of the Update to extend public sewage service into unsewered portions of the Township. A general plan to provide sewerage to these areas in the future should be included.
3. How will the single force main be maintained and what will happen if there is a break or malfunction of the single force main? Is there permanent access to the entire line?
4. Previous plan reviews indicated peak flow rates from the Boston Pump Station contributed to capacity issues in the conveyance lines through Versailles Borough. Will Versailles Borough have the opportunity to comment on how the recommended plan will affect their pipe sizing and capacities?
5. How will the potential purchase by PA American Water, of the Municipal Authority of the City of McKeesport facilities, affect the user rates?
6. There were no costs for pump station upgrades other than the Buena Vista and Boston pump stations. Will there still be overflows at the other pump stations if they are not upgraded?

KAREN HACKER, MD, MPH, DIRECTOR
ALLEGHENY COUNTY HEALTH DEPARTMENT
PUBLIC DRINKING WATER AND WASTE MANAGEMENT PROGRAM
3901 PENN AVENUE • BUILDING 5 • PITTSBURGH, PA 15224-1318
PHONE: 412.578.8040 • FAX: 412.578.8053 • WWW.ACHD.NET

Please include this letter and the response to the questions in the final version of the Act 537 Plan Update. Should you have any questions, feel free to contact me at 412-578-8382.

Sincerely,

Michael Moskorisin, Program Manager
Public Drinking Water & Waste Management

cc: Christopher Kriley, PADEP
Tom Flanagan, PADEP
Norma Ruffing, ACHD

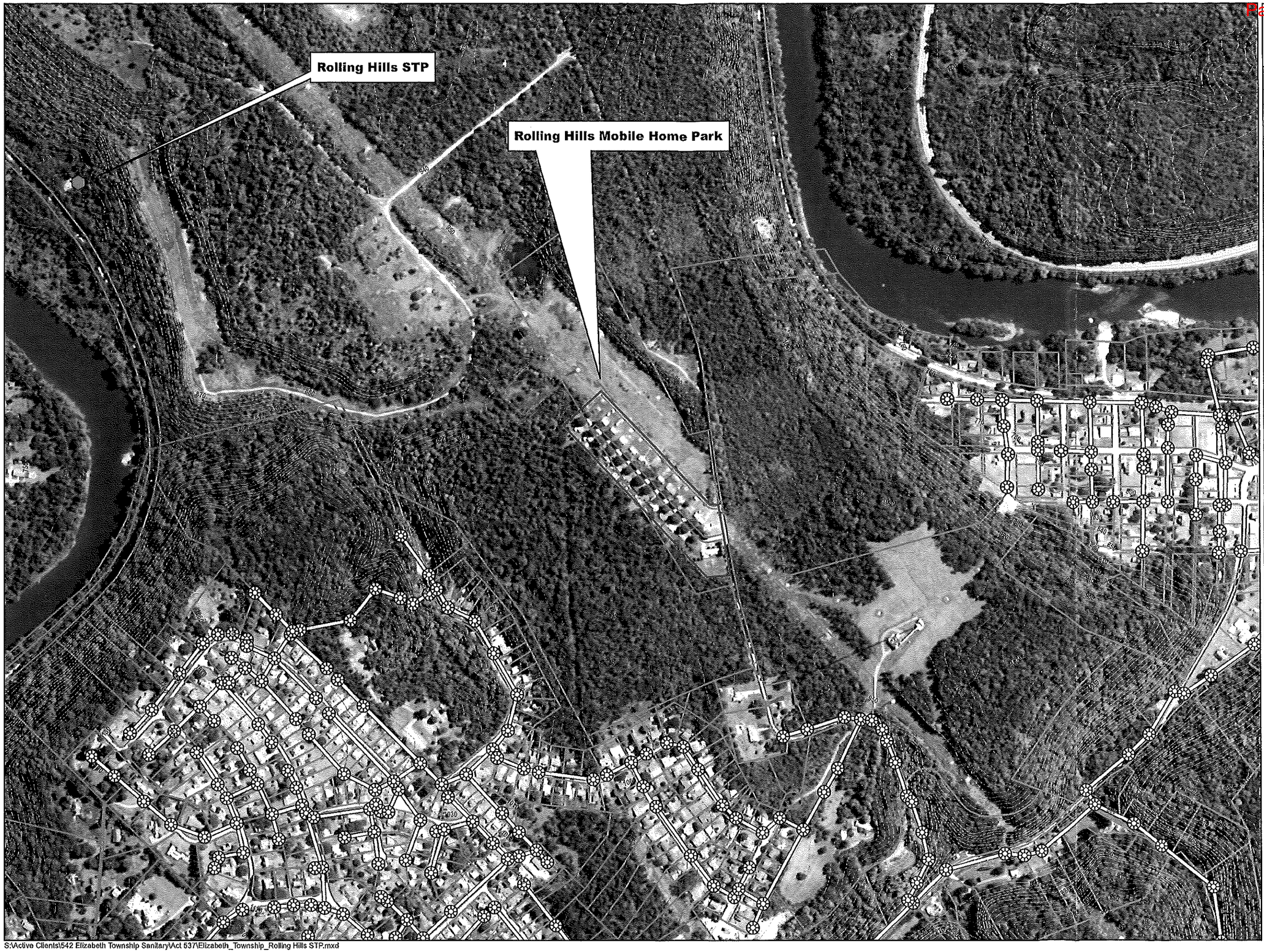
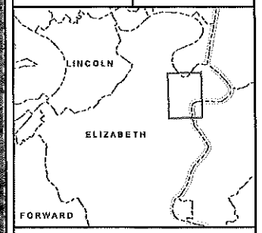


EXHIBIT 17

542-04



KLH ENGINEERS, INC.
5173 Campbells Run Road
Pittsburgh, PA 15205
Phone: 412-494-0510
Fax: 412-494-0426
www.klhengineers.com

Legend

- Rolling Hills Mobile Home Park
- Rolling Hills STP
- Sanitary Manhole
- Sanitary Pipe
- Parcels

ELIZABETH TOWNSHIP

ALLEGHENY COUNTY PENNSYLVANIA

Rolling Hills Service Area and STP Location

0 250 500
Feet

Author: RS
Date: 1/30/2017
NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
Projection: Lambert Conformal Conic

S:\Active Clients\542 Elizabeth Township Sanitary\Act 537\Elizabeth_Township_Rolling Hills STP.mxd

APPENDIX E

Proof of Public Notice

RECEIVED
SEP 19 2016
By

TRIB TOTAL MEDIA

LEGAL ADVERTISING

Proof of Publication of Notice in The Tribune-Review

Under the Act of July 9, 1976, P.L. 877, No. 160

Commonwealth of Pennsylvania }
County of Allegheny } SS:

DALYNN SCIOTTO, Multi-Media Classified Advertising Manager of Trib Total Media, Inc., a corporation of the Commonwealth of Pennsylvania with place of business in Pittsburgh, Allegheny County, Pennsylvania (and general circulation in Allegheny County and Westmoreland County), being duly sworn, deposes and says that the Tribune-Review is a daily newspaper circulated in Southwestern Pennsylvania. Said corporation was established in the year 1924. A copy of the printed notice of publication is attached hereto exactly as the same was printed and published in the regular editions of the said daily newspaper on the following dates, viz:
LEGAL# 6374108, RE: ACT 537 SEWAGE FACILITIES PLAN UPDATE; 13TH DAY OF SEPTEMBER, 2016.

Affiant further deposes that s/he is an officer duly Authorized by the Trib Total Media, Inc., publisher of the Tribune-Review, to verify the foregoing statement under oath and also declares that affiant is not interested in the subject matter of the aforesaid notice of publication, and that all allegations in the foregoing statement as to time, place and character of publication are true.

Classified Advertising Manager,
Trib Total Media, Inc.

Sworn to and subscribed before me this
13TH day of SEPTEMBER, 2016

Notary Public

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
JoAnn M. Callahan, Notary Public
City of Greensburg, Westmoreland County
My Commission Expires July 1, 2020
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

Statement of Advertising Costs

JOELLE WHITEMAN
ELIZABETH TOWNSHIP
522 ROCK RUN ROAD
ELIZABETH, PA 15037

To **Trib Total Media, Inc.**.
For Publishing the notice or advertisement attached hereto on the above stated dates $197.80
Probating Same $ 0
Total $ 197.80

Publisher's Receipt fo

The **Trib Total Media, Inc.**, publisher of
acknowledges a receipt of the aforesaid advertising and
fully paid.

Trib Total Media Inc., Publisher
of the **Tribune-Review**, a Daily Newspaper.

By

Public Notice
Notice is hereby given that Elizabeth Township has prepared an Act 537 Sewage Facilities Plan Update to evaluate alternatives to handle existing and future wastewater flows in the Boston and Buena Vista sewersheds in Elizabeth Township, Allegheny County, Pennsylvania. The proposed alternative includes decommissioning of the existing Buena Vista sewage treatment plant, construction of a pump station and equalization tank at the site of the decommissioned Buena Vista sewage treatment plant, construction of a single force main along the Great Allegheny Passage (Rail Trail) to the Boston Pump Station, upgrades to the Boston Pump Station, pumping from the Boston Pump Station through a single force main to a point of connection with the Municipal Authority of the City of McKeesport near the CSX Railroad Bridge over the Youghiogheny River, and future upgrades to the Buena Vista sewershed pump stations. The estimated cost of the project is $23 million. It is anticipated that bonds will be the primary financing option. The estimated average monthly user rate is approximately $76.00 per month per customer. The Plan is available for review at the Township's office located at 522 Rock Run Road, Elizabeth, PA 15037. A 30-day public comment period will begin on September 14, 2016 and will end on October 14, 2016. Questions and comments must be in written form and should be addressed to the Township at the above address.
6374108(9-13-16)

APPENDIX F

Comments and Responses

KLH
ENGINEERS, INC.

November 7, 2016
Ref. No. 542-04

Mr. Larry A. Coccia
472 Boston Hollow Road
Elizabeth, PA 15037

Dear Mr. Coccia:

Elizabeth Township
Act 537 Sewage Facilities Plan Update
Response to Public Comment

As you are aware, Elizabeth Township is preparing to submit the subject Plan to the Pennsylvania Department of Environmental Protection (PA DEP) for review. One requirement for approval, as outlined in Title 25 – Environmental Protection, Chapter 71 – Administration of Sewage Facilities Planning Program, is that a 30-day public comment period shall be provided to allow residents to provide questions or comments on the proposed Plan. As a part of the submission to the PA DEP, a copy of all written comments received and the municipal response to each comment must be submitted with the Plan.

KLH in is receipt your comment letter dated October 10, 2016, as well as your email dated October 14, 2016, pertaining to the subject Plan. A copy of these comments is attached to this letter. Please be aware that both the comments and this subsequent response must be included as an appendix to the Plan and will remain as public record.

KLH has attempted to identify and adequately address each of your comments. The attached responses on the following pages are formatted as follows:

Your Comment Page **Comment or Question.**

KLH Response.

Comments as submitted in 10/10/2016 Letter

Page 2 **What is minimum flow?**

Minimum flow values were not evaluated as part of this Plan. Flows are recorded at both Buena Vista WWTP and Boston PS, and this flow data is available, but would take time to evaluate for minimum flow parameter. Minimum flow concerns, such as long retention times leading to septic conditions, will be factored into the detailed design of the pump station.

It could be assumed, based on the previous statements in your letter that you are inquiring on a minimum flow requirement to be conveyed to McKeesport per the subject agreement. In this case, there is no minimum flow or requirement stipulated.

5173 Campbells Run Road Pittsburgh, PA 15205 Phone: 412.494.0510 Fax: 412.494.0426 info@klhengineers.com
www.klhengineers.com

PG 24 – Table 7, watershed is for Boston, not Buena Vista.

Noted and corrected.

PG 25 – Table 9 – Existing average flow rates, are these actual or estimated? Buena Vista had permitted flow of 1.4 MGD. Please verify.

The flow rates are based on actual measured flows. The existing hydraulic design capacity of the Buena Vista WWTP is 1.4 MGD. The recorded Year 2015 monthly average flow (MAF) was 1.29 MGD. The MAF was calculated based on monthly compliance reports submitted to the PA DEP.

Page 3

PG 26 – Table 12 – BV PS projected flows, why is 10 YR 24-HR flow rate of 7.41 MGD used?

The flow references are incorrect and have been revised. The peak 2-year, 24-hour design storm flows were to be cited. Using the 2-yr, 24-hour design event, flow projections are as follows.

Existing Pump Rate =	*2.81 MGD*
Projected Overflow Rate =	*3.68 MGD*
Additional Pump Station Flow =	*0.61 MGD*
Future Growth Flow =	*0.31 MGD*
Total Design Flow =	***7.41 MGD***

The 2-year, 24-hour design storm is considered the minimum design standard since this has been approved for the ALCOSAN planning basin for Allegheny County, as well as other sewersheds in Allegheny County.

If you use 6.5 MGD for 2-YR, 24-HR flow, this gives 6.871 - 2.7 MGD = 4.171 MGD or 4.171 MG over one (1) day.

Storm events volumes are not calculated based upon a 24-hr calculation at the peak flow rate. Peak flow rates are not sustained for the duration of a design storm.

Size of tank could be 6.5 – 2.7 = 3.8 MGD or for 1 day 3.8 MG.

Please see last comment on calculation of volume from peak flow rates.

Page 4

What is the size of the pump or pumps, capacity (GPM), HP, and pressure head?

The following parameters were used for planning purposes only. The values are subject to change and do not represent final design numbers. These numbers were used for purposes of feasibility analysis and cost estimating only. They are based on limited design information.

Pump Capacity =	*2.7 MGD*
Static Head =	*24-feet*
Total Dynamic Head (TDH) =	*206-feet*
Horsepower =	*160 HP*
Type =	*Flygt Submersible*

Final pump selection will be based upon a complete system curve analysis.

What is the size of the equalization basins?

For planning purposes, the basin is sized for 2.8 MG.

What are the physical dimensions of this tank (or basin)?

Preliminary planning dimensions are approximately 140-ft in diameter and 28-feet in depth.

What is the elevation to which this tank will be set?

For planning purposes, the following were assumed.

Grade Elevation =	*760.00*
T/ Tank Elevation =	*762.10*
B/ Tank Elevation =	*732.00*

Final elevations will be determined during final design.

Is this tank to be considered as temporary?

No. This tank is a permanent structure.

Has this type of tank been installed at other facilities?

Yes, many facilities incorporate equalization basins.

Does KLH have reference for design or usage?

Yes, KLH has designed similar tanks in the past and will have these available for design reference.

Does the operation of this tank exist in the operation and maintenance manual?

Not at the present time. An O&M manual for the tank will be submitted to the Township upon completion of construction.

Page 5 **Where did the existing flow of 2.6 MGD come from?**

2.6 MGD is the existing design capacity of the Boston Pump Station.

Was the flow measured?

Yes, flow has been measured at the Boston Pump Station.

New Pump Station - Is this station to be designed to handle 17.5 MGD flow max?

Yes. Due to the downstream restrictions at the Municipal Authority of the City of McKeesport (MACM) facilities, the flow is limited to 17.5 MGD.

Since power calculations were made for this station the size of the pumps, capacity, hp, head, and type should be available.

The following parameters were used for planning purposes only. The values are subject to change and do not represent final design numbers. These numbers were used for purposes of feasibility analysis and cost estimating only. They are based on limited design information.

Pump Capacity =	*4.3 MGD*
Static Head =	*24-feet*
Total Dynamic Head (TDH) =	*115-feet*
Horsepower =	*140 HP*
Type =	*Flygt Submersible*

Final pump selection will be based upon a complete system curve analysis.

For the new stations at BV and Boston, emergency generators should be considered especially since they are force main operations.

Emergency generators will be installed at both pump stations for backup power.

Page 6 **The exhibits reference on this page should be:**
For Alt 1 – Exhibit 11 instead of 10
For Alt 2 – Exhibit 12 instead of 11

Noted and corrections made.

For the Alternatives 1, 2, and 3, since power calculations were made, set the elevations used for the pressure head, etc.

The following parameters were used for planning purposes only. The values are subject to change and do not represent final design numbers. These numbers were used for purposes of feasibility analysis and cost estimating only. They are based on limited design information.

Alternative 1 – Buena Vista to Boston

Highest FM Elev =	*754*
BV Wet Well Lowest Level =	*730*
Static Head =	*24*

Alternative 2 – Buena Vista to Intermediate Pump Station

FM Discharge @ IPS =	*890*
BV Wet Well Lowest Level =	*730*
Static Head =	*160*

Alternative 2 –Intermediate Pump Station to Ridge Road

FM Discharge @ Ridge Rd =	*1191*
Wet Well Lowest Level =	*882*
Static Head =	*309*

Common – Boston to MACM

FM Discharge @ MACM =	*746*
Wet Well Lowest Level =	*722*
Static Head =	*24*

What is known about Gateway's tank (basins) size, location, etc?

No information was provided beyond what is included in their Act 537 Plan.

This tank is there a safety net to cover flows over 2.7 MGD. If no power is available, depending on flow, it could fill and then overflow.

There is no additional capacity provided beyond the design volume of the equalization tank. As stated previously, the tank will provided storage for a 2-yr storm.

Page 7

Page 2 – The implementation listing should be rearranged to show evens happening in order of construction, etc. BV STP decommissioning should be last.

Recommendation acknowledged. The decommissioning of the Buena Vista WWTP will be added to the implementation schedule.

Why continue to evaluate Lovedale and Simpson Howell pump stations?

There are overflow issues at these pump stations. However, based on current planning being conducted by Elizabeth Borough Municipal Authority (EBMA), and other considerations, more investigation needs to be completed prior to developing plans. Per the COA, all system overflows must be addressed within 2 years after the completion of the Elizabeth to McKeesport project.

Page 3 – When would rates go up?

Rate increases, as they relate to the project recommended by this Plan, would be determined at the time of additional fund borrowing. Funding amounts and requirements will have an impact on rate increase structure and timing.

Page 3 – The total number of customers (rate payers) should be verified (present and future).

KLH determined the number of customers based on information provided by the prior Authority. Although the number of rate payers fluctuates, we are confident in the numbers used in the analysis.

Page 8

Page 4 – It is stated that the ETSA Revenue Bonds are now in the name of Elizabeth Township. This is not shown on the Emma.org website. Trading of the 2012 series bond occurred on June 16, 2016 with name of ETSA on it. Verify change of title, if that is important.

The Township will look into this. All relevant parties are aware of the actions taken by the Township, and the bond monies are available to the Township for use. Although potentially accurate, this matter does not affect this Plan.

Page 5 – Appendices E, C, D, and F are empty in the book as present. Will they be filled before submitting to DEP on November 9, 2016?

All appendices will be completed prior to submitting to the PA DEP.

Page 6 –Table 1 should be Table 2. The date to complete design on December 31, 2016 is questionable.

Noted and corrections made.

Page 9 – The Part II Permits – Are they complete? Please explain the status.

The Part II Permits are not complete. These permit applications are submitted once the design is complete. Per the COA, there is a deadline for submission of these applications to the PA DEP. The deadline for submission is dependent upon the Department's review time and comment on the Act 537. There are two (2) possible deadlines, and they are as follows.

1. *240 days after signing of the COA*
   May 13, 2016 + 240 = ***January 8, 2017***
2. *45 days after approval of the Act 537 Plan*

Whichever deadline occurs later will be enforced.

Page 11 – Soil dependent systems are not irrelevant. They are rather a problem.

This statement is claiming irrelevancy as they relate to the goals of this Plan, not in general.

Page 9

Page 14 – Are all 4 pump stations made up of 2-pumps in parallel to get capacity shown?

Yes. The figures shown are based on 2-pumps in parallel.

Are the pump curves available and are they in the O&M manuals? This is for all pump stations.

This is an operational question that does not relate to this Plan. This question should be addressed to the operators of the system. In general, pump stations typically have O&M manuals which include pump curves. If pump curves are needed but not available, the operators of the system can obtain them from the pump manufacturer or their certified representative by supplying the nameplate data on the pump.

Page 17 – Boston Pump Station - Backup generator or generators should be located and cost estimates included.

Backup generators are included in the electrical costs. Locations will be determined during final design.

Page 18 – Reference is made to the Authority. Isn't it gone?

Noted and corrections made.

Page 19 – Where is the holding tank off Boston Hollow Road?

This reference was made from prior reporting. This tank is a private on-lot system and falls under the jurisdiction of the Allegheny County Health Department (ACHD), who is the designated sewage enforcement officer (SEO) for the Township.

Page 10

Page 19 - Mansfield Road is referenced as possible 32 homes in here, but 25 have been listed in cost estimate.

The correct projection is 32. The Plan has been revised throughout to reflect this revision.

Page 20 – Thickened sludge hauled to McKeesport will be eliminated when BV STP is decommissioned, but what happens when holding tank is in operation?

Sludge will not be generated once the Buena Vista WWTP is decommissioned. The pump station equalization tank will have an aeration system to prevent the settling of solids.

Table 5 provides info on the MACM WPCP, 2015, biosolids production. Is there a chart for the BV STP? If not, does the MACM chart contain sludge from BV and Boston as referenced?

Please see the attached Sewage Sludge Management Inventory, as reported to the PA DEP in the Year 2015 Chapter 94 Report.

Page 21 – There is the possibility that a gas fired power plant (550 MW) will be built in Elizabeth Township. It could affect the 537 Plan.

Acknowledged. The preliminary planning for this has been taken into consideration.

Page 10

Page 22 – Is the floodplain clearly defined for the Boston Area?

Yes. FEMA has defined floodplain boundaries in this area.

Page 11

Page 23 – KLH has used 6,164 customers in rate calculations. Compare break down (numbers and %) to verify this number. Understanding is the number used is existing rate payers only.

Comment previously addressed.

Pages 28 & 29 - Location of 14-inch diameter line, on or off the trail, should be established as soon as possible.

Location will be established during design.

Page 12

Page 29 & 30 - I say a projection of at least 150 EDU's should be added for the Boston Watershed. More could be added for the immediate Boston Area.

Future growth is used in this Plan to project additional sewage flow. Due to the high infiltration rate of stormwater, it is assumed that flow from any additional connections will be negated by decreases in I&I corresponding to future rehabilitation projects.

Page 12

Page 32 – Comment of only doing what it takes to decommission the BV plant by way of gravity sewer improvements or the installation of force main sewers should state and instead of or.

Acknowledged. Wording has been revised to be clearer.

Page 34 – Use of retaining tank alternatives – Does this tank proposed for BV fall outsides of this ordinance requirement? Please explain.

Yes. The retaining tank alternatives referenced in Section V.E. pertain to private on-lot systems.

Page 13

Page 35 – No action alternative – sentence, minimal impact on drinking water sources would occur is a no-action --- it should change to if no action ---.

Acknowledged and corrected.

Page 36 – 20 year period is stated for planning and cost projections. Why would 30 years be used for bond and present worth projections?

A 30-year period is used for financing considerations due to the reduced impact on rates. While 20-year financing options are available, the debt service payments would be higher, resulting in higher monthly user rates.

Page 37 – The statement – BV STP, Boston Pump Station, Versailles Pump Station and the collection and conveyance facilities etc. are hydraulically overloaded – during storm condition, should be added.

Recommendation acknowledged.

Page 37 – Why is Versailles pump station included in here?

Flow tributary to the Versailles pump station is being removed from the Versailles system as part of this Plan.

Page 37 – Alternative should be made plural – Alternatives, so the project will meet requirements, etc.

In this instance, the reference is made to the selected alternative of this Plan. There are three (3) alternatives proposed, but only one will prevail. Therefore, singular alternative is correct in this reference.

Page 38 – When will Part II WQM Permit be submitted?

This comment was previously addressed.

Page 39 – Spelling, stormwater should be stormwater.

Acknowledged and corrected.

Page 40 – Additional action may be required, when would that occur?

This may occur during the design and permitting phases upon implementation of the selected alternative.

Page 41 – E&S control plan for construction – what are these plans? Were they done by Senate or Gateway? Please explain.

Please reference PA Code, § 102 Erosion and Sediment Control for more information. Per the PA Code, E&S Plan is defined as the following:

> *E&S Plan - Erosion and Sediment Control Plan - A site-specific plan consisting of both drawings and a narrative that identifies best management practices (BMP) to minimize accelerated erosion and sedimentation before, during and after earth disturbance activities.*

To the best of our knowledge, Senate completed E&S plans for the force main project. However, E&S plans are project specific, and will need to be created for this project.

Page 41 – Has it not been determined if wetlands are involved?

Preliminary investigations are completed during the planning phase. A final determination will be made upon detailed design.

Page 14

Page 41 – In summary table 15, since Alternative 2 and 3 were also done by Gateway – please provide comparison with KLH estimates. Especially for Alternative 3.

Gateway did not provide detailed construction cost estimates for alternatives corresponding to KLH Alternatives 2 and 3. The requested comparison cannot be completed with the available information.

Page 42 – What is the 14% estimated delinquency rate based on, ie, number of rate payers? Explain.

Delinquency rate is based on the projected sewer revenue from the current rate structure, number of customers, and water consumption records, versus the actual revenue collected.

Page 44 – The 750 day completion is based upon the issuance of Part II Permits. What is the status of these permits?

This comment was previously addressed.

Page 44 – Did Senate get any Part II Permits? Where are they listed in the schedule as being approved?

To the best of our knowledge, Senate did receive Part II Permits, however, they are project specific based on design and would now be expired.

The approval date is addressed in the footnotes of the Implementation Schedule. It is dependent upon the review time of the PA DEP. For scheduling purposes, the review period is assumed to be 90 days.

Page 44 – KLH has listed in their mini schedule as being submitted on January 8, 2017. You have assumed March 2017 to start 750 day count down. KLH should layout a more detailed schedule to protect themselves as well as others.

Recommendation acknowledged. Scheduling is dependent upon review times of the PA DEP, which are out of our control.

Page 15

Page 45 - What is the amount of money needed to totally fund the project? Later I saw $9.52 million in cost sections. Is that it?

Yes. Additional funding required is estimated to be $9.52 million. However, the actual requirement will be dependent upon other variables such as actual construction cost and financing terms and rates.

Page 46 – When will the design phase of this project start and when can it be expected to get right of ways, easements, etc?

Design has been started, as it must be complete by the end of the year to meet the Part II Permit submission deadline. Any required easements would be acquired prior to the start of construction.

Section 6 – Attachment A and Exhibits – There are 14 exhibits in Appendix H. There are 10 listed in Section 6 of the UER (Pg. 11). In Appendix A, suggestion is to list the exhibits on Pg. 11 of Table of Contents and correct the cross referenced exhibits accordingly. For example, Alternative 3 is shown on Exhibit 13. Note: Exhibit 6 is a rather important one. Why is it not included in the UER – Section 6?

Recommendation acknowledged. The UER is a standalone document that has its own requirements. Only those exhibits required are included.

Page 16

There are 14 (green colored) meter locations shown. Where is the meter reading data kept and how is it used?

Meter data is hosted on a server by the metering company which is accessible to the Township. The data is used for required compliance reporting to the PA DEP.

For example, at Boston, the pump station is close to a stream and close to an elevated ball field. How high is the structure and how will it be protected from foulballs, etc?

This type of detail will be determined during design.

Attachment B: What is a USGS 7.5-minute topographic map?

It is a map developed by the United States Geological Survey (USGS) which is a 1:24,000-scale topographic map. It is referred to as a 7.5-minute map because it covers 7.5 minutes of longitude and 7.5 minutes of latitude. Please visit https://www.usgs.gov/ for more information.

In the cultural resource notice it is required and then requested to show photos. Will this be done later?

Photos were not necessary for this submission.

Procedurally, is there a problem with an E.I.T. signing off on documents?

No professional certification is required for the submission of this information.

Attachment C: Page 1, Twp/Municipality, should this be Elizabeth Township, Elizabeth Borough, and Lincoln Borough?

Township/Municipality are based upon the selected project area, as shown on Page 2 of the PNDI results.

Attachment C: Page 5, Signing by E.I.T.?

No professional certification is required for the submission of this information.

Page 17 **Exhibit 11 – Alternative 1, shows an intermediate pump station. It should not.**

Acknowledged and corrected.

Page 18 **Appendix J – Did ETSA ever pay $52,187.00 to McKeesport for design changes made back in June 2008 or sometime later? Try to verify.**

This request should be made to the Township outside of this Plan.

Appendix K – Page 1 - Add Elizabeth Township, Elizabeth Borough, and Lincoln Borough.

Please see previous response addressing this comment.

Appendix K – Page 5 – Is there a concern with E.I.T. signature?

No professional certification is required for the submission of this information.

Appendix L – PHMC Correspondence – Same comments as in Appendix A, Attachment B, 7.5-minute topographic map? BPS –

Flow will be pumped to McKeesport. E.I.T. signature, again a question.

All comments previously addressed.

Page 19

Appendix M – Cost Estimates - E&S Controls – What is this?

Erosion and sedimentation controls are facilities installed in accordance with approved E&S plan that prevent expedited erosion of the construction site and surrounding areas, as well as preventing excessive sediment into nearby bodies of water.

Please refer to the PA DEP Erosion and Sediment Pollution Control Program Manual, found at http://www.elibrary.dep.state.pa.us/dsweb/View/Collection-11476, for complete information on E&S control requirements.

EQ Tank Size should be stated.

Recommendation acknowledged.

Boston Pump Station (all pumps) not just wet weather – 6 pumps, what are sizes?

For planning purposes, all six (6) pumps assumed to be 140 HP each.

Rails to Trails Permitting Fees – BV to Boston – Where is Boston to McKeesport?

Permits were previously submitted by Gateway for this portion of the project. The fees were paid and it is assumed no further payment will be required.

Concern – Is there a cost to pay Rails to Trails?

This is still under investigation. It is assumed that the cost will be covered by the project cost estimate contingency.

Rumor - $400,000 to what?

The fees charged will be for occupancy of the Rails to Trails right-of-way.

Buena Vista Pump Station – Pumps – size (1 operating and 1 standby)

Recommendation acknowledged.

Electrical – Power required, are lights, security, etc. included?

For planning purposes, the following items were included at each location.

- *Generator*
- *Transfer switch*
- *VFD's*
- *Level Transmitter*
- *Pump Control Panel*
- *Flow meter*
- *Wire Conduit*

An emergency generator should be listed even if it is part of electrical package. State fuel and control types.

This Plan does not require specification of electrical equipment. Although included in the estimate, the level of detail you have requested is not required by this Plan. Construction cost estimates will be developed based on final design.

Page 20 **Equalization Tank – Specify size and dimensions.**

Recommendation acknowledged.

Pumps – size (HP, GPM, and Head should be listed)

Recommendation acknowledged.

Electrical – What does this include?

Comment addressed previously.

Backup generator should be specified.

Comment addressed previously.

Cleanout equipment if needed, specify.

No additional equipment is anticipated.

Fencing, protection (safety) should be specified.

This level of detail has not been determined prior to this Plan.

Boston Pump Station

Pumps – state size.

Recommendation acknowledged.

Pumps (storm) – state size.

Recommendation acknowledged.

Electrical – state power required and what is included. Emergency generator (including piping and what controls and type – gas, diesel or natural gas)

Comment addressed previously.

What will be floodplain protection, Ie, height of control building and sub-station?

This level of detail has not been determined prior to this Plan.

12-inch diameter line to McKeesport (Versailles) under bridge – will it be included to be removed?

Yes. The existing force main will be removed as required by PennDOT.

Alternative 2 – Ridge Road

The pump station cost at BV should be lower, not the same, but maybe it could be.

Per our analysis, the cost of the Buena Vista Pump Station will be similar for all three (3) alternatives.

The elevation for the IPS should be specified.

Recommendation acknowledged.

Stream crossing costs should be consistent.

Stream crossings for Alternatives 2 and 3 are for gravity sewer and priced differently than force main crossings in Alternative 1.

Are they additive with Alternative 1?

No, pricing of each Alternative is independent of the others.

Same comments for electrical…

Comment addressed previously.

Why 2 comminutors here?

Cost was included for a comminutor at the Buena Vista Pump Station, as well as the Intermediate Pump Station.

Page 21 **Alternative 3 – Mansfield Road**

What is the elevation of the drop off manhole at Mansfield?

As previously stated, this elevation was assumed to be 1191.

The 12-inch diameter SDR 35 gravity sewer – Distance 5790-feet is listed. The same for Alt. 2 & 3. The 24-inch diameter SDR 35 gravity sewer – Alt. 2, distance 2,575-feet, Alt. 3 distance 6,879-feet. If you interchange this, run 12-inch diameter down Mansfield and down Boston Hollow to same 24-inch location in Boston, could save 235-140 = $95/ft or $413,630 x 1.2 = $496,356.

The size of this sewer would be verified during design. However, to analyze the cost feasibility of this option, we have revised the sewer diameters in Alternative 3 corresponding to your recommendation. The cost savings you have cited are now reflected in the estimate. Present worth and user rate analyses have been updated. These revisions, however, do not affect the recommendation of the Plan.

Asphalt restoration is also a big number. Where will lines be run?

Detailed alignment plans were not created for this Plan. Location of construction would be dependent upon existing obstructions such as other utilities.

Appendix N – Present Worth Analysis

In the write-up – 32 new customers shown, here 25 new customers used.

Comment acknowledged and corrected.

The 30-year and 4% rate can be made consistent with the 20 year criteria listed in the write up and the 4% reduced to average of 3% rate (today's bond comparison). This affects debt service.

Recommendation acknowledged. KLH has used a rate consistence with historical experience.

Page 22 **The treatment and conveyance fees and 3% escalation rate is questionable, please verify.**

An average of 3% is used to account for inflation. It is not based on historical increases by the MACM, as these numbers would not be representative of future increases due to the recent capital improvement projects.

O&M Cost Calculations

Alternative 1 (Option 1) BV to Boston and Boston to McKeesport

BV Pumps - $81,000 cost per each – in cost estimate it lists $125,000 per each.

Comment acknowledged and corrected.

Please verify my calculations.

*Discrepancies in calculations can be attributed to rounding differences. Although shown as **$0.09 kWh**, the extended cost used in calculation was **$0.0935 kWh**.*

What is the number of gallons treated? See ETSA & McKeesport agreement for example.

Per the May 13, 2013 flow agreement, the cost of treatment for flows less than 14.2 MGD shall be based on customer water usage. Flows conveyed between 14.2 MGD and 17.5 MGD shall be based on actual flow.

Therefore, MACM treatment fees are based on water consumption records, and are summarized as follows.

*193.44 MG / Year @ $8.15 / 1,000 gal = **$1,577,000 per year***

The additional $668,000 per year is calculated based on EBMA treatment rates and water consumption records. They are as follows.

$25.00 per month minimum per customer
$7.25 per 1,000 gal in excess of 2,000 gal

Customers = 1,174
Usage over allowance = 3.62 MG per month

(1,174)($25.00) + (3,620,000)($7.25)/(1,000) = $55,595 per month

($55,595)(12 months) = $667,140 per year = ***$668,000 per year***

Total treatment charges are then as follows.

$1,577,000 + $668,000 = ***$2,245,000 per year***

In pump replacement column – what/which pumps are you replacing?

For the purposes of this Plan, it is assumed that the useful life of a pump is 10 years. Therefore, cost has been included to replace each pump every 10 years.

Page 23 **Alternatives 2 and 3**

Same comments as before.

Comment addressed previously.

Appendix O – User Rate Analysis

The tap in fee is different than in present worth analysis.

Tap fee revenue was calculated using the correct number of additional customers, 32.

Again new customers – 25 vs 32.

Correct number of additional customers is 32. Footnote will be corrected.

Please verify number of rate payers.

Comment addressed previously.

Current budget per CE Report – which CE?

The latest year end CE report was completed by Gateway Engineers in the Year 2015.

Page 24 **When will rate increase take place?**

Comment addressed previously.

What is the date (months) for this budget?

Budget is based on one (1) calendar year, January 1 to December 31.

The sewer charge revenue with 6,164 rate payers calculates to $68.78 / mo. Reference has been made to $76 / mo, a 10.49% difference.

The budget that you are referencing shows the required rates to cover bond requirements with the most current budget expenses. This does equate to approximately $69 / mo. However, this budget does not include additional debt for the recommended project in this Plan. This budget is referenced to show that the current rates are not adequate to cover the expenses outlined in the 2015 CE Report.

On the following page there is a budget for after the implementation of the project. This budget is with assumed $76 / month rates, decreased expenses, and additional debt service.

Please reference Page 3 of the Plan. The $68.78 you refer to is shown as the current required monthly customer rate.

Projected Revenue and Expenses after implementation of Act 537.

Spelling of implementation in title, correct it.

Comment acknowledged and corrected.

Comments as submitted in 10/14/2016 via Email

Email

The design pressure drop should have been estimated by Senate, Gateway & now KLH. On the bases of the minimum velocity criteria for flow & solids drop out & a max velocity for friction head need; this would be a range of 2 fps to 8 fps! KLH plans to pump 1875 gpm in a 14" dia. line & have a holding tank for flows over that. Assuming pumping water only, velocity calculates to 3.908 fps. If you pump 3611gpm (2.7MDG + 2.5MGD tank volume for 1 day), velocity calculates to 7.523 fps.

Recommendation, go to 15" or 16" dia. line, min velocity, 3.405 fps, max velocity, 6.55 fps for 15" or 2.99 fps min to 5.57 fps max for 16". Set up pump configuration for 1 or 2 pumps as needed + 1 pump stand by. (3 pumps total). Elevations need to be set to agree with 60 psi criteria. Availability of pipe size & type & cost & final design (line layout) would confirm pump sizes. For what I have seen, a Holding tank at BV may not be needed. However, KLH should verify this & check with what Senate was planning to do when pumping all the way to McKeesport. Note: I have not checked the friction of the line or the elevations which in total should not exceed 138.568 ft of head. I am reviewing the Hazen-Williams formula flow chart at present. Present day C1 factors for pipe roughness may have changed from my old book.

Recommendation acknowledged. Please note that the necessity of an equalization tank is not based on a physical inability to meet design criteria at peak flow rates, but rather due to downstream restrictions of MACM facilities previously sized based on the flow information provided to them at that time.

In addition, your calculations are based on pump station flow rate and equalization tank volume pumped at a rate of one-day. As previously addressed, 2.8 MG of storage is not correlated to 2.8 MGD over one-day.

The peak flow rate used in this Plan is 7.41 MGD. To size the pump station and force main without an equalization basin, this flow must be used. Therefore, in a 16-inch force main, the corresponding velocity would be 8.21 fps.

We appreciate your interest in the betterment of the Township, as shown by the time and effort put forth in reviewing and commenting on this Plan.

Sincerely,

KLH ENGINEERS, INC.

Bryan M. Churilla, P.E.

Enclosure

cc: Elizabeth Township

SEWAGE SLUDGE MANAGEMENT INVENTORY

In 2015, ETA has removed 189.29 dry tons of solids from the sewage treatment plant and hauled off site.

Table 3: 2015 Biosolids Disposal

Dry Tons of BioSolids	
Month	**Dry Tons**
January	13.97
February	10.95
March	13.84
April	14.45
May	17.98
June	20.38
July	11.42
August	18.50
September	16.17
October	24.19
November	8.49
December	18.95
Total	**189.29**

TO: LAUREN ZANG FOR E.LIB. TWP MGR. OCT. 10, 2016
BRYAN CHURILLA FOR KLH VP-PE

FROM: LARRY A. COCCIA PE RETIRED

SUBJ: COMMENTS & RECOMMENDATIONS (SUGGESTIONS) ON 537 SEWAGE FACILITES PLAN UPDATE, ETC.

PLEASE ACCEPT MY 27 PAGES OF WRITE UP FOR THIS SUBJECT & GET COPY TO BRYAN & AT LEAST ALL THE COMMISSIONERS!
I TRIED TO GET THIS TO YOU LAST FRIDAY BUT I WAS LATE. IF YOU HAVE ANY QUESTIONS LET ME HEAR FROM YOU. I HAVE TRIED TO FOLLOW THE PROCEDURE SET UP BY OTHERS.

Larry A. Coccia

ATTACHMENTS: 27 HAND PRINTED (WRITTEN) PAGES

RECEIVED
OCT 11 2016
JH

(1) of (27)

SEPT. 30, 2016 /
OCT. 6, 2016

TO: ELIZABETH TWP / KLH

FROM: LARRY A. COCCIA, P.E. RETIRED

SUBJECT: COMMENTS ON ACT 537 SEWAGE FACILITES PLAN UPDATE BOSTON AND BUENA VISTA SEWERSHEDS SEPT. 2016, ETC.
(SEE SUMMARY AT END, PGS. 25, 26 & 27.)

THIS PLAN IS THE THIRD ONE AND IT ADDRESSES THE ISSUES WITH THE HELP & GUIDANCE OF THE DEP, VERY WELL BUT THERE ARE SOME ITEMS THAT NEED CLARIFIED.

TO MY KNOWLEDGE THE 3 ENGINEERING COMPANIES & THEIR MAIN SOLUTIONS CONSISTED OF:

SENATE ENG. (2008) - 2 LINES, 12"ϕ & 18"ϕ (STORM WATER) PUMPING (FM) STRAIGHT TO MCK, BUT BOSTON WOULD TIE IN & 18"ϕ WOULD BE INCREASED TO 24"ϕ. FLOWS GOT CONFUSED BUT CONSTRUCTION WAS A MAIN CONCERN (KEEP OPERATIONS GOING). LINES WOULD FOLLOW TRAIL.

GATEWAY ENG. (2015) - KEEP BV PLANT IN OPERATION & UPGRADE ACCORDINGLY (NOT GO TO MCK). ALTERNATES OF GOING UP OVER THE HILL TO BOSTON & TO MCK, WERE ADDRESSED.

KLH ENG. (2016) - BY VIRTUE OF THEIR RECOMMENDATION WOULD GO DOWN THE TRAIL WITH A 14"ϕ FM TO BOSTON & PROVIDE A LARGE HOLDING TANK TO HANDLE OVERFLOW, ETC. @ BV. THEN

(2.) of (27)

AN UPGRADED/NEW PUMP STATION @ BOSTON & 24" Ø FM TO MCK. FLOW HAS BEEN AN ISSUE FOR ME & IT APPEARS FOR EVERYONE ELSE, SINCE AT LEAST APRIL OF 2013, THE AGREEMENT WITH MCK. WAS CHANGED IN MAY OF 2013 TO PEAK FLOW OF 17,500,000 GALLONS PER DAY AND AN AVERAGE FLOW OF 1,695,000 GALLONS PER DAY. THESE ARE COMBINED FLOWS FROM BV & BOSTON. PROBLEM; WHAT IS MINIMUM FLOW? BY THIS TIME, IT WAS ANTICIPATED THAT ALL FLOWS WOULD HAVE BEEN MEASURED & NOT PREDICTED & COULD BE RELIABLY APPLIED FOR DESIGNING. IT IS STATED THAT MCK. USED THE 2 NUMBERS LISTED & UPGRADED ACCORDINGLY (COST, ETC.). RATES FOR TREATMENT WERE ESTABLISHED (MCK. & ET) @ $7.85/1000 GAL, AS OF 7-1-2013, ON UP TO 9,861 GPM & $3.925/1000 GAL OVER 9,861 GPM. THESE RATES COULD INCREASE GOING FORWARD, ETC.

FLOWS AT THE BV (PRESENT VS FUTURE, ETC.) PLANT & FLOWS AT THE BOSTON PUMP STATION (PRESENT & FUTURE), REF. IS MADE TO PAGES 24, 25, 26, 27 & 29 OF KLH PLAN SUMMARY WRITE UP;

PG. 24 - APPROVED FLOWS SHOWN IN TABLE 6 WERE FOR AFTER 2008 TIME FRAME. TABLE 7, WATERSHED IS FOR BOSTON, NOT BV.

PG. 25 - TABLE 9: EXISTING AVE. FLOW RATES, ARE THESE RATES ACTUAL OR ESTIMATED? BV HAD PERMITTED FLOW OF 1.9 MGD. PLEASE VERIFY.

(3) of (27)

PG. 25 (CONT). PEAK OVERFLOW
TABLE 11: VOLUMES FOR 2015 (A GOOD YEAR), HOPEFULLY MEASURED, TOTALS TO 1.974 GALLONS. THIS CONVERTED TO .061 MGD, CALCULATED BASED ON 32 DAYS, (APPROX. 1 MO.).

PG. 26 TABLE 12: BV-PS PROJECTED FLOWS, WHY IS 10 YR 24-HR FLOW RATE OF 7.41 MGD USED? WHEN ADDED TO PUMP STATION OVERFLOWS & FUTURE GROWTH THIS COMES TO 8.184. WHEN LIMITING FLOW TO 2.7 MGD (ALSO A QUESTION) & STATING REMAINING FLOW CAPTURED IN EQUALIZATION (HOLDING TANK) BASINS, THIS COMES TO 8.184 - 2.7 = 5.484 MGD OR IF TANK IS DESIGNED TO HOLD 1 DAY FLOW, SIZE (VOLUME) WOULD BE 5.484 MG.

IF YOU USE 6.5 MGD FOR 2YR 24-HOUR FLOW, THIS GIVES 6.871 MGD - 2.7 MGD = 4.171 MGD OR 4.171 MG OVER 1 DAY.

TABLE 13: BOSTON PS PROJECTED FLOWS

		PEAKS
BOSTON PEAK (FOR 2YR STORM) -	14.77	14.77
BV LIMITED FLOW -	2.7	
DESIGN -	17.47	
BV PEAK (FOR 2YR STORM) PEAK -		6.5 / 21.27

SIZE OF TANK COULD BE 6.5 - 2.7 = 3.8 MGD OR FOR 1 DAY - 3.8 MG.

PG. 27 - FUTURE GROWTH PROJECTION LIMIT TO BV SEWERSHED ONLY - 761 EDU X 400 = .31 MGD IS QUESTIONABLE? SEE LATER COMMENT.

(4) OF (27)

PG. 29 - TABLE 14. COMPARISON OF ALTERNATIVES,
SENATE 2008 PLAN VS KLH 2016 PLAN,
COMMENTS ON KLH 2016 PLAN ONLY -
BY NEW PUMP STATION - 2.7 MGD
EQUALIZATION BASINS - 2.2 MG
FORCE MAIN - 14" ϕ
QUESTIONS:
WHAT IS THE SIZE OF THE PUMP OR PUMPS,
CAPACITY (GPM), HP & PRESSURE HEAD? POWER
CALCULATIONS HAVE BEEN MADE (COST, ETC.) SO
THIS SHOULD NOT BE A PROBLEM TO ANSWER.
WHAT IS THE SIZE OF THE HOLDING TANK OR
EQUALIZATION BASINS? LISTED HERE IT IS 2.2 MG.
ON PREVIOUS PUBLIC HANDOUT IT WAS 2.8 MG.
IN CALCULATIONS ON PREVIOUS PAGE IT COULD
BE 3.8 MG, 4.171 MG OR 5.484 MG.
WHAT ARE THE PHYSICAL DIMENSIONS OF THIS
TANK (OR BASINS)?
WHAT IS THE ELEVATION TO WHICH THIS TANK
WILL BE SET?
IS THIS TANK TO BE CONSIDERED AS TEMPORARY?
HAS THIS TYPE OF TANK BEEN INSTALLED AT
OTHER FACILITIES? DOES KLH HAVE REF FOR
DESIGN OR USEAGE?
DOES THE OPERATION OF THIS TANK EXIST
IN THE OPERATION & MAIN. MANUAL?

(5) OF (27)

PG. 29 (CON'T).

BOSTON: EXISTING PUMP STATION - 2.6 MGD
NEW PUMP STATION " 12.2 MGD
FORCE MAIN - 24" ϕ

QUESTIONS:

WHERE DID THE EXISTING FLOW OF 2.6 MGD COME FROM? THERE ARE 3 - 950 GPM PUMPS @ BOSTON AT PRESENT. 2 OPERATING & 1 STD. BY.

WAS THE FLOW MEASURED? ELSEWHERE IN THIS WRITE UP IT WAS STATED THAT THESE 3 PUMPS COULD GET YOU 4.1 MGD. IF YOU HAVE THE PUMP CURVES & YOU COMBINE THEM & KNOW THE PRESSURE DROPS, YOU WILL SEE THAT YOU CAN'T GET 4.1 MGD FLOW FOR THE 3 PUMPS!

FOR THE NEW PUMP STATION - 12.2 MGD WITH 24" ϕ FORCE MAIN.

IS THIS STATION TO BE DESIGNED TO HANDLE 17.5 MGD FLOW MAX.?

SINCE POWER CALCULATIONS WERE MADE FOR THIS STATION THE SIZE OF THE PUMPS, CAPACITY, HP, HEAD & TYPE SHOULD BE AVAILABLE.

PG 29 CON'T. AT THE EXISTING BV PLANT THERE IS A BACK UP GENERATOR TO COME ON LINE IN CASE OF POWER FAILURE. FOR THE NEW STATIONS @ BV & BOSTON, EMERGENCY GENERATORS SHOULD BE CONSIDERED ESPECIALLY SINCE THEY ARE FORCE MAIN OPERATIONS.

THE EXHIBITS REFERENCED ON THIS PAGE SHOULD BE: FOR ALT. 1 - EXHIBIT 11 INSTEAD OF 10, FOR ALT. 2 - EXHIBIT 12 INSTEAD OF 11.

FOR THE ALTERNATES 1, 2 & 3, SINCE POWER CALCULATIONS WHERE MADE, SET THE ELEVATIONS USED FOR THE PRESSURE HEAD, ETC. THIS DOESN'T NEED TO BE EXACT AT THIS TIME!

THE HOLDING TANK (BASINS) IS IN ALL 3 ALTERNATES. IT'S LOCATION IS CRITICAL & EFFECTS OPERATION, CONSTRUCTION & SCHEDULE GOING FORWARD. KLH ESTIMATE OF COST (INCLUDING ENG, ETC) IS $4,668,726. THIS IS MUCH GREATER THAN GATEWAY'S ESTIMATE, IN AT LEAST ONE (1) PLACE, WHAT IS KNOWN ABOUT GATEWAY'S TANK, (BASINS), SIZE, LOCATION, ETC.? IN GATEWAY'S COMMENT ANSWER TO ALLEGHENY COUNTY, SIZE OF TANK WAS STATED AS 2.5 MG. THIS TANK IS THERE AS A SAFETY NET TO COVER FLOWS OVER 2.7 MGD. IF NO POWER IS AVAILABLE, DEPENDING ON FLOW, IT COULD FILL & THEN OVERFLOW.

(7) of (27)

ADDITIONAL COMMENTS, STARTING WITH PG.1 OF PLAN SUMMARY; ONLY PAGES WITH COMMENTS WILL BE LISTED.

PG.1 - VOTE BY COMMISSIONERS WAS MADE TO DISBAND THE AUTHORITY & FIRE THE GATEWAY ENGS., IN MARCH OF 2016.

ALTHOUGH THE EXISTING BV STP & BOSTON PS HAVE EXCEEDED THEIR USEFUL LIFESPAN, THEY MUST BE MAINTAINED FOR USE FOR AT LEAST 2+ YEARS.

PG.2 - ALT. 1 HAS BEEN RECOMMENDED (COMMENT ON THIS LATER), THE IMPLEMENTATION LISTING SHOULD BE REARRANGED TO SHOW EVENTS HAPPENING IN ORDER OF CONSTRUCTION, ETC. BV STP DECOMMISSIONING SHOULD BE LAST.

WHY CONTINUE TO EVALUATE LOVEDALE & SIMPSON HOWELL PUMP STATIONS? FLOWS FROM THEM ARE & WILL BE PART OF FLOWS TO MCK., GOING FORWARD!

PG.3 - IT IS SHOWN THAT A PRESENT SHORTFALL OF $21.00/MO. IS REQ'D TO COVER EXISTING OPERATIONS. FOR THE PROPOSED PLAN THE TOTAL RATE WOULD GO TO $76.00/MONTH.

WHEN WOULD RATES GO UP?

THE TOTAL NO. OF CUSTOMERS (RATE PAYERS) SHOULD BE VERIFIED (PRESENT & FUTURE).

(8) of (27)

PG. 4 - IT IS STATED THAT THE ETSA REVENUE BONDS ARE NOW IN THE NAME OF ELIZ. TWP. THIS IS NOT SHOWN ON THE EMMA.ORG WEB SITE. TRADING OF 2012 SERIES BOND OCCURRED ON JUNE 16, 2016 WITH NAME OF ETSA ON IT. VERIFY CHANGE OF TITLE, IF THAT IS IMPORTANT.

PG. 5 - APPENDIXES; E, C, D, & F ARE EMPTY IN BOOK AT PRESENT. WILL THEY BE FILLED BEFORE SUBMITTING TO DEP ON NOV. 9, 2016?

PG. 6 - TABLE 1 SHOULD BE TABLE 2.

THE DATE TO COMPLETE DESIGN ON DECEMBER 31, 2016 IS QUESTIONABLE.

NOTE! HOPEFULLY KLH IS PREPARING A MORE DEFINED SCHEDULE FOR THE DEP REVIEW. I RECALL A RATHER LARGE ONE SHOWN BY SENATE.

PG. 9 - THE PART II PERMITS - ARE THEY COMPLETE? PLEASE EXPLAIN STATUS!

IT APPEARS THAT THE GOAL OF THE PADEP IS TO GET RID OF SMALL TREATMENT PLANTS, NO MATTER WHAT THE COSTS ARE & WHO PAYS. HOPEFULLY FINANCIAL HELP IS AVAILABLE.

PG. 11 - SOIL DEPENDENT SYSTEMS ARE NOT IRRELEVANT! THEY ARE RATHER A PROBLEM!

(9) OF (27)

PG. 14 - MY UNDERSTANDING IS THAT ALL FLOW ARRIVES AT THE BVSTP BY GRAVITY. IN TABLE 3, ARE ALL 4 PUMP STATIONS MADE UP OF 2 - PUMPS IN PARALLEL TO GET CAPACITY SHOWN. FOR EXAMPLE, AT LOVEDALE, 2 PUMPS IN OPERATION & THERE IS ONE (1) PUMP STAND BY, FOR 3 PUMPS TOTAL. ARE THE PUMP CURVES AVAILABLE & ARE THEY IN THE O&M MANUALS. THIS IS FOR ALL PUMP STATIONS.

AT BOSTON, 3 PUMPS IN OPERATION WILL NOT GET TO 4.1 MGD. FLOW SHOULD BE MEASURED.

PG. 17 - BOSTON PUMP STATION - IT IS STATED THAT ALL CAPACITY ISSUES WILL BE ELIMINATED WITH THE IMPROVEMENTS REC. IN PLAN - EXCEPT FOR CASE OF POWER FAILURE! BACK UP GENERATOR OR GENERATORS SHOULD BE LOCATED & COST ESTIMATES INCLUDED.

PG. 18 - REFERENCE IS MADE TO THE AUTHORITY, ISN'T IT GONE?

PG. 19 - WHERE IS THE HOLDING TANK OFF BOSTON HOLLOW ROAD?

PG. 19 (CON'T) - IF THE PURPOSE OF THE 537 PLAN IS TO CLEAN UP STREAMS, ETC, & PROTECT THE HEALTH CONCERNS OF ALL THEN LINCOLN HALL, MANSFIELD ROAD, BOSTON HOLLOW, LINCOLN BORO, ETC. SHOULD BE INCLUDED IN THE PLAN. A TIME FRAME & COST ESTIMATE SHOULD BE MADE & REFERENCED! MANSFIELD ROAD IS REFERENCED AS POSSIBLE 32 HOMES TIE IN HERE, BUT 25 HAVE BEEN LISTED IN COST ESTIMATE.

PG. 20 - THICKENED SLUDGE HAULED TO MCK. WILL BE ELIMINATED WHEN BV STP IS DECOMMISSIONED, BUT WHAT HAPPENS WHEN HOLDING TANK IS IN OPERATION? TABLE 5 PROVIDES INFO. ON THE MACM WPCP, 2015, BIOSOLIDS PRODUCTION. IS THERE A CHART FOR THE BVSTP? IF NOT, DOES THE MACM CHART CONTAIN THE SLUDGE FROM BV & BOSTON AS REFERENCED?

PG. 21 - THERE IS THE POSSIBILITY THAT A GAS FIRED POWER PLANT (550 MW) WILL BE BUILT IN ELIZ. TWP! IT COULD AFFECT THIS 537 PLAN.

P. 22 - FLOODPLAIN CONCERNS. BOSTON PUMPSTATION, PRESENT & FUTURE ARE IN THE FLOODPLAIN! ET HAS CODES FOR THIS SITUATION THAT NEED ADDRESSED. ELEVATIONS ARE CRITICAL, AS REFERENCED. IS THE FLOODPLAIN CLEARLY DEFINED FOR THE BOSTON AREA?

(11) OF (27)

PG. 23 - KLH HAS USED 6,164 CUSTOMERS IN RATE CALCULATIONS. COMPARE BREAK DOWN (NUMBERS & %) TO VERIFY THIS NUMBER. UNDERSTANDING IS THE NO. USED IS EXISTING RATE PAYERS ONLY.

FOR PGS. 24, 25, 26, 27 & 29, SEE PREVIOUS COMMENTS.

PG. 28 & 29 FOR ALT. 1 (CHOSEN OPTION) - GREAT ALLG. PASSAGE FORCE MAIN, ALMOST 4.94 MILES TO MCK, WITH DROP OFF AT BOSTON ALONG THE WAY, TAP INTO FORCE MAINS IS NOT RECOMMENDED (IT POSSIBLY CAN BE DONE WITH CHECK VALVES & PRESSURE CONTROLS). CONCERN WITH THE COST (FROM/TO) SETTLEMENT WITH TRAIL COUNCIL. LOCATION OF 14"ϕ LINE, ON OR OFF TRAIL, SHOULD BE ESTABLISHED ASAP. THIS ALT. 1 IS SHOWN ON EXHIBIT 11. (NOT 10)

PG. 29-30 FOR ALT. 2 & 3, IF THESE ALTERNATIVES ARE TO BE SERIOUSLY CONSIDERED, THE STATE (RENNDOT) IS NOT AWARE OF IT. (TO MY KNOWLEDGE). THE STATE IS PRESENTLY STUDYING & SURVEYING BOSTON HOLLOW AREA TO UPGRADE ROAD & STREAM CROSSING ISSUES.

MORE ON THESE ALTERNATES LATER.

FOR ALT. 3 TO BE FEASIBLE, MORE RATE PAYERS MUST BE OBTAINTED (FURTHER THAN 150' FROM LINE)

CALLING THIS POTENTIAL EXTENSION OR PICK UP OF RATE PAYERS WOULD/COULD MEAN TO PUT INTERCEPTS (6" TO 8" ϕ) DOWN BOSTON HOLLOW TO MANSFIELD, DOWN PIERCE & FINNEY ROADS (LINCOLN BORO) TO BOSTON HOLLOW THEN TO MANSFIELD & THEN TO BOSTON. ALL GRAVITY FLOW. ESTIMATE OF NEAR TERM PAYERS ≈100. THIS INCLUDES: RIDGE ROAD, MANSFIELD ROAD, PIERCE & FINNEY & BOSTON HOLLOW. APPROX. ANOTHER 50 COULD OCCUR IF SOME FUTURE DEV. WOULD BE PLANNED.

NOTE: ON PG. 27, KLH ELECTED TO USE SENATE POPULATION PROJECTION OF 761 EDU'S & HAVE ALL THIS GO TO THE BV WATERSHED. I SAY A PROJECTION OF @ LEAST 150 EDU'S SHOULD BE ADDED FOR THE BOSTON WATERSHED. MORE COULD BE ADDED FOR THE IMMEDIATE BOSTON AREA.

PG. 32 - COMMENT OF ONLY DOING WHAT IT TAKES TO DECOMMISSIONING THE BV PLANT BY WAY OF GRAVITY SEWER IMPROVEMENTS OR THE INSTALLATION OF FORCE MAIN SEWERS SHOULD STATE AND INSTEAD OF, OR! ALSO, 537 PLAN SHOULD BE FOR MORE THAN THIS WRITE UP PLAN CONSIDERS.

PG. 34 - USE OF RETAINING TANK ALTERNATIVES - DOES THE TANK PROPOSED FOR BV FALL OUTSIDE OF THIS ORDINANCE REQUIREMENT? PLEASE EXPLAIN.

(13) OF (27)

PG.35 - NO ACTION ALTERNATIVE - SENTENCE, MINIMAL IMPACT ON DRINKING WATER SOURCES WOULD OCCUR IS A NO-ACTION ---- IT SHOULD CHAN... TO IF A NO ACTION ----. NOTE! MINIMAL TO NO ACTION WILL OCCUR FOR OVER 2 YEARS AS CHANGES ARE MADE, i.e., EXISTING SYSTEMS MUST FUNCTION OVER THIS TIME PERIOD. NO ACTION BECOMES ACTION IF YOU CAN PAY FOR IT!

PG.36 - 20 YEAR PERIOD IS STATED FOR PLANNING & COST PROJECTIONS. WHY WOULD 30 YEARS BE USED FOR BOND AND PRESENT WORTH PROJECTIONS?

PG.37 - THE STATEMENT - BY ST.P, BOSTON PUMP STATION, VERSAILLES PUMP STATION & THE COLLECTION & CONVEYANCE FACILITIES ETC. ARE HYDRAULICALLY OVER LOADED - DURING STORM CONDITION, SHOULD BE ADDED! WHY IS VERSAILLES PUMP STATION INCLUDED HERE? ALTERNATIVE SHOULD BE MADE PLURAL - ∴ ALTERNATIVES, SO THE PROJECT WILL MEET REQ'MTS, - ETC.

PG.38 - WHEN WILL PART II WPM PERMIT BE SUBMITTED?

PG.39 - SPELLING, SOTMWATER SHOULD BE STORMWATER.

PG.40 - ADDITIONAL ACTION MAY BE REQ'D, WHEN WOULD THAT OCCUR? THIS IS NOT THE FIRST 537 PLAN.

PG.41 - E&S CONTROL PLAN FOR CONSTRUCTION - WHAT ARE THESE PLANS? WERE THEY DONE BY SENATE OR GATEWAY. PLEASE EXPLAIN. HAS IT NOT BEEN DETERMINED IF WETLANDS ARE INVOLVED? REFERENCE IS MADE TO PRELIMINARY INVESTIGATION.

(14) of (27)

COST ESTIMATES & PRESENT WORTH ANAL.-
APPENDIX M, COMMENT LATER. IN SUMMARY
TABLE 15, SINCE ALT. 2 & 3 WERE ALSO DONE
BY GATEWAY - PLEASE PROVIDE COMPARISON
WITH KLH ESTIMATES. ESPECIALLY FOR
ALT. 3.

PG. 42 - KLH HAS CHOSEN A 30-YEAR PERIOD
& A 4.0% INTEREST RATE. THESE ARE RELATIVE
FOR EACH ALT. BUT COULD BE 20 YEAR &
3% RATE FOR EXAMPLE.
PROJECTED RATES WERE CALCULATED BASED
ON ANNUAL DEBT SERVICE PAYMENTS & O&M
COSTS. LATER ON THIS O&M ISSUE.
WHAT IS THE 14% EST. DELINQUENCY RATE
BASED ON, I.E., NO OF RATE PAYERS? EXPLAIN.

PG. 44 - THE 750 DAY COMPLETION IS BASED UPON THE
ISSUANCE OF PART II PERMITS. WHAT IS
STATUS OF THESE PERMITS? DID SENATE GET
ANY PART II PERMITS? WHERE ARE THEY LISTED
IN THE SCHEDULE AS BEING APPROVED?
KLH HAS LISTED IN THEIR MINI SCHEDULE
AS BEING SUBMITTED ON JAN. 8, 2017. YOU
HAVE ASSUMED MARCH 2017 TO START 750 DAY
COUNT DOWN. KLH SHOULD LAYOUT A MORE
DETAILED SCHEDULE TO PROTECT THEMSELVES
AS WELL AS OTHERS!

(15) OF (27)

PG. 45 - REPEATING OF WRITE-UP ISSUES GOES ON.
WHAT IS THE AMOUNT OF MONEY NEEDED TO TOTALLY FUND PROJECT? LATER I SAW 9.52 MILLION IN COST SECTIONS. IS THAT IT?

PG. 46 - WHEN WILL THE DESIGN PHASE OF THIS PROJECT START & WHEN CAN IT BE EXPECTED TO GET RIGHT OF WAYS, EASEMENTS, ETC? ALT. 1 SHOULD ALREADY BE MAPPED OUT IF SENATE COMPLETED ROUTE 1

PG. 47 - REPEATING WHAT WAS LISTED ELSEWHERE!

PG. 48 - " " " " "

PG. 49 - " " " " "

APPENDIX A - UER WRITE UP (REVIEW).
THIS IS RG. WRITE UP COVERS ESSENTIALLY WHAT EXISTS ELSEWHERE. COMMENTS AGAIN WILL BE RELATED TO PAGES.
IN TABLE OF CONTENTS, PG. i - SECTIONS 5 & 6, PGS. 10 & 11 HAVE SOME COMMENTS, ATTACHMENTS A, B & C WILL ALSO BE ADDRESSED.

SECTION 6 -
ATTACHMENT A / EXHIBITS - THERE ARE 14 EXHIBITS IN APPENDIX H. THERE ARE 10 LISTED IN SEC. 6 OF THE UER (PG. 11) IN APPENDIX A, SUGGESTION IS TO LIST THE EXHIBITS ON PG. ii OF TABLE OF CONTENTS & CORRECT THE CROSS REFERENCED EXIBITS ACCORDINGLY. FOR EXAMPLE, ALT. 3 IS SHOWN ON EXHIBIT 13. NOTE! EXHIBIT 6 IS A RATHER IMPORTANT ONE. WHY IS IT NOT INCLUDED IN THE UER-SEC. 6?

(16) OF (27)

THERE ARE 14 (GREEN COLORED) METER LOCATIONS SHOWN (IF I COUNTED CORRECTLY). WHERE IS THE METER READING DATA KEPT & HOW IS IT USED?

ALTHOUGH THE FLOODPLAIN ISSUE EXISTS & IS DEPICTED ON EXHIBITS 7, 8 & 9, I HAVE TROUBLE UNDERSTANDING THE DRAWINGS (SCALE, COLORS, MARKING, ETC.). FOR EXAMPLE, AT BOSTON, THE PUMP STATION IS CLOSE TO A STREAM & CLOSE TO AN ELEVATED BALL FIELD. HOW HIGH IS THE STRUCTURE & HOW WILL IT BE PROTECTED FROM FILE BALLS, ETC.?

ATTACHMENT B: WHAT IS A USGS 7.5-MINUTE TOPOGRAPHIC MAP? ON PG. 2, REFERENCE IS MADE TO A 7.5' USGS MAP, ON PG. 1, REFERENCE IS MADE TO AN ATTACHED EXHIBIT. EXHIBIT II IS ATTACHED BUT IT IS TOO SMALL TO READ, ETC. IN THE CULTURAL RESOURCE NOTICE IT IS REQ'D & THEN REQUESTED TO SHOW PHOTO'S. WILL THIS BE DONE LATER? PROCEDURALLY, IS THERE A PROBLEM WITH AN E.I.T SIGNING OFF ON DOCUMENTS?

ATTACHMENT C: PG. 1, TWP/MUN 1, SHOULD THIS BE ELIZ TWP, ELIZ BORO & LINCOLN BORO.?, PG. 5, SIGNING BY E.I.T.?

(17) of (27)

APPENDIX B: ACT 537 PLAN CONTENT & ENVIRONMENTAL ASS'T. CHECK LIST - THERE ARE 14 PAGES OF CLEARLY DEFINED STEPS.

CROSS REFERRING OF ITEMS COULD HAVE BEEN MADE EASIER TO FOLLOW. DEP NUMBERS COULD HAVE BEEN USED EVEN IF SEVERAL OCCURRED ON ONE(1) PAGE. FOR EX. DEP 1.T.3 LISTED ON PG. 5.

AT THIS TIME, THE 537 PLAN BOOK IS NOT COMPLETE. HOPEFULLY THIS WILL BE DONE BY SUBMITTAL DATE OF NOV. 9, 2016.

APPENDIX C & D: INCOMPLETE

" E: NEED AN ADDITIONAL NOTICE OF PUBLIC NOTICE - SEPT. 14 TO OCT. 14, 2016.

" F: INCOMPLETE

" G: CONSENT ORDER & AGREEMENT (COA).

PG. 8, APPEAL DATE, SEPT. 25, 2016 SHOULD BE SEPT. 25, 2015.

PG. 11, DECOMMISION TIME OF 24 MONTHS NEEDS TO BE CLARIFIED.

APPENDIX H: CONTAINS 14 EXHIBITS. SOME ARE TOO SMALL TO READ, ETC. A FEW COMMENTS ARE IN ORDER.

EXHIBIT II-ALT. 1, SHOWS AN INTERMEDIATE PUMP STATION. IT SHOULD NOT.

PUMP STATIONS SHOWN AT BV & BOSTON WILL BE CHANGED. THEY ARE SHOWN AS EXISTING. THIS IS CASE FOR ALT. 2 & ALT. 3, EXHIBITS 12 & 13.

APPENDIX I - ZONING MAP - NO COMMENT.

APPENDIX J - MACM FLOW AGREEMENT;
SINCE FLOWS HAVE CHANGED (MAINLY AT BV) & MACM MAYBE HAS A NEW OWNER, MAYBE THIS AGREEMENT CAN BE REVISITED.
KLH IS WORKING FOR ET & ESSENTIALLY WORKED FOR MCK. ANOTHER REVIEW SHOULD TAKE PLACE. HOPEFULLY NEGOTIATED RATES HAVE BEEN USED & CAN BE VERIFIED.
DID ETSA EVER PAY $52,187.00 TO MCK. FOR DESIGN CHANGES MADE BACK IN JUNE, 2008 OR SOMETIME LATER? TRY TO VERIFY.

APPENDIX K - PNDI ENV. REVIEW RECEIPT, PGS. 1-5.
PG. 1 - ADD ELIZ. TWP, ELIZ. BORO & LINCOLN BORO.
PG. 5 - IS THERE A CONCERN WITH E.I.T. SIGNATURE?

APPENDIX L - PHMC CORRESPONDENCE, SAME COMMENTS AS IN APPENDIX A, ATTACHMENT B, 7.5-MINUTE TOPOGRAPHIC MAP? BPS - FLOW WILL BE PUMPED TO MCK, E.I.T. SIGNATURE, AGAIN A QUESTION.

(19) OF (27)

APPENDIX M - COST ESTIMATES

ALT. 1 - ALLEGHENY PASSAGE FM

E & S CONTROLS - WHAT IS THIS? ESTIMATED AS LF (1 PL) & LS (3 PLACES) - TOTAL FOR THIS, 104,750 + 35,000 + 10K + 7.5K = 157,250. THIS IS LISTED PER EACH BREAK-DOWN - 4 PLACES.

14" PVC FM IS BV TO BOSTON

24" D.I. FM IS BOSTON TO MCK.

EQ. TANK - SIZE SHOULD BE STATED.

BOSTON PUMP STATION (ALL PUMPS) NOT JUST WET WEATHER) - 6 PUMPS, WHAT ARE SIZES? (GATEWAY HAD DIFF. SIZES).

RAILS TO TRAILS PERMITTING FEES - BV TO BOSTON.

43,750 LF @ 1.63 = 71,331.52

WHERE IS BOSTON TO MCK.? 8625 X 1.63 = 14,058.75

CONCERN - IS THERE A COST TO PAY TO RAILS TO TRAILS? RUMOR - $400,000 TO WHAT?

BUENA VISTA PUMP STATION -

PUMPS - SIZE (1 OPERATING + 1 STD. BY)

ELECTRICAL - POWER REQ., ARE LIGHTS, SECURITY, ETC., INCLUDED.

AN EMERGENCY GENERATOR SHOULD BE LISTED EVEN IF IT IS PART OF ELECTRICAL PACKAGE!

STATE FUEL & CONTROL TYPES.

(20) of (27)

EQUALIZATION TANK - SPECIFY SIZE & DIMENSIONS.
PUMPS - SIZE (HP, GPM & HEAD SHOULD BE LISTED)
ELEC. - WHAT DOES THIS INCLUDE?
BACK UP GENERATOR SHOULD BE SPECIFIED.
CLEAN OUT EQUIPMENT IF NEEDED, SPECIFY.
FENCING, PROTECTION (SAFETY) SHOULD BE SPECIFIED.

BOSTON PUMP STATION:
PUMPS - STATE SIZE
PUMPS (STORM) - STATE SIZE
ELECTRICAL - STATE POWER REQ'D. & WHAT IS INCLUDED.
EMERGENCY GENERATOR (INCLUDING RIPING & CONTROLS & TYPE - GAS, DIESEL OR NATURAL GAS).
WHAT WILL BE FLOODPLAIN PROTECTION i.e. HEIGHT OF CONTROL BUILDING & SUB-STATION?
12"ϕ LINE TO MCK. (VERSAILLES) UNDER BRIDGE - WILL IT BE INCLUDED TO BE REMOVED?

ALT. 2 - RIDGE AVE.
IF THIS ALTERNATE GOES FORWARD (INTERMITTENT PUMP (IPS) STATION) THEN THE PUMP STATION COST AT B.V. SHOULD BE LOWER, NOT THE SAME. BUT MAY BE. IT COULD BE. THE ELEV. FOR THE IPS SHOULD BE SPECIFIED. STREAM CROSSINGS COSTS SHOULD BE CONSISTENT. ARE THEY ADDITIVE WITH ALT. 1?
SAME COMMENTS FOR ELECTRICAL AS FOR B.V. PUMP STAT.
THE SIZE & TYPE OF PUMPS SHOULD BE SPECIFIED, NOT JUST A COST OF $130,000. EACH. WHY 2 COMMINUTORS HERE?

(21) OF (27)

ALT. 3 - MANSFIELD ROAD (STREET)

WHAT IS THE ELEVATION AT THE DROP OFF MANHOLE AT MANSFIELD? NOTE: IF YOU USED THE 60PSIG ALLOWABLE LIMIT, THEN THE ELEV, WOULD BE 60/.433 = 138.57 FT. (E' TO IPS).

GOING BACK TO ALT. 2 - USING SAME ANALOGY, FROM BV TO IPS WOULD BE 138.57'.

TOTAL, THEN BV TO MANSFIELD MANHOLE IS - 277.14 FT. +/-

LOCATION OF STATIONS, LINE SIZES, ETC. SHOULD BE VERIFIED. VELOCITY & THEN HP CAN BE CALCULATED!

THE 12" ϕ SDR 35 GRAVITY SEWER - DISTANCE 5790' IS LISTED. THE SAME FOR ALT. 2 & ALT. 3, THE 24" ϕ SDR 35 GRAVITY SEWER - ALT. 2, DISTANCE 2,575', ALT. 3, DISTANCE 6,879'.

IF YOU INTERCHANGE THIS, RUN 12" ϕ DOWN MANSFIELD & DOWN BOSTON HOLLOW TO SAME 24" ϕ LOCATION IN BOSTON COULD SAVE 235 - 140 = 95/FT. OR $ 4.13,630. X1.2 = $ 496,356

ASPHALT RESTORATION IS ALSO A BIG NUMBER. WHERE WILL LINES BE RUN?

NOTE: FOR ALL THREE (3) ALTERNATES - THE PIPE SIZE (+MAT'L) COST PER FOOT TO BE CHECKED (COMPARE W/ GATEWAY) ALSO INCLUDES O&M ITS COST CALC.

APPENDIX N - PRESENT WORTH ANALYSIS

COMMENTING ON KLH NUMBERS ONLY:

IN THE WRITE UP - 32 NEW CUSTOMERS SHOWN, HERE 25 NEW CUSTOMERS USED.

THE 30 YR & 4% RATE CAN BE MADE CONSISTENT WITH 20 YR CRITERIA LISTED IN WRITE UP & THE 4% REDUCED TO AVE. OF 3% RATE (TODAYS BOND COMPARISON) THIS EFFECTS DEBT SERVICE!

(22.) OF (27)

THE TREATMENT & CONVEYANCE FEES & 3% ESCALATION RATE IS QUESTIONABLE, PLEASE VERIFY.

O & M COST CALCULATIONS

ALT. 1 (OPTION 1) BV TO BOSTON & BOSTON TO McK.

BV PUMPS

$81,000 COST PER EACH - IN COST ESTIMATE IT LISTS $125,000 COST PER EACH

160 HP TO 139.2 HP @ 87% EFF. (ASSUMED CORRECT)

CONVERSION TO KW (USE .7455 KW/HP)

103.77 KW (NOT KWH)

24 HRS/DAY OPERATION (HOPEFULLY THIS IS NOT THE CASE)

0.09 KWH COST

224.14 COST/DAY (KLH NO. 232.71)

81,811.11 COST/YR. (KLH NO. 84,939.80)

PLEASE VERIFY, MY CALCULATIONS.

TOTAL LOAD - ASSUMED CORRECT

995 HP @ 80% TO 796 HP X .7455 KW/HP =

593.42 KW X 24 HR X .09/KWH = 1281.18/DAY X 365 DAY/YR

467,850.75 COST/YR. (KLH NO. - 485,718.96)

KLH CAN RUN THEIR 30 YR CALC. AGAIN (COMPARE W/ 20 YR)

NOTE: TREATMENT & OTHER O&M (QUESTIONABLE)

WHAT ARE NUMBER OF GALLONS TREATED?

SEE ETSA & McK. RATE AGREEMENT - FOR EXAMPLE!

IN PUMP REPLACEMENT COLUMN - WHAT/WHICH PUMPS ARE YOU REPLACING?

(23) OF (27)

ALT 2 & 3 (OPTIONS 2 & 3) - BV TO IPS TO BOSTON
FOR NOW I WILL ASSUME YOUR HP's ARE
CORRECT.
SAME COMMENTS ON PUMP CALCULATIONS.
TOTAL LOAD - COST PER EACH (WHAT'S THIS)
1470 HP @ 80% TO 1176 HP X .7455 KW/HP = 876.71 KW
876.71 KW X 24 HR/DAY X 365 DAY/YR X .09/KWH = 691,196.59 COST/YR.
KLH NO. 717,594.85 COST/YR (26,398.26 MORE)
PLEASE VERIFY.
SAME COMMENT ON TREATMENT & OTHER O&M
AS ON/FOR ALT. 1.
PUMP REPLACEMENT - WHAT/WHICH PUMPS
WILL BE REPLACED?

APPENDIX O - USER RATE ANALYSIS (ALSO BUDGET, REVENUES & EXPENSE INFO.)
THE TAP IN FEE IS DIFFERENT THAN IN PRESENT
WORTH ANALYSIS, AGAIN NEW CUSTOMERS - 25 VS 32
IN WRITEUP & NOW A DIFFERENT FEE SHOWN.
32 NEW PAYERS USED HERE " 32 X 6000 = 192,000
25 " " " " 25 X 6000 = 150,000
PLEASE VERIFY THE NUMBER OF RATE PAYERS!

CURRENT BUDGET PER CE REPORT - WHICH CE?
THIS SHOWS DEFICIT. NO FURTHER DETAIL COMMENTS HERE,
BUT DEBT SERVICE REQ. MUST BE VERIFIED;
TIME, DURATION, RATE, ETC. FOR BONDS SHOULD
BE ADDRESSED (UPDATED).

CURRENT BUDGET, REVISED FOR RATE INCREASE.
(WHEN WILL RATE INCREASE TAKE PLACE?)
WHAT IS DATE (MONTHS) FOR THIS BUDGET?
THERE ARE MANY EXPENSES TO BE VERIFIED
INCLUDING LEGAL & ENGINEERING, SUB-CONTRACTS
ETC.
THIS SHOWS NO BOND INCREASE (DEBT SERVICE),
BUT NOW YOU HAVE A SURPLUS.
NOTE: THESE ARE ANNUAL BUDGETS.
THE SEWER CHARGE REV. WITH 6,164 RATE PAYERS
CALCULATES TO $68.78/MO. REF. HAS BEEN MADE TO
$76/MO., A 10.49% DIFFERENCE.
$76 X 12 X 6,164 = $5,621,568. USING SAME ≈ EVERYTHING -
TAKE IT TO BOTTOM, SURPLUS OF 695,323 OR 139%
BOND COVERAGE.

PROJECTED REV. & EXPENSES AFTER IMPLEMENTATION
OF ACT 537.
SPELLING OF IMPLEMENTATION IN TITLE, CORRECT IT.
OPERATING EXPENSES SHOULD ALL BE VERIFIED.
IF YOU NEED TO BORROW $9.52 X 10^6$, CHECK DEBT
SERVICE AGAIN.
IF THE NUMBERS ARE CORRECT, MAYBE NO
MORE BORROWING ($9.52 X 10^6$ BOND) IS REQUIRED!
JUST A RATE INCREASE, OR, MAYBE JUST BORROWING
& NOT AS BIG A RATE INCREASE.

SUMMARY

MY PURPOSE WAS TO REVIEW THIS 537 PLAN UPDATE AS CONSTRUCTIVELY A POSSIBLE & TO SUM UP MY INVOLVEMENT WHICH STARTED IN APRIL OF 2013. IT TOOK MANY WORDS TO EXPLAIN WHAT I WAS TOLD OR ASKED TO DO ETC.! THE CORRECTIONS ARE NOT THAT SERIOUS BUT ATTENTION TO DETAILS TAKES TIME WHICH IS OF THE ESSENCE HERE. THIS STARTED IN 2008. IT HAS BEEN VERY DIFFICULT TO LOCATE & GET INFORMATION ON THE EXISTING SYSTEMS (PUMPS, LINE SIZES & LOCATIONS ON PAST & NOW FUTURE SITUATIONS). ONE NEEDS TO WALK THE LINES, ETC.

I REVISITED THE BOSTON BALL FIELD ON SAT. MORNING OCT. 1, 2016 & DROVE AROUND THE AREA TRYING TO VISUALIZE THE CHANGES THAT HAVE TAKEN PLACE SINCE I WAS DEEPLY INVOLVED WITH THE DESIGN & CONSTRUCTION OF THAT FIELD BACK IN 1971 OR 1972, I CAN'T REMEMBER EXACTLY. WE GOT A $100,000 GRANT TO DO IT. HOW ABOUT A PRESENT WORTH OF THAT. USE THE SIMPLE COMPOUND INTEREST EQUATION; $A = P(1+i)^n$, $n = 45$ YEARS (WOW)

$A = 100,000(1+.03)^{45} = \$378,159.58$. $i = 3\%$, $P = 100,000$

NOTE; THE EXISTING PUMP STATION WAS THERE WHEN WE DID THE FIELD. I CAN RECALL THAT IN MY DAYS OF COACHING, ETC. ON THAT FIELD THAT ON OCCASION AN UNPLEASANT SMELL WAS IN THE AIR. NOT SURE WHAT IT IS LIKE TODAY. I WALKED ALONG THE STREAM WHICH FLOWS NEAR THE PUMP STATION ON IT'S WAY TO THE RIVER. I SAW A SIGN THAT STATED SOME-

LIKE
THING AT CERTAIN TIMES, STAY AWAY FROM THIS
WATER, SEWAGE OVERFLOW, I DROVE TO THE SOCCER FIELD
(MY WORDS).
& THE ROAD DUMP (LARGE PILE) & BACK ALONG THE
TRAIL. I SAW THE MEMORIAL TO RON WISE, HE PLAYED
ON ONE OF MY ALL STAR TEAMS. MUCH HAS BEEN DONE
FOR RECREATION ON THE WATERFRONT, ETC.
THE PRESENT FUTURE LOCATION OF THE DROP OFF
POINT FOR SEWERAGE COMING FROM BV & THE BOSTON
WATERSHED WOULD NOT BE GOOD FOR THIS AREA.
IT IS AGREED THAT FLOW FROM BV & BOSTON WILL
GO FOR TREATMENT AT MCK. ALTHOUGH HAVING
AN APPROX. .994 MILE FM TO MCK. FROM BV IS NOT APPEALING
(NO FUTURE TAP INS), SENATE ENG. PROPOSED THIS & IT
WAS APPROVED BY THE DEP (BACK IN 2008/2009).
SINCE FLOW AT/FROM BV HAS BEEN REDUCED AND STIPULATED
BY KLH AS BEING 2.7 MGD, PUMP THIS STRAIGHT TO MCK.!
FOR NOW, KEEP A HOLDING TANK SOMEHOW AT BV (CONSTRUC-
TION CONCERNS). BOSTON NEEDS A NEW PUMP (LIFT
OR INVESTIGATE TO PUT IT
STATION). PUT IT DOWN BY THE ROAD WASTE PILE. THE BOSTON
BALL FIELD & THE SOCCER FIELD SHOULD BE MINIMALLY EFFECTED.
MCK. IS LOOKING FOR 17.5 MGD PEAK (IT MAY NEVER HAPPEN
AS IMPROVEMENTS FOR I & I ARE MADE)! ELEVATIONS NEED TO BE
ESTABLISHED & COST ESTIMATES MADE QUICKLY.
AS FAR AS NEW RATE PAYERS COMING ON BOARD, WHICH
SHOULD BE THE GOAL TO CLEAN UP STREAMS, GROUND
THE
WATER, ETC. AS REQ'D. BY A CLEAN STREAMS ACT (DEP) FROM THE

RIDGE ROAD, MANSFIELD, BOSTON HOLLOW, LINCOLN BORO AREAS, THIS IS ALL GRAVITY FLOW TO BOSTON. AN ESTIMATE SHOULD BE MADE TO DO THIS NOW. THE STATE SHOULD BE INVOLVED IN THIS ACTION AS RT. 46 IS IN NEED OF ONGOING REPAIRS, ETC. AT LEAST THE STATE WILL BE AWARE OF THE ISSUE AND CAN HELP TO PAY FOR THE INSTALLATION, ETC, MAYBE, SOMEDAY!

SEWAGE STARTED TO BE INSTALLED IN ELIZABETH TWP. BACK IN THE LATE 1950's & THE TERRAIN HERE HAS MADE IT A VERY DIFFICULT JOB. THE COST TO GET & HAVE SEWAGE & THE LOCATIONS FOR MANY PUT IT IN AN UNFAVORABLE LIGHT. FOR ME, SEWAGE IS SOMETHING EVERYONE SHOULD HAVE & WANT. IF WATER CAN GET TO YOUR PROPERTY, THEN SEWAGE SHOULD LEAVE YOUR PROPERTY. THAT SOUNDS & LOOKS LIKE A UTILITY. THE GOVERNMENT (STATE OR OTHER) SHOULD BE INVOLVED TO DIRECT, REGULATE & HELP TO COVER THE COSTS (LIKE INFRASTRUCTURE).

GOOD LUCK TO US ALL,

SINCERELY,

Larry L. Cooper P.E. RETIRED

P.S. - I AM INESTIGATING THE POSSIBILITY OF NOT HAVING A HOLDING TANK AT B.V. KLH & OTHERS SHOULD ALSO LOOK AT THIS AGAIN.

Bryan Churilla

From: Larry Coccia <Lacoccia1@aol.com>
Sent: Thursday, October 20, 2016 11:59 AM
To: Bryan Churilla; Lauren Zang
Cc: jbeckowitz@comcast.net
Subject: Fwd: 537 Plan comments, etc

Bryan & Lauren,
In following the procedures I tried to get comments in by Oct.14 & the statement (below) was my attempt to complete my comments. Please attach this statement somehow to my comments & handle accordingly.
Thank you in advance,
LAC

Sent from my iPad

Begin forwarded message:

From: lacoccia1@aol.com
Date: October 14, 2016 at 4:50:46 PM EDT
To: bchurilla@klhengineers.com, lzang@elizabethtwppa.com
Cc: shoffman@klhengineers.com, jbeckowitz@comcast.net
Subject: Fwd: 537 Plan comments, etc

Bryan & Lauren,
Since this is the Oct. 14, 2016 comment deadline please accept this statenment as my comment on the Holding tank at BV. On page 27 of my comments I added a P.S. statement that made reference to my investigation of the need of a holding tank.

Statement:
The design pressure drop should have been estimated by Senate, Gateway & now KLH. On the bases of the minimum velocity criteria for flow & solids drop out & a max velocity for friction head need, this would be a range of 2 fps to 8 fps! KLH plans to pump 1875gpm in a 14" dia. line & have a holding tank for flows over that. Assuming pumping water only, velocity calculates to 3.908 fps.If you pump 3611gpm (2.7MDG + 2.5MGD tank volume for 1 day) , velocity calculates to 7.523 fps.
Recommendation, go to 15 "or 16" dia. line, min velocity, 3.405 fps, max velocity, 6.55 fps for 15" or 2.99 fps min to 5.57 fps max for 16". Set up pump configuration for 1 or 2 pumps as needed + 1 pump stand by. (3 pumps total). Elevations need to be set to agree with 60 psi criteria. Availability of pipe size & type & cost & final design (line layout) would confirm pump sizes. For what I have seen, a Holding tank at BV may not be needed. However, KLH should verify this & check with what Senate was planning to do when pumping all the way to Mck. Note: I have not checked the friction of the line or the elevations which in total should not exceed 138.568 ft of head. I am reviewing the Hazen-Williams formula flow chart at present. Present day C1 factors for pipe roughness may have changed from my old book.
LAC

-----Original Message-----
From: lacoccia1 <lacoccia1@aol.com>
To: bchurilla <bchurilla@klhengineers.com>
Cc: jbeckowitz <jbeckowitz@comcast.net>; shoffman <shoffman@klhengineers.com>
Sent: Thu, Oct 13, 2016 4:31 pm
Subject: Re: 537 Plan comments, etc

Bryan,
Will my comments as submitted go to the DEP?

KLH
ENGINEERS, INC

November 7, 2016
Ref. No. 542-04

Mr. Emil Burak
255 Scenery Drive
Elizabeth, PA 15037

Dear Mr. Burak:

Elizabeth Township
Act 537 Sewage Facilities Plan Update
Response to Public Comment

As you are aware, Elizabeth Township is preparing to submit the subject Plan to the Pennsylvania Department of Environmental Protection (PA DEP) for review. One requirement for approval, as outlined in Title 25 – Environmental Protection, Chapter 71 – Administration of Sewage Facilities Planning Program, is that a 30-day public comment period shall be provided to allow residents to provide questions or comments on the proposed Plan. As a part of the submission to the PA DEP, a copy of all written comments received and the municipal response to each comment must be submitted with the Plan.

KLH in is receipt your comment letter dated October 12, 2016 pertaining to the subject Plan. A copy of these comments is attached to this letter. Please be aware that both the comments and this subsequent response must be included as an appendix to the Plan and will remain as public record.

KLH has attempted to identify and adequately address each of your comments. The attached responses on the following pages are formatted as follows.

Your Comment Page **Comment or Question.**

KLH Response.

Comments as submitted in 10/12/2016 Letter

Page 1 **I believe we probably should go back to the Senate Engineering 537 Plan which does not include any holding tanks.**

The Senate Engineering Plan was based upon estimated flow values that have since been measured. Based on the updated data, 100% of the flow cannot be pumped, as it would exceed the 17.5 MGD design capacity of the downstream Municipal Authority of the City of McKeesport (MACM) facilities. These facilities were designed and constructed based upon the 17.5 MGD peak flow agreement signed in May 2013.

5173 Campbells Run Road Pittsburgh, PA 15205 Phone: 412.494.0510 Fax: 412.494.0426 info@klhengineers.com
www.klhengineers.com

We appreciate your interest in the betterment of the Township, as shown by the time and effort put forth in reviewing and commenting on this Plan.

Sincerely,

KLH ENGINEERS, INC.

Bryan M. Churilla, P.E.

Enclosure

cc: Elizabeth Township

D

10/12/16

EMIL BUREK
255 SCENERY DRIVE
ELIZABETH, PA. 15037

WITH A NEW MAJORITY BOARD CONSISTING OF LARRY VOTA, CLAIRE BRYCE, PAUL SAXON AND CHRIS EVANS A DECISION WAS MADE TO REPLACE THE EXISTING ETSA BOARD OF THEIR CHOOSING. THEY ALSO DECIDED TO HIRE GATEWAY ENGINEERS AND HIRE JACK CAMBEST AS SOLICTOR. THEY THEN CANCELLED THE SENATE ENGR. ACT 537 WITH A NEW PLAN BY GATEWAY ENGINEERS. THE SENATE ENGR. PLAN WAS 95% COMPLETELY DESIGNED AND IF CONTINUED THIS PROJECT WOULD NOW BE DONE. THE ABOVE BOARD BECAUSE OF POLITICS, REVENGE, RETALIATION AND VINDICTIVENESS HAS COST THE RATE PAYERS AND ELIZ. TWP. A LARGE AMOUNT OF DOLLARS AND LOSS OF TIME. HAVING SAID ALL OF THAT EVERYONE IS DISAPPOINTED IN THE KLH ENGR. PLAN DUE TO THE FACT THERE IS A HOLDING TANK AT BUENA VISTA INCLUDED IN THE PLAN. MOST PEOPLE THAT TALK TO ME ARE UNDER THE MISCONCEPTION THAT THERE WILL BE A HOLDING TANK IN BUENA VISTA AND BOSTON ALL ARE AGAINST ANY HOLDING TANKS AND I PERSONALLY AM AGAINST IT ALSO. I BELIEVE WE PROBABLY SHOULD GO BACK TO THE SENATE ENGR. 537 PLAN, WHICH DOES NOT INCLUDE ANY HOLDING TANKS.

(2)

I DON'T KNOW WHAT CONSEQUENCES THIS WOULD HAVE RELATING TO TIME DELAYS AND THE POSSIBILITY OF FUTURE FINES. THESE POINTS SHOULD BE CLARIFIED BY THE DEP AND AGH DEPT. I PERSONALLY WANT PROJECT EXPIDITED, FINISHED AND SOLD TO THE PA. AMERICAN WATER CO. WHEN I SAY SOLD I AM TALKING ABOUT THE SEWAGE SYSTEM. THIS WILL THEN ELIMINATE THE POLITICS IN THIS SITUATION. I ALSO BELIEVE THE INDIVIDUALS RESPONSIBLE FOR THE CHAOS CREATED SHOULD [redacted] ALSO BE [redacted] HELD ACCOUNTABLE. THERE HAS BEEN TERRIBLE CHAOS AND UNCESSARY AMOUNTS OF MONEY SPENT DUE THE POOR DECISIONS MADE BY THE ABOVE MENTIONED COMMISIONERS. THANK YOU.

SINCECELY,

EMIL BURAK

APPENDIX G

Consent Order and Agreement (COA)

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

RECEIVED
MAY 13 2016
Water Management
DEP, Southwest Regional Office

Elizabeth Township	:	Sewage Facilities Act
Allegheny County	:	Clean Streams Law

CONSENT ORDER AND AGREEMENT

This Consent Order and Agreement is entered into this 13th day of May, 2016, by and between the Commonwealth of Pennsylvania, Department of Environmental Protection ("Department") and Elizabeth Township.

The Department has found and determined the following:

A. The Department is the agency of the Commonwealth with the duty and authority to administer and enforce the Clean Streams Law, the Act of June 22, 1937, P.L. 1987, *as amended*, 35 P.S. §§ 691.1-691.1001 ("Clean Streams Law"); The Pennsylvania Sewage Facilities Act, Act of January 24, 1966, P.L. 1535, No. 537, *as amended*, 35 P.S. § 750.1-750.20a ("Sewage Facilities Act"); Section 1917-A of the Administrative Code, the Act of April 9, 1929, P.L. 177, *as amended*, 71 P.S. § 510-17 ("Administrative Code"); and the rules and regulations promulgated thereunder ("Regulations").

B. The Allegheny County Health Department ("ACHD") is a health department organized under the Local Health Administration Law, Act 315 of August 24, 1951, P.L. 1304, *as amended*, 16 P.S. §12001-12028, and executes the powers and duties vested in it by the laws of the Commonwealth, and the rules and regulations of the State Department of Health and other departments, boards, or commissions of the State government.

C. Elizabeth Township ("Township") is a "municipality" as defined by Section 1 of the Clean Streams Law, 35 P.S. § 691.1, Section 2 of the Sewage Facilities Act, 35 P.S. § 750.2, and maintains a mailing address of 522 Rock Run Road, Elizabeth, Pennsylvania 15037.

D. Elizabeth Township owns and operates a sanitary sewer system, which includes: the Buena Vista Sewage Treatment Plant ("BVSTP"), the sewage conveyance system tributary to the BVSTP ("Buena Vista Sewer System"), the Boston Pump Station and its appurtenances, and the sewage conveyance system tributary to the Boston Pump Station ("Boston Sewer System"). The Buena Vista Sewer System and the Boston Sewer System may be collectively referred to as the "Township Sanitary Sewer System" or "Sanitary Sewer System". The BVSTP, Buena Vista Sewer System, Boston Pump Station, and the Boston Sewer System may be collectively referred to as the "Sanitary Sewerage Facilities."

E. On September 11, 2008, the Township, along with the Elizabeth Township Sanitary Authority ("ETSA"), entered into an Administrative Consent Order ("2008 ACO") with the Allegheny County Health Department to address sanitary sewer overflow ("SSO") and hydraulic overload issues in the Buena Vista Sewer System.

F. The 2008 ACO also required ETSA and the Township to develop an Operation and Maintenance Plan ("O&M Plan") to address the proper operation and maintenance of the BVSTP and Buena Vista Sewer System, which the Township has failed to implement. Even though the Boston Sewer System is hydraulically overloaded, the 2008 ACO did not require a formal O&M Plan for the Boston Sewer System and ETSA and the Township did not develop or implement an O&M Plan for the Boston Sewer System.

G. On December 23, 2013, the Elizabeth Township Authority ("ETA") assumed the ownership and operation of the Sanitary Sewerage Facilities. ETA replaced ETSA, the previous

owner and operator of the Sanitary Sewerage Facilities. ETA is the legal successor in interest to ETSA. ETSA was dissolved on December 16, 2013 and ETA assumed all responsibilities of ETSA.

H. During or about the month of March 2016, the Township Board of Commissioners voted to disband ETA and to assume sole ownership and operation of the Sanitary Sewerage Facilities.

Failure to Eliminate Sanitary Sewer Overflows

I. The Sanitary Sewerage Facilities are hydraulically overloaded and the Township frequently discharges unauthorized SSOs of untreated sewage from the Sanitary Sewer System to the Youghiogheny River, which is a "water of the Commonwealth" as that phrase is defined by Section 1 of the Clean Streams Law, 35 P.S. § 691.1.

J. The discharges of sewage from the Sanitary Sewer System, as identified in Paragraph I, above, are not authorized by any permit or regulation and therefore constitute violations of Sections 201 and 202 of the Clean Streams Law, 35 P.S. §§ 691.201 and 691.202; statutory nuisances under Sections 3 and 202 of the Clean Streams Law, 35 P.S. §§ 691.3 and 691.202; and unlawful conduct under Section 611 of the Clean Streams Law, 35 P.S. § 691.611.

Failure to Implement and Amend the Official Plan

K. Section 5 of the Sewage Facilities Act, 35 P.S. § 750.5, and Sections 71.11 and 71.12 of the Regulations, 25 Pa. Code §§ 71.11 and 71.12, require the Township to submit an official plan for the safe, sanitary and adequate treatment of sewage within its jurisdiction and to revise said plan whenever it is necessary to meet the sewage disposal needs of the municipality ("Official Plan").

L. Pursuant to Section 10 of the Sewage Facilities Act, 35 P.S. § 750.10, and Sections 71.13 and 71.32 of the Department's Regulations, 25 Pa. Code §§ 71.13, 71.32, the Department has the power and the duty to approve or disapprove Official Plans, and to approve or disapprove revisions thereto.

M. Under the 2008 ACO, the Township and ETSA agreed and were ordered to: abandon the BVSTP; complete all necessary construction to convey sewage flow previously conveyed from the Buena Vista Sewer System to the BVSTP; convey it for treatment to the Municipal Authority of the City of McKeesport Sewage Treatment Plant ("McKeesport STP"), located in the City of McKeesport, Allegheny County; and revise the Township's Official Plan to ensure the Township's and ETSA's ability to comply with the 2008 ACO.

N. On or about October 20, 2008, the Township submitted a revision to the Township's Official Plan to the Department ("2008 Official Plan"). The 2008 Official Plan provided for the abandonment of the BVSTP and the construction of a conveyance system to convey sewage from the Buena Vista Sewer System to the McKeesport STP for treatment. In addition, the 2008 Official Plan provided that the sewage flows in the Boston Sewer System continue to be conveyed from the Township to the Boston Pump Station and, thereafter, to the McKeesport STP. The Implementation Schedule in the 2008 Official Plan required that the abandonment of the BVSTP and the construction of the new sewerage facilities be completed by December 31, 2012.

O. Although in 2008 sewage flows from the Boston Sewer System were being conveyed to the McKeesport STP via the Boston Pump Station, at that time the Boston Pump Station did not have adequate capacity to convey all flows in the Boston Sewer System to the McKeesport STP. Accordingly, the 2008 Official Plan required the replacement of the Boston

Pump Station to provide additional capacity to convey additional sewage flows in the Boston Sewer System to the McKeesport STP.

P. On May 20, 2009, the Department approved the 2008 Official Plan.

Q. On or about June 18, 2008, and as modified by an amendment dated May 13, 2013, Elizabeth and McKeesport entered into a written agreement regarding the conveyance of sewage from the Township Sanitary Sewer System to McKeesport.

R. On or about July 10, 2007, McKeesport submitted an Official Plan to the Department to, *inter alia,* provide for the acceptance of sewage flows from the Township. On July 20, 2007, the Department approved this Official Plan.

S. McKeesport spent approximately $67,000,000, a significant portion of which was allocated to construct improvements to its collection and treatment system in order to accept sewage from the Township.

T. As of the date of execution of this Consent Order and Agreement, McKeesport has made improvements to its collection and treatment system, which system is available for the connection of sewage flows from the Township Sanitary Sewer System to the McKeesport STP.

U. Since the approval of the 2008 Official Plan and continuing to the present, the Township, ETSA, and ETA have failed to comply with the 2008 ACO and the 2008 Official Plan in that they have not initiated any construction necessary to implement the 2008 Official Plan and convey the flows from the Township Sanitary Sewer System to the McKeesport STP. In addition, the Township has failed to implement the Operation and Maintenance Program Plan submitted by ETSA to the ACHD as required by the 2008 ACO. The Township continues to discharge raw sewage from unauthorized SSOs from the Sanitary Sewer System to the Youghiogheny River.

V. The Township's failure to implement the 2008 Official Plan to convey sewage from its Sanitary Sewer System to the McKeesport STP is a violation of Section 71.11 of the Regulations, 25 Pa. Code § 71.11.

W. On or about May 2012, the Township advised the Department that its earlier flow estimates for the Boston Pump Station were incorrect. The Township noted that flows from the Boston Pump Station to McKeesport were significantly greater, from an original figure of 4.2 MGD to approximately 14 MGD. The Township indicated to the Department that the size and proposed location for the Boston Pump Station included in the 2008 Official Plan was not sufficient to eliminate SSOs in the Boston Sewer System and that the 2008 Official Plan needs to be revised to account for necessary changes in the size and location of the Boston Pump Station.

X. Although a revision to the 2008 Official Plan was necessary to address issues related to the Boston Pump Station, no revision was necessary or requested for the portion of the 2008 Official Plan that proposed to convey sewage from the Buena Vista Sewer System and to abandon the BVSTP.

Status of NPDES Permit

Y. On May 18, 2004, the Department issued NPDES Permit PA0024732 ("NPDES Permit") to ETSA authorizing the discharge of treated sewage from BVSTP to the Youghiogheny River.

Z. On February 13, 2009, the Township submitted to the Department an application to renew the NPDES Permit and to transfer it from ETSA to the Township. The NPDES Permit has been administratively extended while the Township constructs the necessary sewerage facilities to convey flows from its Sanitary Sewer System to the McKeesport STP which will result in the abandonment of the BVSTP (the conveyance of these Township flows from its

Sanitary Sewer System to the McKeesport STP shall generally be referred to as the "Elizabeth to McKeesport Project").

Failure to Transfer Water Quality Management Part II Permits

AA. While ETSA owned and operated the Sanitary Sewerage Facilities, the Department issued it numerous Water Quality Management (Part II) Permits regulating the operation and maintenance of those facilities. The specific Part II Permits are listed in Appendix A, which is attached and fully incorporated by reference. Since assuming ownership and operation of the Sanitary Sewerage Facilities, the Township has not submitted an application to have the Part II Permits, referenced above, transferred to the Township.

BB. The proper operation and maintenance of the Sanitary Sewerage Facilities is necessary to prevent the potential for pollution from those facilities.

CC. Compliance with the terms and conditions of the Part II Permits will require the Township to properly operate and maintain the Sanitary Sewerage Facilities both in the interim stages of construction and upon completion of the Elizabeth to McKeesport Project.

DD. The Township is currently operating its Sanitary Sewerage Facilities without authorization under the applicable Part II Permits.

DEP's August 26, 2016 Administrative Order, Ensuing Litigation and Withdrawal of Litigation

EE. On August 26, 2015 the Department issued an Administrative Order to the Township and ETA which, *inter alia*, required ETA and the Township to abandon the BVSTP, implement an Elizabeth to McKeesport Project and to apply to transfer the Part II Permits listed in Appendix A.

FF. The Township and ETA appealed the Department's August 26, 2015 Order to the Environmental Hearing Board on or around September 25, 2016. The appeals were docketed at EHB Docket Numbers 2015-145-B and 2015-146-B, and were later consolidated at EHB Docket Number 2015-145-B.

GG. In their appeals, the Township and ETA, *inter alia*, contended that the BVSTP should be rebuilt and that sewage should be conveyed to the BVSTP for treatment instead of being conveyed to the McKeesport STP.

HH. On December 22, 2015, the Township and ETA submitted to the Department two separate Official Plans: one plan for increased flows at the Boston Pump Station ("Boston Plan") and one plan for continuing operation of BVSTP ("BVSTP Plan"). This submission was contrary to the requirements of the 2008 ACO and contrary to the requirements of the August 26, 2015 Administrative Order in which the Township was to submit an Official Plan to eliminate operation of the BVSTP.

II. On March 7, 2016 the Township Board of Commissioners voted to terminate and disband ETA, to convey sewage to the McKeesport STP instead of the BVSTP, and to withdraw the appeals of the August 26, 2015 Administrative Order docketed at 2015-145-B and 2015-146 B.

JJ. On March 21, 2016, the Township Board of Commissioners voted unanimously to withdraw the Boston Plan and the BVSTP Plan, to take over the duties and obligations of ETA, and legally eliminate the ETA.

KK. After continuing negotiations among the parties, and in furtherance of settlement of the instant EHB litigation, the Township has agreed to submit one unified Official Plan, which shall require all flows from both the Buena Vista Sewer System and the Boston Sewer System to

be conveyed to the McKeesport STP. Although the Township has not yet determined the precise route for the sewerage flows, which will be determined by the Official Plan, the parties are in agreement that all Sanitary Sewer System flows will be conveyed to the McKeesport STP for treatment.

After full and complete negotiation of all matters set forth in this Consent Order and Agreement and upon mutual exchange of covenants contained herein, the parties desiring to avoid litigation and intending to be legally bound, it is hereby ORDERED by the Department and AGREED to by the Township as follows:

1. Authority. This Consent Order and Agreement is an Order of the Department authorized and issued pursuant to Sections 5, 203, 316, 402 and 610 of the Clean Streams Law, 35 P.S. §§ 691.5,691.203, 691.316, 691.402 and 691.610; Section 10 of the Sewage Facilities Act, 35 § 750.10 and Section 1917-A of the Administrative Code, 71 P.S. § 510-17.

2. Findings

a. The Township agrees that the findings in Paragraph A through KK are true and correct and, in any matter or proceeding involving the Township and the Department, the Township shall not challenge the accuracy or validity of these findings.

b. The parties do not authorize any other persons to use the findings in this Consent Order and Agreement in any matter or proceeding.

Immediate Corrective Actions

3. Within 10 days of the execution of this Consent Order and Agreement, the Township shall withdraw EHB Appeals 2015-145-B and 2015-146-B, which are consolidated at EHB Docket Number 2015-145-B.

4. Within 30 days of the execution of this Consent Order and Agreement, the Township shall submit to the Department a transfer application for the Part II Permits listed in Appendix A.

5. Until such time that the Township completes the implementation of the Elizabeth to McKeesport Project and discharges of sewage from the BVSTP permanently cease, the Township shall, when operating BVSTP or discharging from BVSTP to waters of the Commonwealth, comply with the terms and conditions established in the NPDES Permit issued to ETSA on May 18, 2004.

Revised Official Plan

6. Within 180 days of the execution of this Consent Order and Agreement, the Township shall submit to the Department for review and approval a complete and accurate revised Official Plan in compliance with all applicable statutes and regulations proposing to construct and complete the Elizabeth to McKeesport Project. The submission shall include, but not be limited to, provisions (i) for changes in capacity and location necessary for a new or expanded Boston Pump Station to convey all sewage flows tributary to the pump station; (ii) for the construction of any additional sewerage facilities, including additional pump stations to convey all sewage flows from the Sanitary Sewer System to the McKeesport STP; and (iii) for the abandonment of the BVSTP upon the rerouting of flows from the Sanitary Sewer System to the McKeesport STP ("Revised Official Plan").

7. The Revised Official Plan shall include a schedule to implement the Revised Official Plan ("Official Plan Implementation Schedule") whereby:

a. Within 45 days of Department approval of the Revised Official Plan, or 240 days after the execution of this Consent Order and Agreement, whichever is later, the

Township shall submit to the Department complete and accurate Water Quality Management Part II Permit applications for the construction and operation of the sewerage facilities necessary to implement the Elizabeth to McKeesport Project.

b. Within 750 days of Department issuance of the Part II Permits referenced in Paragraph 7.a, above, authorizing the construction and operation of the sewerage facilities necessary to construct and implement the Elizabeth to McKeesport Project, the Township shall have completed construction of the Elizabeth to McKeesport Project.

c. Within 30 days after completion of construction and operation of the Elizabeth to McKeesport Project, the Township shall convey all its Sanitary Sewer System flow to the McKeesport STP.

8. Upon Department approval of the revised Official Plan, the Township shall implement the approved plan, as set forth in Paragraph 7, above.

9. Plan to Decommission BVSTP. Within 24 months of the execution of this Consent Order and Agreement, the Township shall submit to the Department for its review a complete and accurate plan and schedule consistent with all applicable statutes and regulations to decommission the BVSTP after all flows from BVSTP have been redirected to the McKeesport STP. Upon review, the Department may approve the plan or approve it with modifications, after which, the Township shall decommission the BVSTP in accordance with the plan and schedule.

10. Plan to Eliminate Remaining SSOs. Should there be any SSOs remaining in the Township Sanitary Sewer System, that have not been eliminated by the Elizabeth to McKeesport Project, within 24 months after the completion of construction of the Elizabeth to McKeesport Project, the Township shall submit to the Department, for its review and approval, a complete and accurate plan and schedule consistent with all applicable statutes and regulations to eliminate

all SSOs from the Buena Vista Sewer System and the Boston Sewer System. Upon review, the Department may approve the plan or approve it with modifications, after which the Township shall implement the plan and schedule to eliminate all remaining SSOs.

11. SSO Monitoring and Reporting. Within 30 days of the execution of this Consent Order and Agreement, the Township shall install the equipment necessary to measure the volume, duration and date of all SSOs occurring from the Sanitary Sewer System and begin taking such measurements immediately after the installation of the equipment. The Township shall submit this information to the Department as part of its monthly DMR reporting for BVSTP.

12. Operation and Maintenance Plan. Within 30 days of the execution of this Consent Order and Agreement, the Township shall develop and implement a new O&M Plan for both Buena Vista and Boston Sanitary Sewer Systems, utilizing any applicable provisions of the O&M Plan developed in accordance with the 2008 ACO, as set forth in Appendix B, attached and incorporated herein. This O&M Plan will be developed for the purpose of achieving the proper operation and maintenance of the Elizabeth Township Sanitary Sewerage Facilities.

13. Tap Control Plans. The Township shall submit an Annual Tap Control Plan that allocates Equivalent Dwelling Units ("EDU")/sewer taps for the subsequent calendar year by November 30 of each year. Upon execution of this Consent Order and Agreement, 46 taps (one "tap" is equivalent to 1 EDU) are approved for the Township sewer system during 2016 for the uses listed in Appendix C. One EDU is equivalent to 400 gallons per day of sewage flow.

14. Progress Report. Following the execution of this Consent Order and Agreement, the Township shall submit semi-annual written progress reports to the Department documenting its efforts to comply with its obligations under this COA ("Progress Report"). The first progress

report shall be for the period of July through December 2016 and submitted by January 30, 2017. The Progress Report shall be sent to the address in Paragraph 22 below, and include, but not be limited to:

a. A description of the actions that have been taken toward achieving compliance with this Consent Order and Agreement;

b. A description of all activities scheduled for the remainder of the Consent Order and Agreement; and

c. A description of any problems or delays encountered or anticipated regarding the performance of the activities required by this Consent Order and Agreement.

15. Additional Information. If the Department requires additional information for any submittal pursuant to this Consent Order and Agreement or under the laws and regulations of the Commonwealth of Pennsylvania or the United States, the Township shall provide such additional information to the Department within fifteen (15) days unless a longer time is specified in the Department's notice.

16. Plan Incorporation. Each plan and submission, including all schedules therein, approved by the Department or approved with modifications by the Department, shall be incorporated into this Consent Order and Agreement as if fully set forth herein for all purposes, including, but not limited to, its enforcement.

17. Stipulated Civil Penalties

a. In the event the Township fails to comply with any term or provision of this Consent Order and Agreement, the Township shall be in violation of this Consent Order and Agreement and, in addition to other applicable remedies, shall pay a civil penalty in the amount of TWO HUNDRED FIFTY DOLLARS ($250.00) per day per violation.

b. From the date of execution of this Consent Order and Agreement until discharges from the BVSTP permanently cease, for each exceedance of a monthly average effluent limitation for each parameter set forth in the NPDES Permit (loading and concentration are separate exceedances) reported on the monthly Discharge Monitoring Reports, the Township shall pay a stipulated civil penalty of ONE THOUSAND DOLLARS ($1,000.00) per parameter.

c. From the date of execution of this Consent Order and Agreement until discharges from BVSTP permanently cease, for each exceedance of weekly average effluent limitation for each parameter set forth in the NPDES Permit (loading and concentration are separate exceedances) reported on the monthly Discharge Monitoring Reports, the Township shall pay a stipulated civil penalty of FIVE HUNDRED DOLLARS ($500.00) per parameter.

d. From the date of execution of this Consent Order and Agreement the Township shall pay a stipulated civil penalty of ONE THOUSAND DOLLARS ($1,000.00) for each month during which an SSO occurs.

e. Stipulated civil penalty payments shall be payable monthly on or before the last day of each succeeding month. The payment shall be made by corporate check or the like made payable to the "Commonwealth of Pennsylvania Clean Water Fund" and sent to Compliance Specialist, Clean Water Program, Department of Environmental Protection, 400 Waterfront Drive, Pittsburgh, PA 15222-4745.

f. Any payment under this Paragraph shall neither waive the Township's duty to meet its obligations under this Consent Order and Agreement, nor preclude the Department from commencing an action to compel the Township to comply with the terms and conditions of this Consent Order and Agreement. The payment resolves only the Township's

liability for civil penalties arising from the violation of this Consent Order and Agreement for which the payment is made.

g. Stipulated civil penalties shall be due automatically and without notice.

18. Additional Remedies.

a. In the event the Township fails to comply with any provision of this Consent Order and Agreement, the Department may, in addition to the remedies prescribed herein, pursue any remedy available for a violation of an order of the Department, including an action to enforce this Consent Order and Agreement.

b. The remedies provided by this paragraph and Paragraph 17 (Stipulated Civil Penalties) are cumulative and the exercise of one does not preclude the exercise of any other. The failure of the Department to pursue any remedy shall not be deemed to be a waiver of that remedy. The payment of a stipulated civil penalty, however, shall preclude any further assessment of civil penalties for the violation for which the stipulated penalty is paid.

19. Reservation of Rights. The Department reserves the right to require additional measures to achieve compliance with applicable law. The Township reserves the right to challenge any action which the Department may take to require those measures.

20. Liability of Operator. The Township shall be liable for any violations of the Consent Order and Agreement, including those caused by, contributed to, or allowed by its officers, agents, employees, or contractors. The Township also shall be liable for any violation of this Consent Order and Agreement caused by, contributed to, or allowed by its successors and assigns.

21 Transfer of Site.

a. The duties and obligations under this Consent Order and Agreement shall not be modified, diminished, terminated or otherwise altered by the transfer of any legal or equitable interest in the Sanitary Sewerage Facilities, or any part thereof.

b. If the Township intends to transfer any legal or equitable interest in the Sanitary Sewerage Facilities affected by this Consent Order and Agreement, the Township shall serve a copy of this Consent Order and Agreement upon the prospective transferee of the legal and equitable interest at least thirty (30) days prior to the contemplated transfer and shall simultaneously inform the Department's Southwest Regional Office of such intent.

c. The Department in its sole discretion may agree to modify or terminate the Township's duties and obligations under this Consent Order and Agreement upon transfer of the Sanitary Sewerage Facilities. The Township waives any right that it may have to challenge the Department's decision in this regard.

22. Correspondence with Department. All correspondence with the Department concerning this Consent Order and Agreement shall be addressed to:

Compliance Specialist
Department of Environmental Protection
Clean Water Program
400 Waterfront Drive
Pittsburgh, Pennsylvania 15222

23. Correspondence with the Township. All correspondence with the Township concerning this Consent Order and Agreement shall be addressed to:

Elizabeth Township
522 Rock Run Road
Elizabeth, PA 15037

The Township shall notify the Department whenever there is a change in the contact person's name, title, or address. Service of any notice or any legal process for any purpose under this Consent Order and Agreement, including its enforcement, may be made by mailing a copy by first class mail to the above address.

24. Force Majeure.

a. In the event that the Township is prevented from complying in a timely manner with any time limit imposed in this Consent Order and Agreement solely because of a strike, fire, flood, act of God, or other circumstance beyond the Township's control and which the Township, by the exercise of all reasonable diligence, is unable to prevent, then the Township may petition the Department for an extension of time. An increase in the cost of performing the obligations set forth in this Consent Order and Agreement shall not constitute circumstances beyond the Township's control. The Township's economic inability to comply with any of the obligations of this Consent Order and Agreement shall not be grounds for any extension of time.

b. The Township shall only be entitled to the benefits of this paragraph if it notifies the Department within five (5) working days by telephone and within ten (10) working days in writing of the date it becomes aware or reasonably should have become aware of the event impeding performance. The written submission shall include all necessary documentation, as well as a notarized affidavit from an authorized individual specifying the reasons for the delay, the expected duration of the delay, and the efforts which have been made and are being made by the Township to mitigate the effects of the event and to minimize the length of the delay. The initial written submission may be supplemented within ten working days of its submission. The Township's failure to comply with the requirements of this paragraph

specifically and in a timely fashion shall render this paragraph null and of no effect as to the particular incident involved.

c. The Department will decide whether to grant all or part of the extension requested on the basis of all documentation submitted by the Township and other information available to the Department. In any subsequent litigation, the Township shall have the burden of proving that the Department's refusal to grant the requested extension was an abuse of discretion based upon the information then available to it.

25. Severability. The paragraphs of this Consent Order and Agreement shall be severable and should any part hereof be declared invalid or unenforceable, the remainder shall continue in full force and effect between the parties.

26. Entire Agreement. This Consent Order and Agreement shall constitute the entire integrated agreement of the parties. No prior or contemporaneous communications or prior drafts shall be relevant or admissible for purposes of determining the meaning or extent of any provisions herein in any litigation or any other proceeding.

27. Attorney Fees. The parties shall bear their respective attorney fees, expenses and other costs in the prosecution or defense of this matter or any related matters, arising prior to execution of this Consent Order and Agreement.

28. Modifications. No changes, additions, modifications, or amendments of this Consent Order and Agreement shall be effective unless they are set out in writing and signed by the parties hereto.

29. Titles. A title used at the beginning of any paragraph of this Consent Order and Agreement may be used to aid in the construction of that paragraph, but shall not be treated as controlling.

30. Decisions Under Consent Order. Any decision which the Department makes under the provisions of this Consent Order and Agreement, including a notice that stipulated civil penalties are due, is intended to be neither a final action under 25 Pa. Code § 1021.2, nor an adjudication under 2 Pa. C.S. § 101. Any objection which the Township may have to the decision will be preserved until the Department enforces this Consent Order and Agreement.

31. Termination. The obligations of this Consent Order and Agreement shall terminate when the Department determines that the Township has complied with the terms and conditions of this Consent Order and Agreement or 10 years from the execution date of the Consent Order and Agreement, whichever occurs first.

32. Resolution. Attached hereto as Appendix D is a resolution of the Township authorizing its signatories below to enter into this Consent Order and Agreement on its behalf.

IN WITNESS WHEREOF, the parties hereto have caused this Consent Order and Agreement to be executed by their duly authorized representatives. The undersigned representatives of the Township certify under penalty of law, as provided by 18 Pa. C.S. § 4904, that they are authorized to execute this Consent Order and Agreement on behalf of the Township; that the Township consents to the entry of this Consent Order and Agreement as a final ORDER of the Department; and that the Township hereby knowingly waives its right to appeal this Consent Order and Agreement and to challenge its content or validity, which rights may be available under Section 4 of the Environmental Hearing Board Act, Act of July 13, 1988, P.L. 530, 35 P.S. § 7514; the Administrative Agency Law, 2 Pa. C.S. § 103(a) and Chapters 5A and 7A; or any other provisions of law. Signature by the Township's attorney certifies only that the agreement has been signed after consulting with counsel.

FOR ELIZABETH TOWNSHIP:

Name: Rob Rhoderick
Title: President

FOR THE COMMONWEALTH OF PENNSYLVANIA, DEPARTMENT OF ENVIRONMENTAL PROTECTION:

Christopher J. Kriley, P.E.
Program Manager
Clean Water
Southwest Region

Name: Joanne Beckowitz
Title: Vice President

Attorney for Elizabeth Township

Charney Regenstein
Assistant Counsel

Appendix A

Permits Associated With Elizabeth Township Sewage System

Part II 0281465 for the Buena Vista STP
Part II 0281465-A1 for the Buena Vista STP
Part II 0289456 for Howell Park #17 Sewer Extension
Part II 466S102 for Mt Vernon & Cc Sewer & Duncan Pump Station
Part II 9316-S for Highland Meadows Sewer Extension
Part II 461-S-83 for Youghiogheny Elementary School Sewer Extension
Part II 9335-S for Greenock & Boston Area Sewer Extension & Boston Pump Station
Part II 0296411 for Fallen Timber Watershed Lower Interceptor Sewer Extension
Part II 9571-S for Wylie Run Sewer Extension & Pump Station
Part II 9819-S for Happy Hollow Sewer Extension
Part II 9100-S for Blaine Hill Sewer Extension
Part II 461-S-39 for School Ridge Pump Station
Part II 0207405 for Boyds Hollow Rd Sanitation Sewer
Part II 0213408 for Force main and Buena Vista Pump Station
Part II 0200402 for Sewer Extension for Buena Vista Sewage Treatment Plant
Part II 0200402-A1 for Sewer Extension for Buena Vista Sewage Treatment Plant

GP05-0213217 for Utility Line Stream Crossing New Buena Vista Pump Station

Appendix B

NPDES Permit PA0024732

Appendix C

Tap Requests

Elizabeth Borough This watershed has taps

Boston / Buena Vista - No Taps

- The Following Taps Requested:

Development	No. of Tap Requests	Watershed
Mt. Vernon Manor	10	Buena Vista
149 Eighth Avenue (Sutersville)	1	Buena Vista
Forward Township	10	Buena Vista
Sutersville Sewickley Municipal Sewage Authority	5	Buena Vista
Belsar Road	1	Buena Vista
Tripoli	2	Buena Vista
Larry Cocci	2	Buena Vista
Miscellaneous Taps	15	Buena Vista
TOTAL	46	

Appendix D

Resolution

TOWNSHIP OF ELIZABETH
ALLEGHENY COUNTY, PENNSYLVANIA
RESOLUTION NO. 2016-9

A RESOLUTION OF THE TOWNSHIP OF ELIZABETH, COUNTY OF ALLEGHENY, COMMONWEALTH OF PENNSYLVANIA APPROVING THE CONSENT ORDER AND AGREEMENT WITH THE COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

WHEREAS, Elizabeth Township ("Township") and the Commonwealth of Pennsylvania Department of Environmental Protection ("Department") have agreed upon terms relating to the conveyance and operation and maintenance of Sanitary Sewer System flows from the Buena Vista Sewer System and the Boston Sewer System;

WHEREAS, after continuing negotiations and in furtherance of the settlement of pending litigation with the Environmental Hearing Board, the Township and the Department have agreed upon terms which have been set forth in the Consent Order and Agreement attached hereto;

WHEREAS, it is appropriate to approve the terms of the Consent Order and Agreement by Resolution;

NOW THEREFORE, BE IT RESOLVED AND ENACTED by the Township of Elizabeth as follows:

SECTION 1. The Township of Elizabeth hereby approves the terms of the Consent Order and Agreement with the Commonwealth of Pennsylvania Department of Environmental Protection.

SECTION 2. The proper officials of the Township are authorized to sign the attached Consent Order and Agreement setting forth the terms and conditions relating to the conveyance of Sanitary Sewer System flows from the Buena Vista Sewer System and the Boston Sewer System to the Municipal Authority of the City of McKeesport Sewage Treatment Plant which is hereby approved.

SECTION 3. A copy of the Consent Order and Agreement is attached hereto and made a part hereof.

RESOLVED AND ENACTED by the Board of Commissioners of the Township of Elizabeth in lawful session assembled this 2nd day of May, 2016.

ATTEST:

Lauren Zang, Office Manager

TOWNSHIP OF ELIZABETH

Robert Rhoderick, President

APPENDIX H

Exhibits

EXHIBIT 1

542-04

KLH ENGINEERS, INC
5173 Campbells Run Road
Pittsburgh, PA 15205
Phone: 412-494-0510
Fax: 412-494-0426
www.klhengineers.com

Legend

- Elizabeth Township Boundary
- Municipal Boundaries
- County Boundaries
- Boston Sewershed
- Buena Vista Sewershed
- Elizabeth Sewershed

ELIZABETH TOWNSHIP

ALLEGHENY COUNTY
PENNSYLVANIA

Planning Area Deliniation

0 2,700 5,400
Feet

Author: RS
Date: 8/10/2016
NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
Projection: Lambert Conformal Conic

S:\Active Clients\542 Elizabeth Township Sanitary\Act 537\Elizabeth_Township_Planning Area Deliniation.mxd

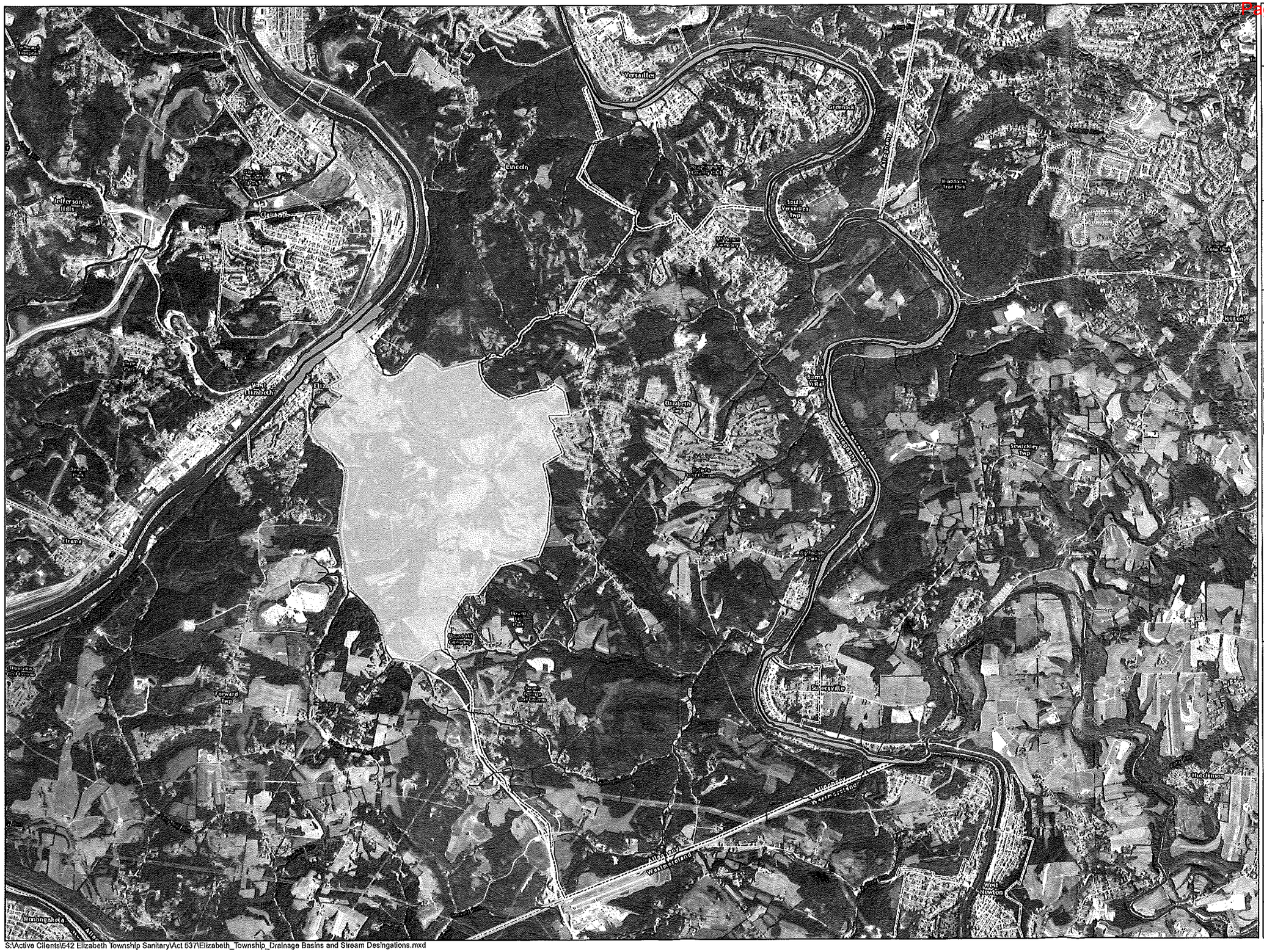


EXHIBIT 2

542-04

KLH ENGINEERS, INC
5173 Campbells Run Road
Pittsburgh, PA 15205
Phone: 412-494-0510
Fax: 412-494-0426
www.klhengineers.com

Legend

- Warm Water Fish
- Streams
- Small Water Body
- Elizabeth Township Boundary
- Municipal Boundaries
- County Boundaries
- Planning Area

ELIZABETH TOWNSHIP

ALLEGHENY COUNTY PENNSYLVANIA

Drainage Basins and Stream Designations

0 2,700 5,400
Feet

Author: RS
Date: 5/10/2016
NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
Projection: Lambert Conformal Conic

S:\Active Clients\542 Elizabeth Township Sanitary\Act 537\Elizabeth_Township_Drainage Basins and Stream Designations.mxd

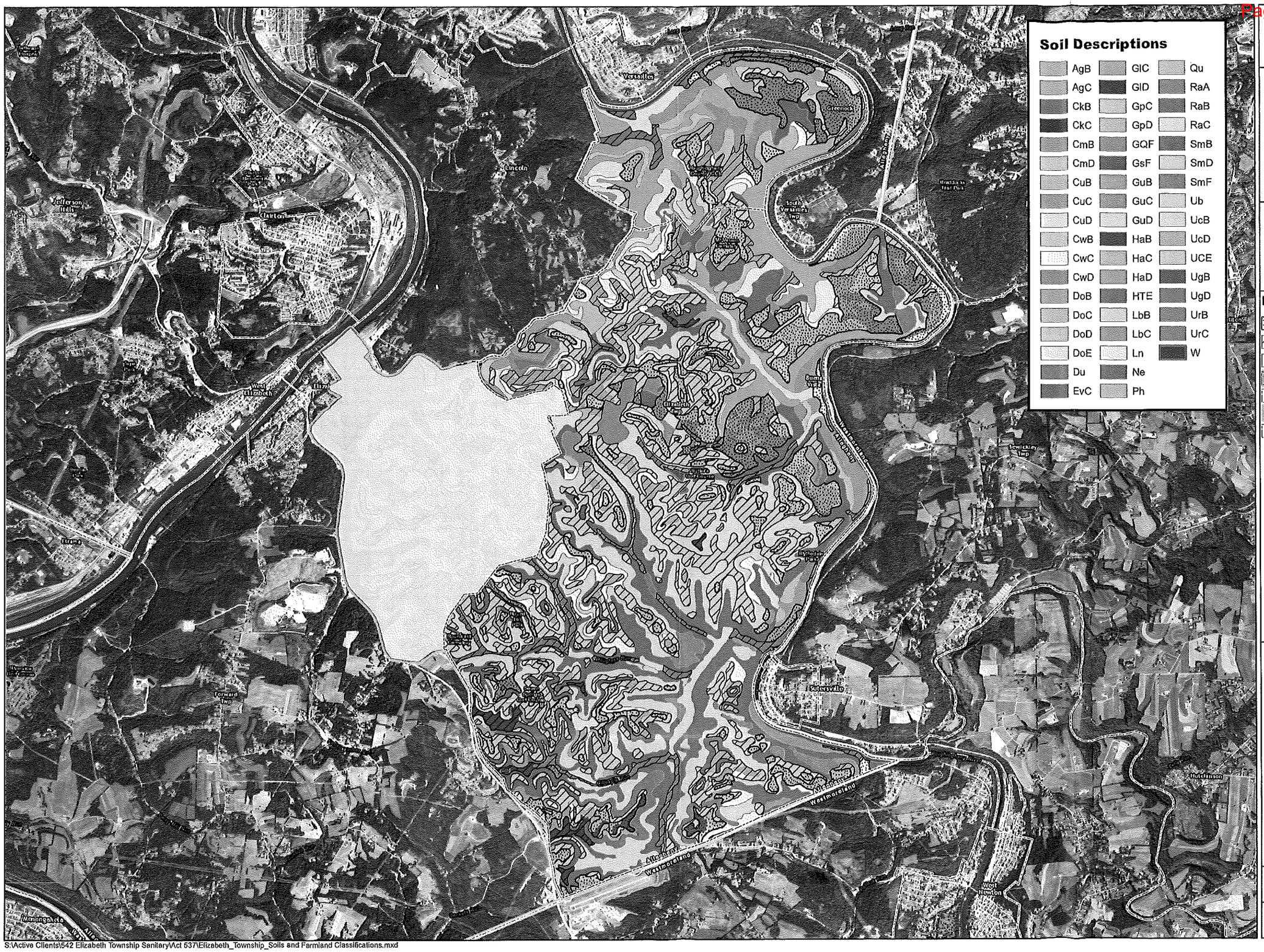

Soil Descriptions
AgB
AgC
CkB
CkC
CmB
CmD
CuB
CuC
CuD
CwB
CwC
CwD
DoB
DoC
DoD
DoE
Du
EvC
GlC
GlD
GpC
GpD
GQF
GsF
GuB
GuC
GuD
HaB
HaC
HaD
HTE
LbB
LbC
Ln
Ne
Ph
Qu
RaA
RaB
RaC
SmB
SmD
SmF
Ub
UcB
UcD
UCE
UgB
UgD
UrB
UrC
W
Jefferson Hills
Clairton
Lincoln
Versailles
Greenock
South Versailles Twp
Glassport
Forward Twp
Elizabeth
Elizabeth Twp
Monongahela
Monongahela Twp
Jefferson
Jefferson Twp
Gilmore
Gilmore Park
Coursin
Coursin Park
Cutlerville
Cutlerville Park
Wall
Wall Park
Buena Vista
Buena Vista Park
Lower Elizabeth Twp
Lower Elizabeth Twp Park
Lower Elizabeth Twp Park
Lower Elizabeth Twp Park

EXHIBIT 4

542-04

KLH ENGINEERS, INC
5173 Campbells Run Road
Pittsburgh, PA 15205
Phone: 412-494-0510
Fax: 412-494-0426
www.klhengineers.com

Legend

- Casselman Formation
- Glenshaw Formation
- Monongahela Group
- Waynesburg Formation
- Elizabeth Township Boundary
- Municipal Boundaries
- County Boundaries
- Planning Area

ELIZABETH TOWNSHIP

ALLEGHENY COUNTY
PENNSYLVANIA

Geologic Features

0 2,700 5,400
Feet

Author: RS
Date: 8/10/2016
NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
Projection: Lambert Conformal Conic

S:\Active Clients\542 Elizabeth Township Sanitary\Act 537\Elizabeth_Township_Geologic Features.mxd

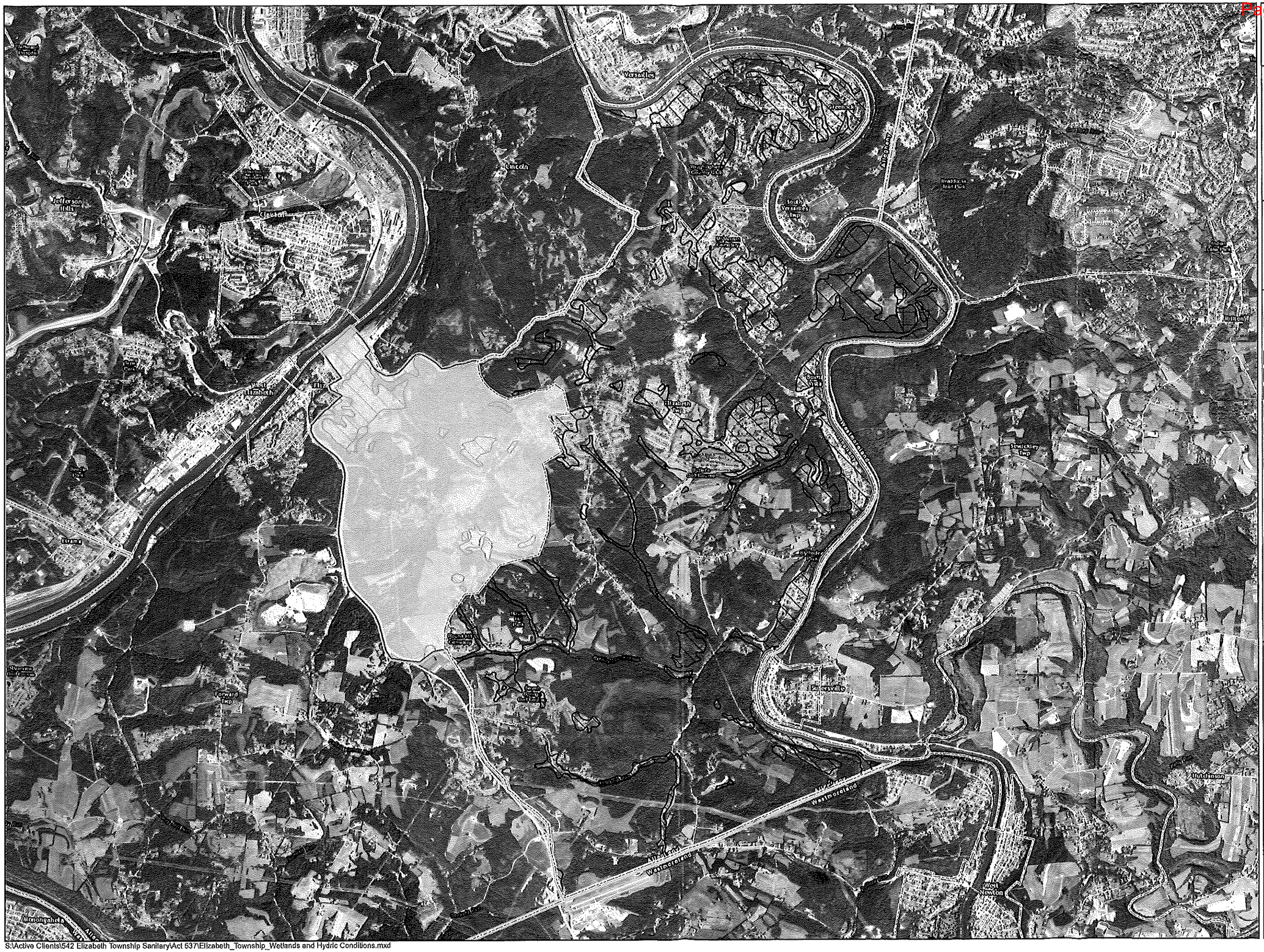


EXHIBIT 5

542-04

KLH ENGINEERS, INC
5173 Campbells Run Road
Pittsburgh, PA 15205
Phone: 412-494-0510
Fax: 412-494-0426
www.klhengineers.com

Legend

- Freshwater Pond
- Riverine
- All hydric
- Not hydric
- Partially hydric
- Elizabeth Township Boundary
- Municipal Boundaries
- County Boundaries
- Planning Area

ELIZABETH TOWNSHIP

ALLEGHENY COUNTY PENNSYLVANIA

Wetlands and Hydric Conditions

0 2,700 5,400
Feet

Author: RS
Date: 8/10/2016
NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
Projection: Lambert Conformal Conic

S:\Active Clients\542 Elizabeth Township Sanitary\Act 537\Elizabeth_Township_Wetlands and Hydric Conditions.mxd

EXHIBIT 6

542-04

KLH ENGINEERS, INC
5173 Campbells Run Road
Pittsburgh, PA 15205
Phone: 412-494-0510
Fax: 412-494-0426
www.klhengineers.com

Buena Vista Pump Station
Buena Vista STP
Duncan Pump Station
Boston Pump Station
Simpson-Howell Pump Station
Lovedale Pump Station
15th Street Pump Station
McKeesport WPCP
Wylie Pump Station
Elizabeth Borough STP

Legend

- WPCP
- STP
- Pump Station
- MeterLocations
- Force Main
- Sanitary Manhole
- Sanitary Pipe
- Boston Sewershed
- Buena Vista Sewershed
- Elizabeth Sewershed
- Planning Area
- Elizabeth Township Boundary
- Municipal Boundaries
- County Boundaries

ELIZABETH TOWNSHIP

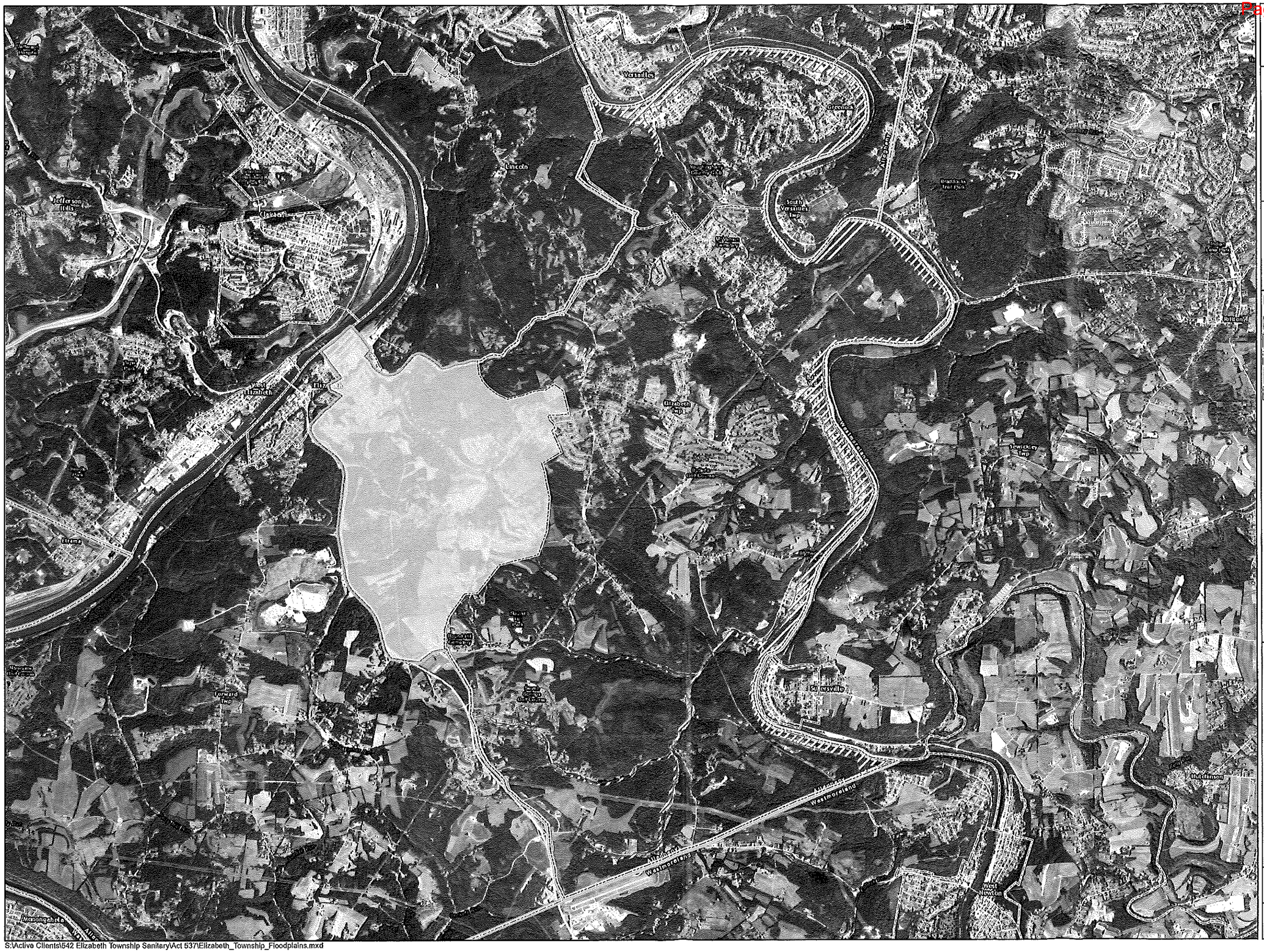
ALLEGHENY COUNTY PENNSYLVANIA

Existing Sewage Facilites

0 2,500 5,000
Feet

Author: RS
Date: 8/11/2016
NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
Projection: Lambert Conformal Conic

S:\Active Clients\542 Elizabeth Township Sanitary\Act 537\Elizabeth_Township_Existing Sewage Facilities.mxd



S:\Active Clients\542 Elizabeth Township Sanitary\Act 537\Elizabeth_Township_Floodplains.mxd

EXHIBIT 7

542-04

KLH ENGINEERS, INC
5173 Campbells Run Road
Pittsburgh, PA 15205
Phone: 412-494-0510
Fax: 412-494-0426
www.klhengineers.com

Legend

- Elizabeth Township Floodplains
- Elizabeth Township Boundary
- Municipal Boundaries
- County Boundaries
- PlanningArea

ELIZABETH TOWNSHIP

ALLEGHENY COUNTY
PENNSYLVANIA

Floodplains

0 2,700 5,400
Feet

Author: RS
Date: 8/10/2016
NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
Projection: Lambert Conformal Conic

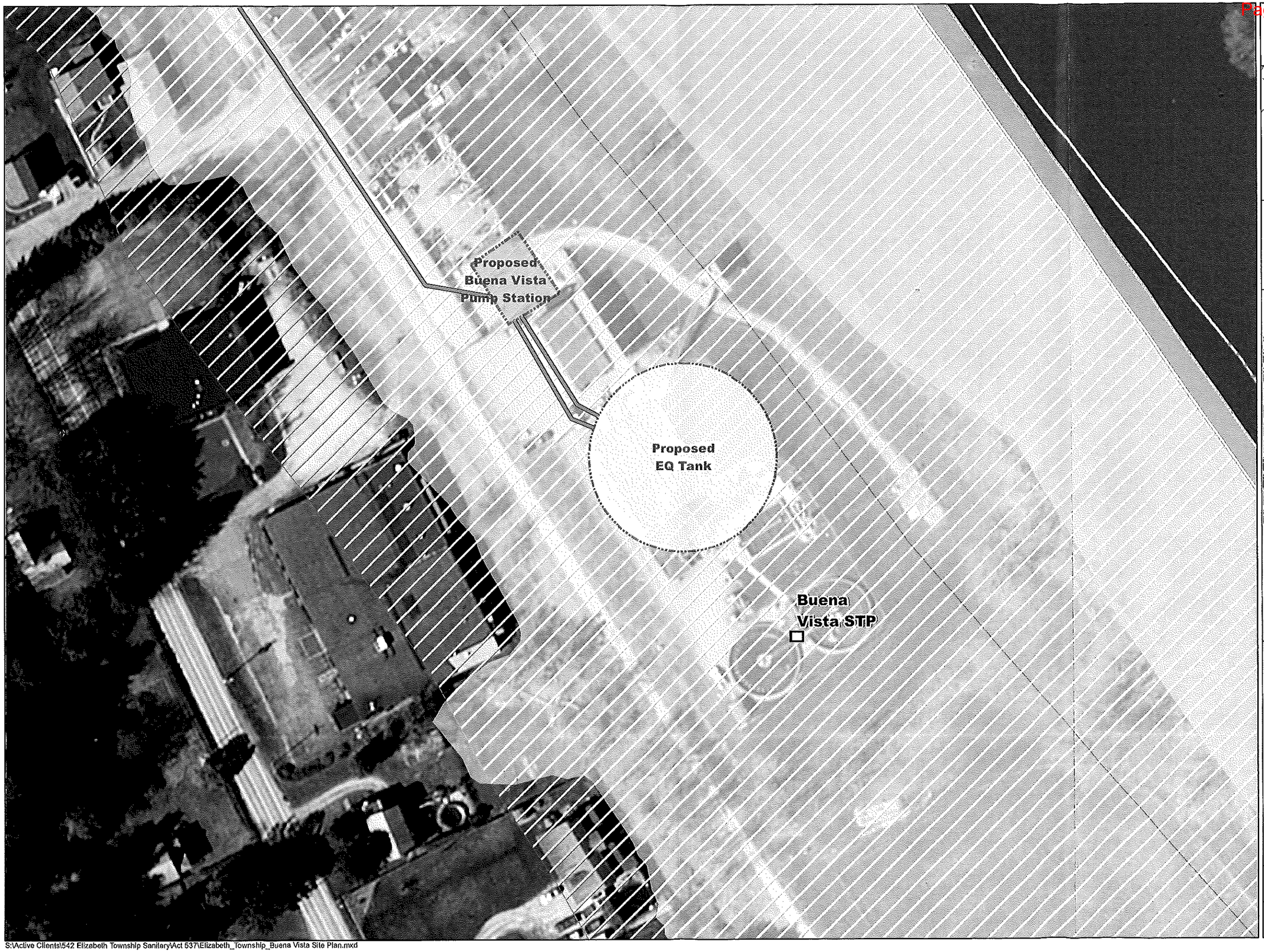
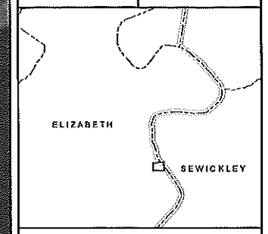


EXHIBIT 8

542-04



KLH ENGINEERS, INC
5173 Campbells Run Road
Pittsburgh, PA 15205
Phone: 412-494-0510
Fax: 412-494-0426
www.klhengineers.com

Legend

- STP
- Proposed Force Main
- Buena Vista EQ Tank
- Proposed Buena Vista Pump Station
- Floodway
- Floodplain
- Freshwater Pond
- Riverine
- Planning Area
- Elizabeth Township Boundary
- Municipal Boundary
- Municipal Boundaries

ELIZABETH TOWNSHIP

ALLEGHENY COUNTY PENNSYLVANIA

Buena Vista Site Plan

0 40 80
Feet

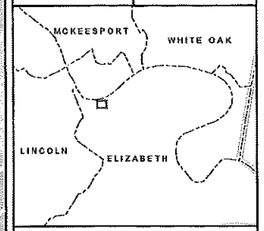
Author: RS
Date: 9/14/2016
NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
Projection: Lambert Conformal Conic

S:\Active Clients\542 Elizabeth Township SanitaryAct 537\Elizabeth_Township_Buena Vista Site Plan.mxd



EXHIBIT 9

542-04



KLH ENGINEERS, INC
5173 Campbells Run Road
Pittsburgh, PA 15205
Phone: 412-494-0510
Fax: 412-494-0426
www.klhengineers.com

Legend

- Existing Pump Station
- Boston Proposed Force Main
- Proposed Boston Pump Station
- Freshwater Pond
- Riverine
- All hydric
- Not hydric
- Partially hydric
- Floodway
- Elizabeth Township Floodplains

ELIZABETH TOWNSHIP

ALLEGHENY COUNTY PENNSYLVANIA

Boston PS Site Plan

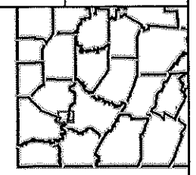
0 30 60
Feet

Author: RS
Date: 9/14/2016
NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
Projection: Lambert Conformal Conic

S:\Active Clients\542 Elizabeth Township Sanitary\Act 537\Elizabeth_Township_Boston Site Plan.mxd

EXHIBIT 10

542-04



KLH ENGINEERS, INC
5173 Campbells Run Road
Pittsburgh, PA 15205
Phone: 412-494-0510
Fax: 412-494-0426
www.klhengineers.com

Legend

- Alternative 1
- Alternative 2
- Alternative 3
- Elizabeth Township Boundary
- Municipal Boundaries
- County Boundaries
- Boston Sewershed
- Buena Vista Sewershed
- Elizabeth Sewershed

ELIZABETH TOWNSHIP

ALLEGHENY COUNTY
PENNSYLVANIA

Planning Area Deliniation Alternatives

0 2,700 5,400
Feet

Author: RS
Date: 9/14/2015
NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
Projection: Lambert Conformal Conic

S:\Active Clients\542 Elizabeth Township SanitaryAct 537\Elizabeth_Township_Planning Area Deliniation Alternatives.mxd

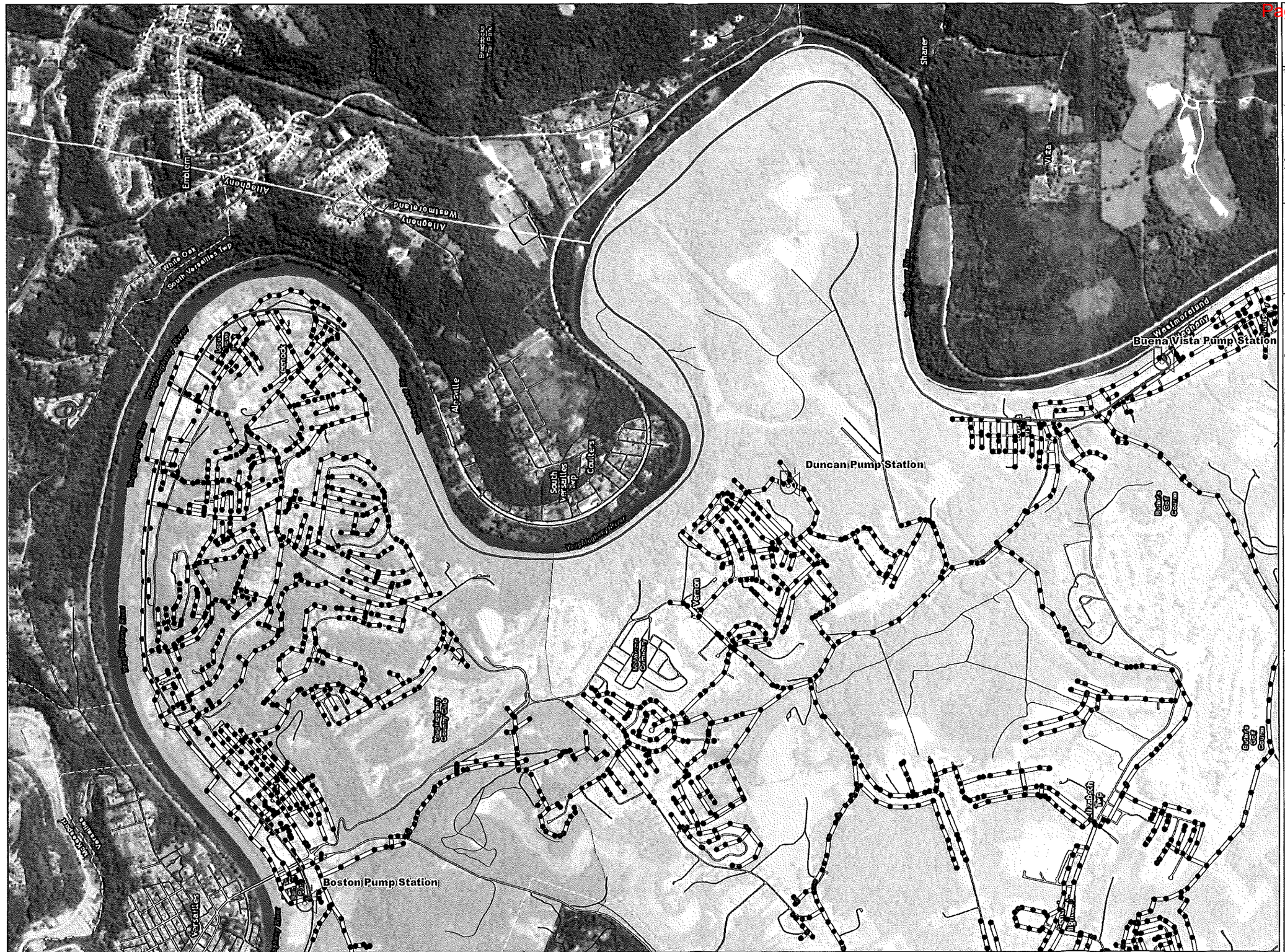


EXHIBIT 11

542-04

KLH ENGINEERS, INC
5173 Campbells Run Road
Pittsburgh, PA 15205
Phone: 412-494-0510
Fax: 412-494-0426
www.klhengineers.com

Legend

- Existing Pump Station
- Alternative1 Conceptual Layout
- Sanitary Manhole
- Sanitary Pipe
- Boston Sewershed
- Buena Vista Sewershed
- Elizabeth Sewershed

ELIZABETH TOWNSHIP

ALLEGHENY COUNTY PENNSYLVANIA

Alternative 1 Conceptual Layout

0 1,000 2,000
Feet

Author: RS
Date: 11/8/2016
NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
Projection: Lambert Conformal Conic

S:\Active Clients\542 Elizabeth Township SanitaryAct 537\Elizabeth_Township_Alternative 1 Conceptual Layout.mxd

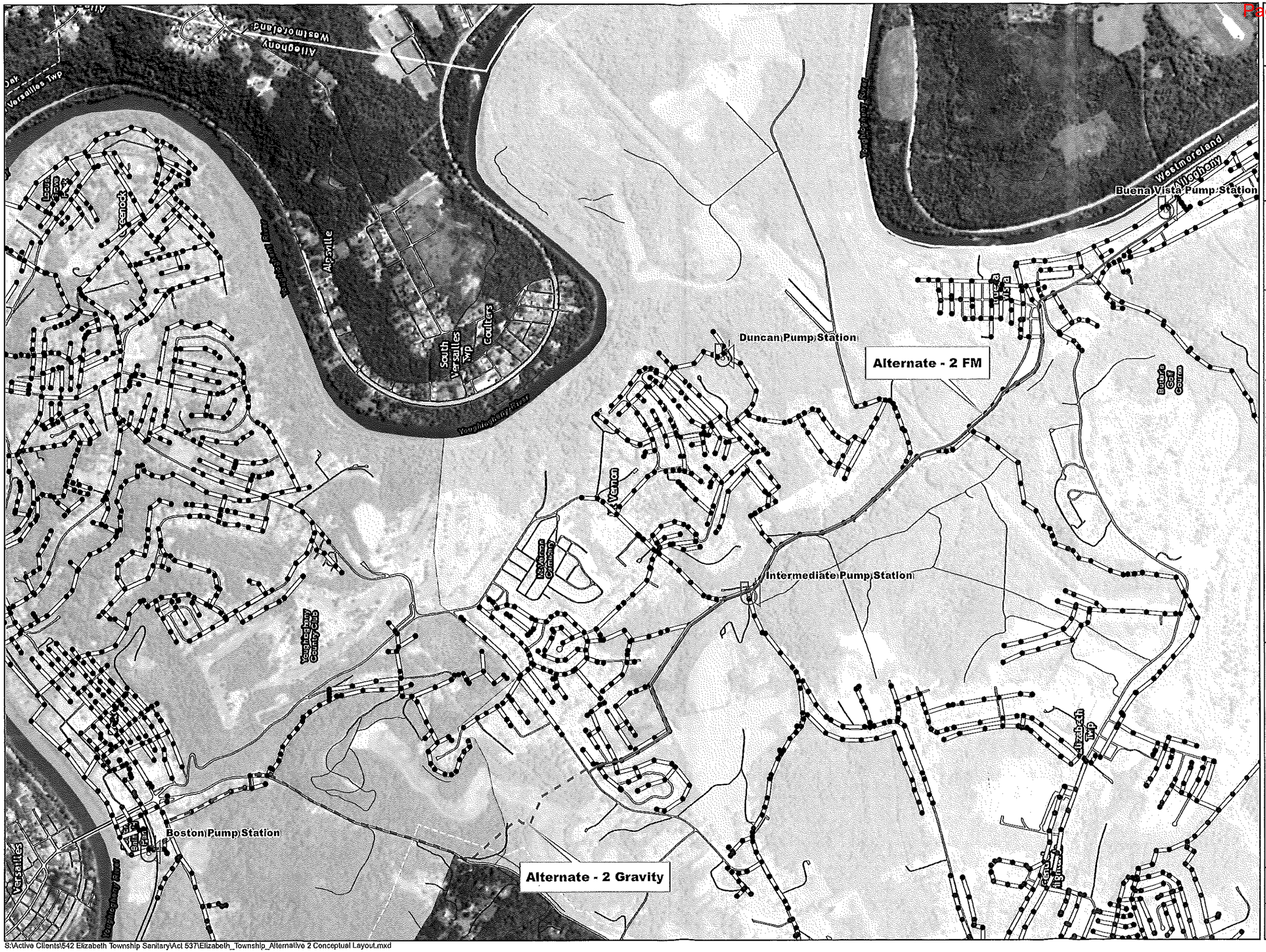


EXHIBIT 12

542-04

KLH ENGINEERS, INC
5173 Campbells Run Road
Pitsburgh, PA 15205
Phone: 412-494-0510
Fax: 412-494-0426
www.klhengineers.com

Legend

- Existing Pump Station
- Proposed Pump Station
- Alternative 2 Conceptual Layout
- Sanitary Manhole
- Sanitary Pipe
- Boston Sewershed
- Buena Vista Sewershed
- Elizabeth Sewershed

ELIZABETH TOWNSHIP

ALLEGHENY COUNTY PENNSYLVANIA

Alternative 2 Conceptual Layout

0 840 1,680
Feet

Author: RS
Date: 9/14/2016
NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
Projection: Lambert Conformal Conic

S:\Active Clients\542 Elizabeth Township Sanitary\Act 537\Elizabeth_Township_Alternative 2 Conceptual Layout.mxd

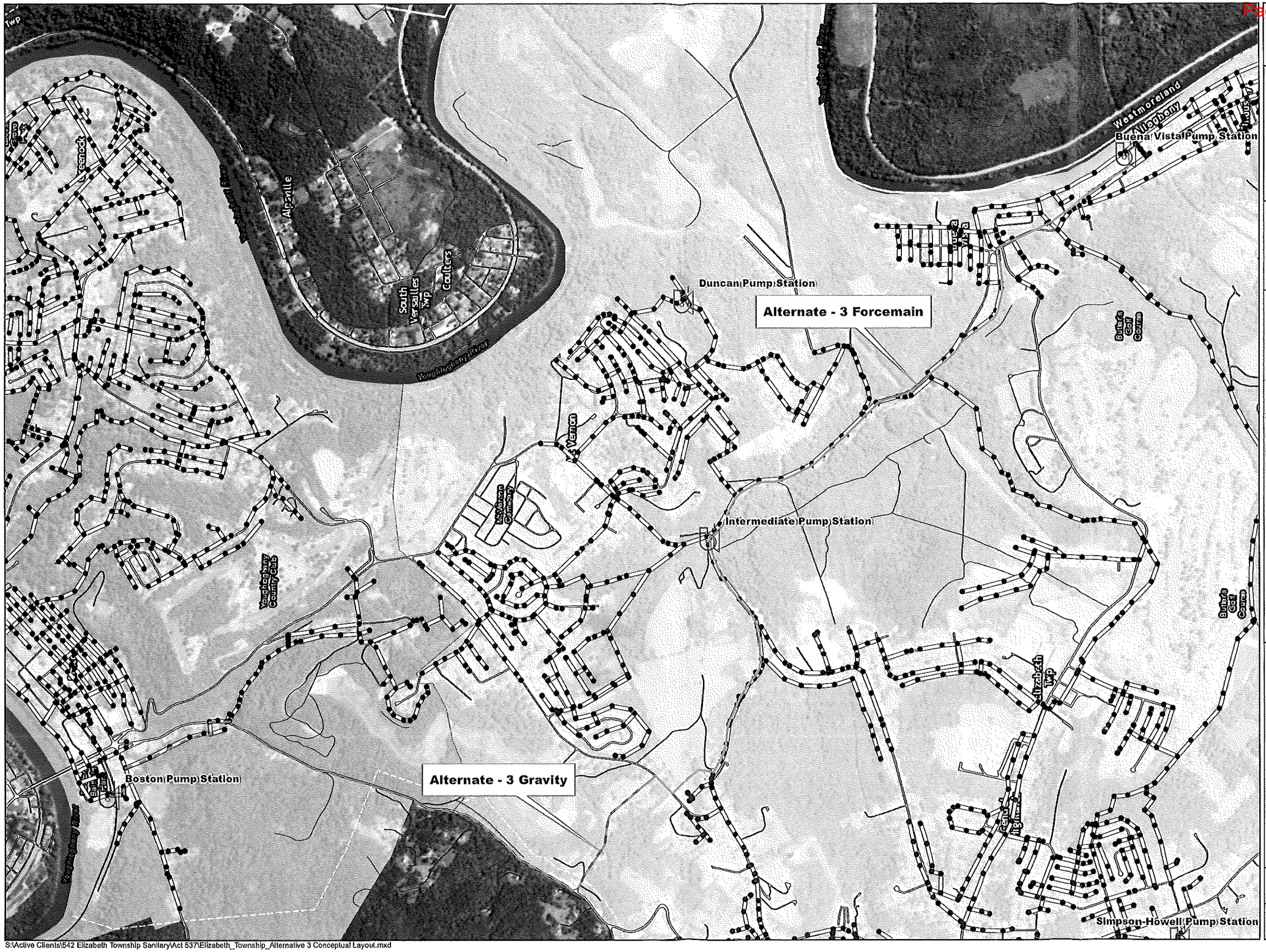


EXHIBIT 13

542-04

KLH
ENGINEERS, INC
5173 Campbells Run Road
Pittsburgh, PA 15205
Phone: 412-494-0510
Fax: 412-494-0426
www.klhengineers.com

Legend

- Existing Pump Station
- Proposed Pump Station
- Alternative 3 Conceptual Layout
- Sanitary Manhole
- Sanitary Pipe
- Boston Sewershed
- Buena Vista Sewershed
- Elizabeth Sewershed

ELIZABETH TOWNSHIP

ALLEGHENY COUNTY PENNSYLVANIA

Alternative 3 Conceptual Layout

0 840 1,680
Feet

Author: RS
Date: 9/14/2016
NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
Projection: Lambert Conformal Conic

S:\Active Clients\542 Elizabeth Township Sanitary\Act 537\Elizabeth_Township_Alternative 3 Conceptual Layout.mxd

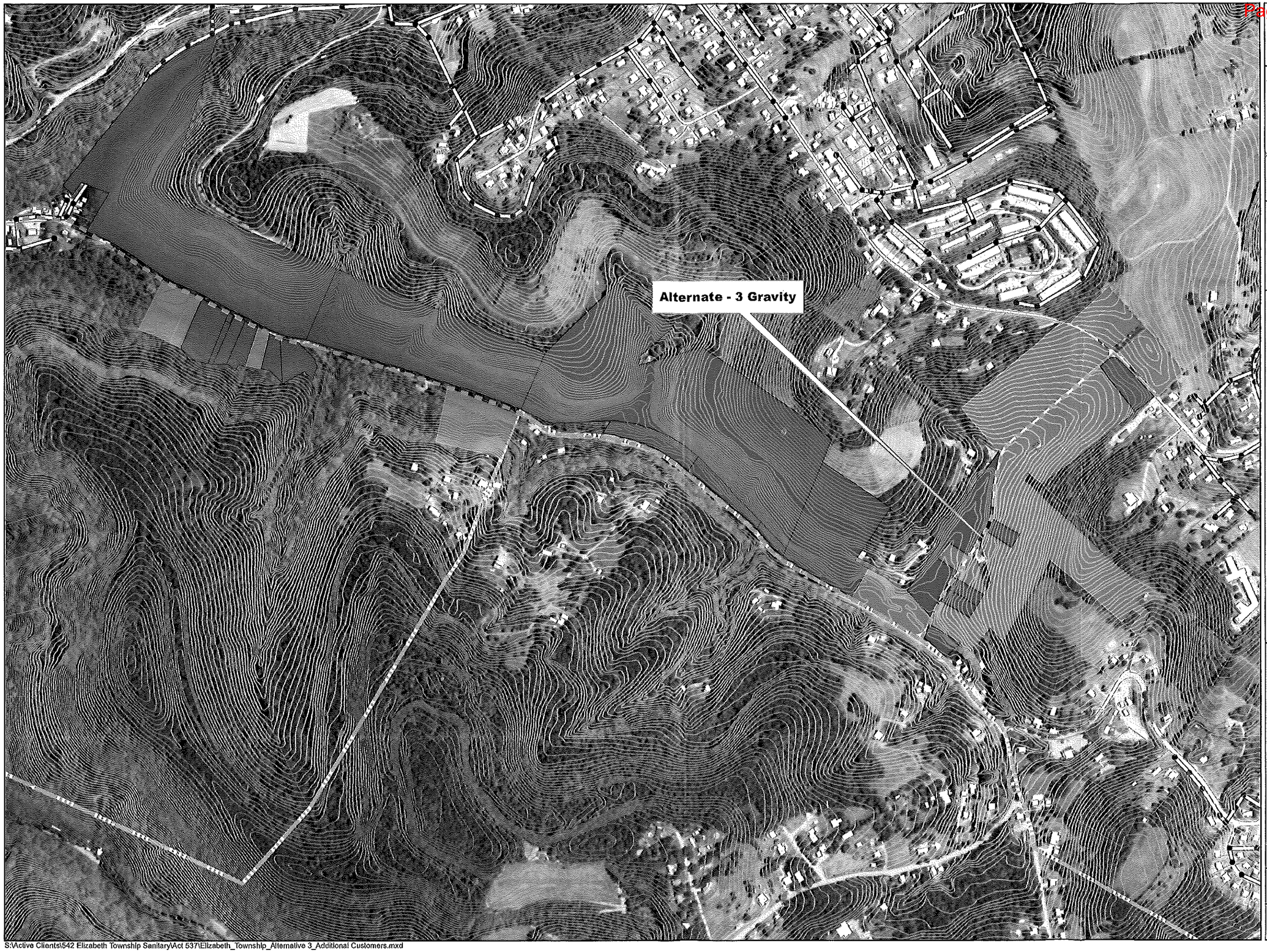
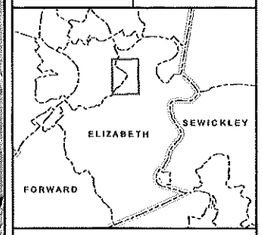


EXHIBIT 13

542-04



KLH
ENGINEERS, INC
5173 Campbells Run Road
Pittsburgh, PA 15205
Phone: 412-494-0510
Fax: 412-494-0426
www.klhengineers.com

Legend

ELIZABETH TOWNSHIP

ALLEGHENY COUNTY
PENNSYLVANIA

Alternative 3
Additional Customers

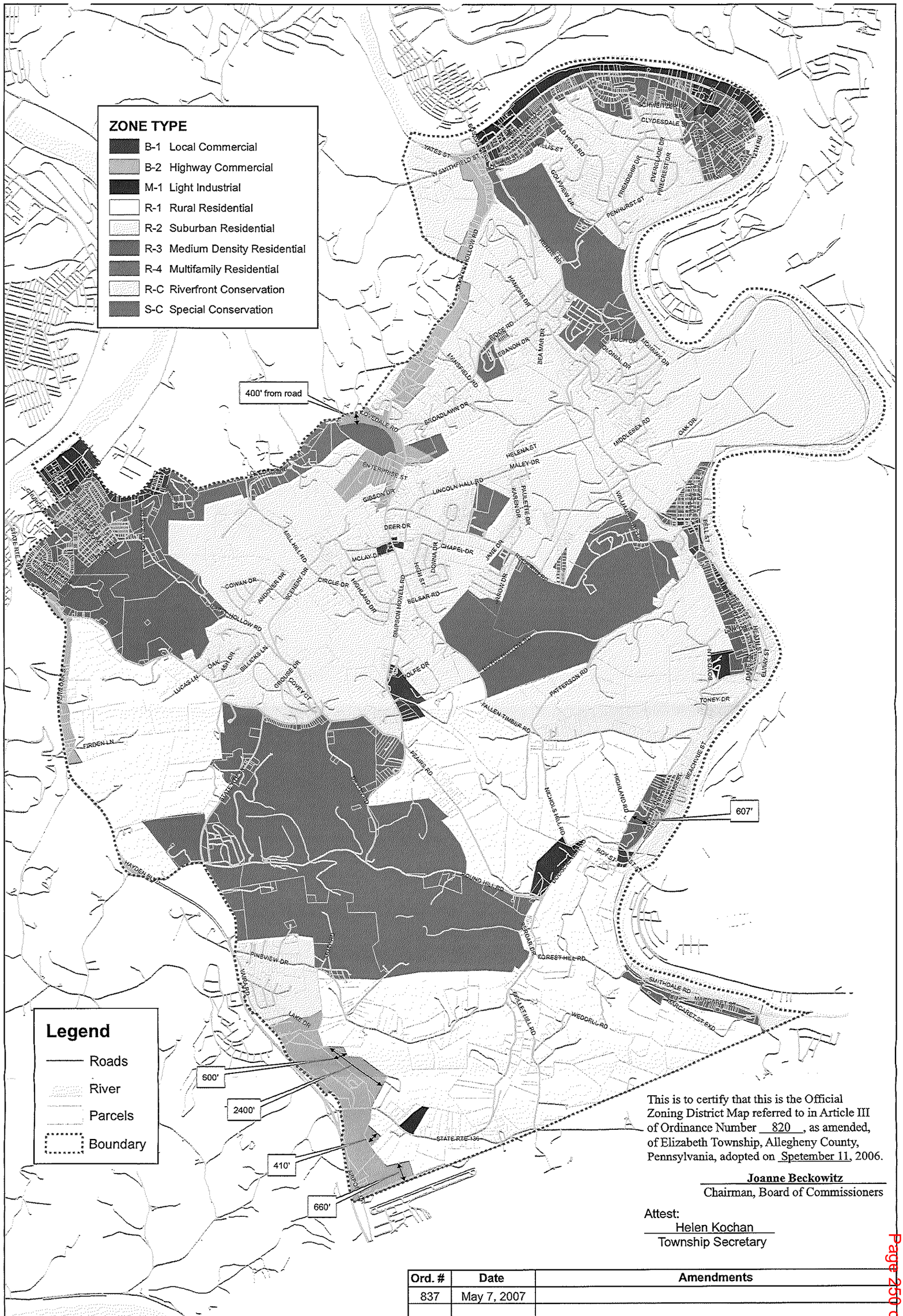
0 350 700
Feet

Author: RS
Date: 9/14/2016
NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
Projection: Lambert Conformal Conic

S:\Active Clients\542 Elizabeth Township Sanitary\Act 537\Elizabeth_Township_Alternative 3_Additional Customers.mxd

APPENDIX I

Elizabeth Township Zoning Map



Ord. #	Date	Amendments
837	May 7, 2007	

435

1 Inch = 3,000 feet

0 ½ 1 Miles

Author: Ross Volkwein
Date: 5/26/2013
NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
Projection: Lambert Conformal Conic

ELIZABETH TOWNSHIP
ALLEGHENY COUNTY
OFFICIAL ELIZABETH TOWNSHIP ZONING MAP

KLH ENGINEERS, INC
5173 Campbells Run Road
Pittsburgh, PA 15205
Phone: 412-494-0510
Fax: 412-494-0425
www.klhengineers.com

N

APPENDIX J

MACM Flow Agreement

AMENDMENT TO AGREEMENT DATED JUNE 18, 2008, BY AND BETWEEN THE MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT AND THE ELIZABETH TOWNSHIP SANITARY AUTHORITY

This Amendment, dated May 13, 2013, to Agreement dated June 18, 2008, by and between THE MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT, a municipal authority organized and existing under the Pennsylvania Municipal Authorities Act, Act 22 of 2001, formerly the Municipality Authorities Act of 1945, as amended, hereinafter referred to as "MACM,"

AND

THE ELIZABETH TOWNSHIP SANITARY AUTHORITY, a municipal authority organized and existing under the Pennsylvania Municipal Authorities Act, Act 22 of 2001, formerly the Municipality Authorities Act of 1945, as amended, hereinafter referred to as "ETSA."

WHEREAS, MACM and ETSA have heretofore entered into an Agreement dated June 18, 2008, for ETSA to connect and transport its water and sewage flows from its Buena Vista Watershed, in addition to the water and sewage flows MACM has allocated from Elizabeth Township in the Boston Pump Station Service Area, to the MACM sewage collection, treatment and disposal system and which Agreement, in paragraph 2 thereof, sets forth an anticipated peak flow capacity of 10,000,000 gallons per day from the Buena Vista Watershed, plus the peak flow capacity of 4,200,000 gallons per day allocated for the Boston Pump Station Service Area, and with MACM guaranteeing ETSA peak capacity of 10,000,000 gallons per day, and with the an average daily flow of 1,400,000 gallons per day for the Buena Vista

Watershed, in addition to the flows MACM has allocated from Elizabeth Township in the Boston Pump Station Service Area, and which Agreement is attached hereto as Exhibit 1; and

WHEREAS, in addition to the Agreement dated June 18, 2008, between the parties attached hereto as Exhibit 1, there are additional Agreements in place between the parties hereto and Elizabeth Township, hereinafter referred to as "Municipality," and which Agreements include, but are not limited to, a Service Agreement dated October 14, 2008, and a Corrective Action Agreement dated October 14, 2008; and, in addition to the Agreements existing in place between the parties hereto and/or the Municipality, there are currently in existence, at a minimum, an Administrative Consent Order dated September 11, 2008, by and between the Allegheny County Health Department, ETSA and the Municipality, and an existing Act 537 Plan for sewage collection, transportation, treatment and disposal among the parties hereto, the Municipality, and other parties including, but not limited to, the City of McKeesport; and

WHEREAS, with regard to the Agreement attached hereto as Exhibit 1 in effect between MACM and ETSA and which sets forth in paragraph 2 thereof that MACM will design, construct and pay for treatment facilities to accommodate the Buena Vista Watershed flows, in addition to the flows MACM has allocated from Elizabeth Township in the Boston Pump Station Service Area, and with MACM guaranteeing to ETSA in said Agreement peak capacity of 10,000,000 gallons per day with an average daily flow of 1,400,000 gallons per day from

the Buena Vista Watershed, in addition to the flows MACM has allocated from Elizabeth Township in the Boston Pump Station Service Area; and

WHEREAS, as set forth in said Agreement dated June 18, 2008, attached hereto as Exhibit 1, the Municipality, under its enabling and authorizing Resolution No. 36-8, authorized ETSA to proceed to divert the Buena Vista Watershed to MACM and enter into negotiations for such sewage treatment; and

WHEREAS, ETSA has met with representatives of MACM to inform MACM that it wishes to amend paragraph 2 of said Agreement dated June 18, 2008, and seek MACM approval for ETSA to increase its peak flow capacity from the Buena Vista Watershed from the currently stated maximum amount of 10,000,000 gallons per day, plus the approximately 4,200,000 gallons per day MACM has allocated from Elizabeth Township in the Boston Pump Station Service Area, to a revised and increased combined peak flow capacity of 17,500,000 gallons per day from the Buena Vista Watershed and the flows MACM has allocated from Elizabeth Township in the Boston Pump Station Service Area and, in addition thereto, to negotiate the rate to be charged to ETSA by MACM for such increased sewage flow; and

WHEREAS, MACM has agreed to accommodate the request of ETSA and to establish a revised and increased combined peak flow capacity of 17,500,000 gallons per day which includes combined flow from the Buena Vista Watershed and the Boston Pump Station Service Area, and for MACM to guarantee ETSA an increased and revised combined peak

flow capacity of 17,500,000 gallons per day from both service areas and with an average combined daily flow of 1,695,000 gallons per day for both service areas.

NOW, THEREFORE, the parties hereto, each intending to be legally bound, hereby agree as follows:

1. Section 2 of the Agreement between the parties dated June 18, 2008, a copy of which is attached hereto as Exhibit 1, is hereby amended to read as follows:

> 2. MACM will design, construct and pay for treatment facilities to accommodate the Buena Vista Watershed flows (in addition to the flows MACM has allocated from Elizabeth Township in the Boston Pump Station service area which were already considered in design) for a combined peak flow of 17,500,000 gallons per day and MACM guarantees ETSA peak capacity of 17,500,000 gallons per day from the combined flow from the Buena Vista Watershed and the Boston Pump Station Service Area, and with an average combined daily flow of 1,695,000 gallons per day for both combined systems. For the first 14,200,000 gallons per day (9,860 gallons per minute) flow from the combined flow from the Buena Vista Watershed and the Boston Pump Station Service Area, MACM shall charge ETSA,

and ETSA shall pay, the then prevailing user rates for MACM service communities which will be $7.85 per thousand gallons of water usage as of July 1, 2013, and which shall be subject to an increase from time to time by MACM. For all flows from the combined systems of the Buena Vista Watershed and the Boston Pump Station Service Area in excess of 14,200,000 gallons per day (9,860 gallons per minute), MACM shall charge ETSA, and ETSA shall pay, 50% of the then prevailing user rates for MACM service communities which will be $7.85 per thousand gallons of water usage as of July 1, 2013, and which shall be subject to increase from time to time by MACM. For example, as of July 1, 2013, ETSA will pay MACM $7.85 per thousand gallons of water usage for all combined flows from the Buena Vista Watershed and the Boston Pump Station Service Area up to 9,860 gallons per minute, and $3.925 per thousand gallons of flow in excess of 9,860 gallons per minute.

2. This Amendment to Agreement between the parties constitutes the entire understanding of the parties and supersedes any and all prior agreements and negotiations between them relating to the subject matter of this Amendment. There are no

representations or warranties other than those expressly set forth herein.

3. Except as set forth above and as specifically amended above, all other provisions of the Agreement dated June 18, 2008, between the parties, a copy of which is attached hereto as Exhibit 1, shall remain in full force and effect and, additionally, all other Agreements and provisions of Agreements heretofore entered into between the herein parties and other third parties, including, but not limited to those Agreements heretofore set forth above, shall remain in full force and effect.

IN WITNESS WHEREOF, The Municipal Authority of the City of McKeesport and Elizabeth Township Sanitary Authority have caused this Amendment to Agreement to be signed by their duly authorized officers on the date set forth below their respective signatures.

ATTEST: ELIZABETH TOWNSHIP SANITARY AUTHORITY

Jacqueline Collis
Secretary

BY: Richard N. Matthews
Chairman

Date: MAY 13, 2013

ATTEST: THE MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT

Bob R McCall
Secretary

BY:
Chairman

Date: MAY 14, 2013

AGREEMENT

THIS AGREEMENT, made this 18 day of June, 2008, by and between the MUNICIPAL AUTHORITY OF THE CITY OF McKEESPORT, hereinafter referred to as "MACM", a body corporate and politic of the Commonwealth of Pennsylvania, created and existing under the provisions of the Municipality Authorities Act of 1945, as amended,

A

N

D

The ELIZABETH TOWNSHIP SANITARY AUTHORITY, hereinafter referred to as "ETSA", a body corporate and politic of the Commonwealth of Pennsylvania, created and existing under the provisions of the Municipality Authorities Act of 1945, as amended.

WHEREAS, Section 5 of the Act of January 24, 1966, P.L. No. 1535 No. 537 known as the "Pennsylvania Sewage Facilities Act", as amended, requires Elizabeth Township, through ETSA to adopt an Official Sewage Facilities Plan providing for sewage services; and

WHEREAS, MACM has prepared such a Sewage Facilities Plan; and

WHEREAS, ETSA has declared its intention to connect its Buena Vista Watershed (the area currently served by the Buena Vista Waste Water Treatment Plant) to the MACM system.

WHEREAS, the Township of Elizabeth has authorized ETSA to proceed, under Resolution No. 36-08, to divert the Buena Vista Watershed to the MACM system, and enter into negotiations for said treatment.

NOW THEREFORE, in consideration of the mutual promises and understandings of each party to the other, the parties hereto each intending to legally bind itself, its successors and assigns, covenant and agree as follows:

1. MACM shall design, construct and pay for the portion of the interceptor from the proposed West Shore Pump Station to a point just downstream of the railroad bridge crossing the Youghiogheny River.

2. MACM will design, construct and pay for treatment facilities to accommodate the Buena Vista Watershed flows (in addition to the flows MACM already receives from Elizabeth Township in the Boston Pump Station service area which were already considered in design) for a peak flow capacity of ten (10) million gallons per day from the Buena Vista Watershed. MACM has guaranteed ETSA peak capacity of 10 MGD, with an average daily flow of 1.4 MGD for the Buena Vista Watershed. Available growth capacity shall be allocated to MACM's contract customers on a first come - first served basis.

3. The new service area covers the Buena Vista Watershed, which is the area currently connected to the Buena Vista Wastewater Treatment Plant. However, ETSA specifically reserves the right to remove the areas serviced by the Lovedale Pump Station (Lovedale area) and the Simpson Howell Pump Station (Simpson Howell) and divert that flow to the Elizabeth Borough Wastewater Treatment Plant.

4. ETSA shall make a contribution for the costs of the changes to the design work, comprised of TWENTY-FIVE THOUSAND and 00/100 ($25,000.00) DOLLARS plus TWENTY-SEVEN THOUSAND ONE HUNDRED EIGHTY-NINE and 00/100 ($27,189.00) DOLLARS, totaling FIFTY TWO THOUSAND ONE HUNDRED EIGHTY-NINE and 00/100 ($52,187.00) DOLLARS. Said payment will be made within sixty (60) days of execution of this AGREEMENT.

5. The parties shall continue to operate under the terms and conditions of the existing agreement that covers the Boston Pump Station service area, until that time that new service agreements are developed and approved by all parties.

6. No tap fee will be due for customers that are connected to the ETSA's system at the time of execution of this AGREEMENT. Any customer that taps into the ETSA's system, in

either the Boston Watershed or Buena Vista Watershed, after the date of execution of this AGREEMENT, shall be subject to the current MACM tap fee requirements, similar to the procedure already in place for the Boston Watershed.

8. ETSA shall be committed to this connection to the MACM system until such time as MACM ceases to exist or until the expiration of one (1) calendar year following the payment in full of all bonds, notes or other obligations of MACM, whichever date is later.

IN WITNESS WHEREOF, the parties hereto have each cause this AGREEMENT to be executed by their duly authorized officers and their respective corporate seals to be thereto affixed and attested as of the date first written above.

(SEAL)

THE MUNICIPAL AUTHORITY
OF THE CITY OF McKEESPORT

ATTEST:

David L. Demchak
Secretary

By: Leon J. McLaughlin
Chairman

(SEAL)

THE ELIZABETH TOWNSHIP
SANITARY AUTHORITY

ATTEST:

J. Coles
Secretary

By:
Chairman

APPENDIX K

PNDI Environmental Review Receipt

1. PROJECT INFORMATION

Project Name: **Elizabeth Township Act 537 Plan Update**
Date of Review: **8/10/2016 10:06:35 AM**
Project Category: **Waste Transfer, Treatment, and Disposal, Liquid waste/Effluent, Sewage module/Act 537 plan**
Project Area: **97.23 acres**
County(s): **Allegheny**
Township/Municipality(s): **ELIZABETH; LINCOLN**
ZIP Code: **15018; 15037; 15133; 15135**
Quadrangle Name(s): **MC KEESPORT**
Watersheds HUC 8: **Youghiogheny**
Watersheds HUC 12: **Pollack Run-Youghiogheny River**
Decimal Degrees: **40.280693, -79.809034**
Degrees Minutes Seconds: **40° 16' 50.4953" N, 79° 48' 32.5216" W**

2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	No Known Impact	No Further Review Required
PA Department of Conservation and Natural Resources	No Known Impact	No Further Review Required
PA Fish and Boat Commission	No Known Impact	No Further Review Required
U.S. Fish and Wildlife Service	No Known Impact	No Further Review Required

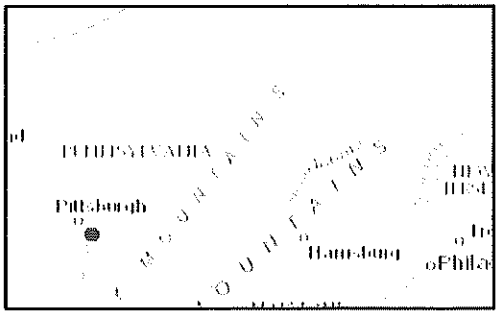
As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate no known impacts to threatened and endangered species and/or special concern species and resources within the project area. Therefore, based on the information you provided, no further coordination is required with the jurisdictional agencies. This response does not reflect potential agency concerns regarding impacts to other ecological resources, such as wetlands.

Elizabeth Township Act 537 Plan Update



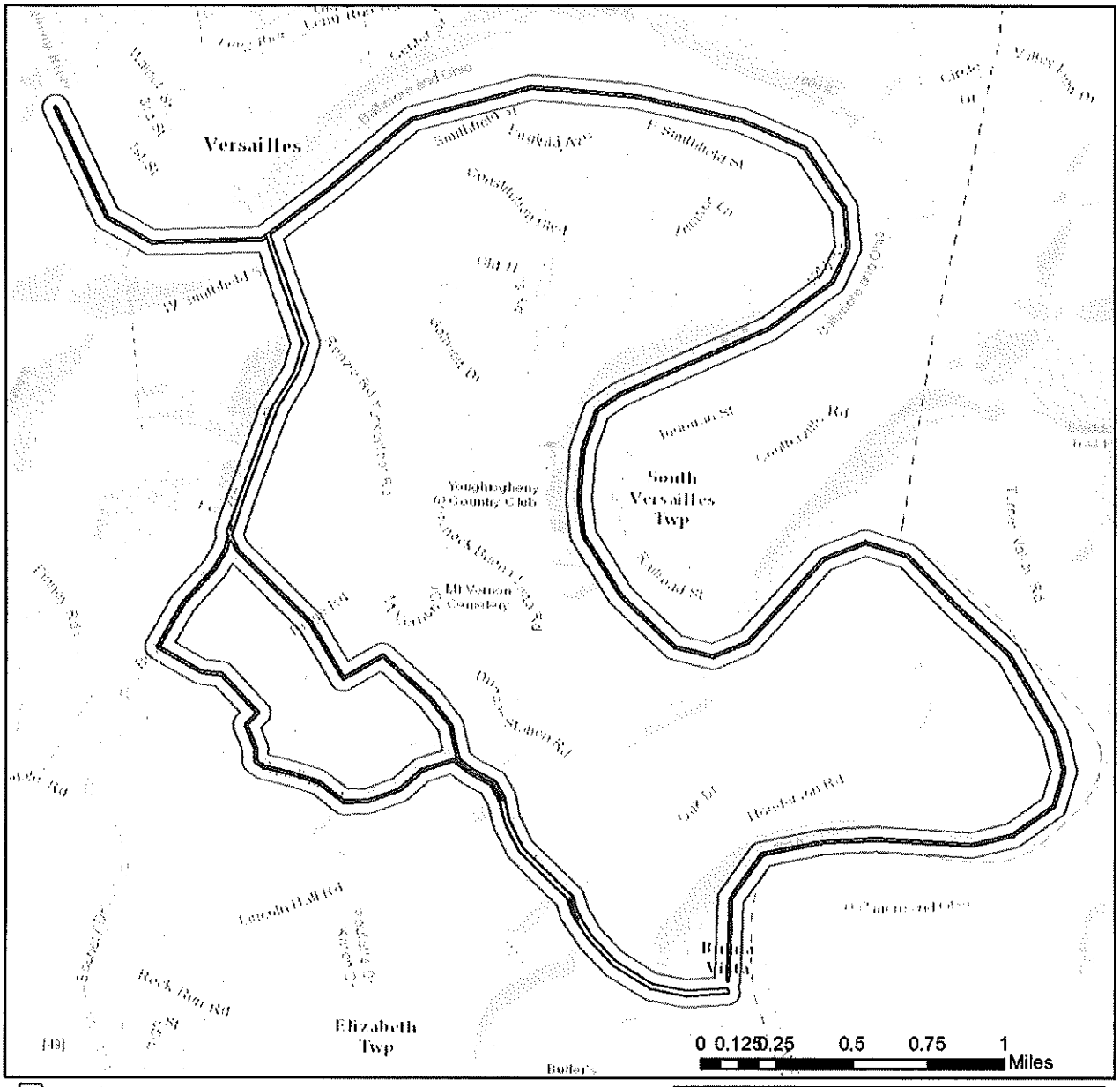
☐ Project Boundary

☐ Buffered Project Boundary



Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA,

Elizabeth Township Act 537 Plan Update



Project Boundary

Buffered Project Boundary



Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jurisdictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

PA Game Commission
RESPONSE:
No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Department of Conservation and Natural Resources
RESPONSE:
No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Fish and Boat Commission
RESPONSE:
No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

U.S. Fish and Wildlife Service
RESPONSE:
No impacts to **federally** listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq. is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other authorities.

4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. Two review options are available to permit applicants for handling PNDI coordination in conjunction with DEP's permit review process involving either T&E Species or species of special concern. Under sequential review, the permit applicant performs a PNDI screening and completes all coordination with the appropriate jurisdictional agencies prior to submitting the permit application. The applicant will include with its application, both a PNDI receipt and/or a clearance letter from the jurisdictional agency if the PNDI Receipt shows a Potential Impact to a species or the applicant chooses to obtain letters directly from the jurisdictional agencies. Under concurrent review, DEP, where feasible, will allow technical review of the permit to occur concurrently with the T&E species consultation with the jurisdictional agency. The applicant must still supply a copy of the PNDI Receipt with its permit application. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. The applicant and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at https://conservationexplorer.dcnr.pa.gov/content/resources.

5. ADDITIONAL INFORMATION

The PNDI environmental review website is a preliminary screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

6. AGENCY CONTACT INFORMATION

PA Department of Conservation and Natural Resources
Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552
Harrisburg, PA 17105-8552
Email: RA-HeritageReview@pa.gov
Fax:(717) 772-0271

U.S. Fish and Wildlife Service
Pennsylvania Field Office
Endangered Species Section
110 Radnor Rd; Suite 101
State College, PA 16801
NO Faxes Please

PA Fish and Boat Commission
Division of Environmental Services
450 Robinson Lane, Bellefonte, PA 16823
Email: RA-FBPACENOTIFY@pa.gov

PA Game Commission
Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA 17110-9797
Email: RA-PGC_PNDI@pa.gov
NO Faxes Please

7. PROJECT CONTACT INFORMATION

Name: Sam Gibson
Company/Business Name: KLH Engineers, Inc.
Address: 5173 Campbells Run Rd.
City, State, Zip: Pittsburgh, PA 15205
Phone:(412) 494-0510 Fax:(412) 494-6426
Email: sgibson@klhengineers.com

8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

applicant/project proponent signature

8/10/16
date

APPENDIX L

PHMC Correspondence

Pennsylvania State Historic Preservation Office
PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

8 September 2016

Samuel Gibson
KLH Engineers, Inc.
5173 Campbells Run Road
Pittsburgh, PA 15205

RECEIVED
SEP 16 2016
By

RE: ER 2015-1706-003-E
DEP: Cultural Resource Notice, Boston and Buena Vista Sewersheds Act 537 Sewage Faculties Plan Update, Elizabeth Township, Allegheny County

Dear Mr. Gibson:

Thank you for submitting information concerning the above referenced project. The Pennsylvania State Historic Preservation Office reviews projects in accordance with state and federal laws. Section 106 of the National Historic Preservation Act of 1966, and the implementing regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation, is the primary federal legislation. The Environmental Rights amendment, Article 1, Section 27 of the Pennsylvania Constitution and the Pennsylvania History Code, 37 Pa. Cons. Stat. Section 500 et seq. (1988) is the primary state legislation. These laws include consideration of the project's potential effects on both historic and archaeological resources.

Archaeology
Alternative 1
Based on our records Alternative 1 for this project has been previously investigated for archaeological resources. No resources were identified and a Record of Disturbance Form was submitted to our office for review. If the project area for this alignment option has not changed no additional archaeological investigation is needed. If the area of disturbance has expanded beyond the previously considered area, our office should be notified as additional archaeological survey for this alignment may be needed.

All Other Alternatives
Based on an evaluation by our staff, there is a high probability that significant archaeological sites are located in this project area. These resources could be adversely affected by project activities. Although there are no recorded archaeological sites within the project boundaries, the soil type, topographic setting, slope direction, and distance to water of the project area are similar to the settings of known archaeological sites in the vicinity. A Phase I archaeological survey of the project area is required to locate potentially significant archaeological resources. Guidelines and instructions for conducting Phase I surveys are available on our web site or from our office upon request.

Above Ground Resources
Based on the information provided, the Pittsburgh and Lake Erie Railroad (Key No. 116800), a resource eligible for the National Register of Historic Places, is located near the project area. In our opinion, the activity described in your proposal will have no effect on such resources. Should the scope and/or nature of the project activities change, the PA SHPO should be contacted immediately.

If you need further information regarding archaeological resources, please contact Kira Heinrich at kiheinrich@pa.gov or at (717) 705-0700. If you need further information concerning above ground resources, please contact Barbara Frederick at bafrederic@pa.gov or at (717) 772-0921.

Sincerely,

Douglas C. McLearen, Chief
Division of Archaeology & Protection

KLH
ENGINEERS, INC.

August 10, 2016
Ref. No. 542-04

Pennsylvania Historical and Museum Commission
Bureau of Historic Preservation
400 North Street, Second Floor
Harrisburg, PA 17120-0093

CERTIFIED RETURN RECEIPT

To Whom It May Concern:

Elizabeth Township
Act 537 Sewage Facilities Plan Update
Cultural Resource Notice

On behalf of Elizabeth Township, KLH Engineers, Inc. is providing this Cultural Resource Notice for approval. This is being done in an effort to complete the planning required in preparation of the Act 537 Sewage Facilities Plan Update. Your response is greatly appreciated. The following attachments are included in this submission:

- Cultural Resource Notice
- USGS 7.5-minute topographic map showing the planning area and alternative alignments

The capacity of the sewerage facilities in the Boston and Buena Vista sewersheds is exceeded under peak flow conditions during major rainfall events resulting in sanitary sewer overflows into the Youghiogheny River and its tributaries. The Act 537 Sewage Facilities Plan Update is being developed to evaluate alternative sewer alignments to convey flow from these two sewersheds to McKeesport for treatment.

The planning area is shown on the attached USGS 7.5-minute topographic map. The Plan proposes pump station upgrades as well as the installation of force main and gravity sewers to convey flows from the Buena Vista sewershed to the Boston Pump Station. The Boston Pump Station will be upgraded and flow ultimately conveyed to McKeesport.

Three separate alignments are being evaluated as shown on the attached exhibit. They are as follows:

- Alternative 1 force main alignment follows the Great Allegheny Passage (Rail Trail) the entire length of the Rail Trail from a Buena Vista until it reaches the Boston Pump Station. The total length of the Alternative 1 alignment is approximately 45,700 LF. Assuming a 4' wide trench, the total earth disturbance for Alternative 1 is approximately 4.2 acres.

- Alternative 2 force main alignment follows Greenock Buena Vista Road to a new pump station near the intersection of Greenock Buena Vista Road and Broadlawn Drive. A

5173 Campbells Run Road Pittsburgh, PA 15205 Phone: 412.494.0510 Fax: 412.494.0426 info@klhengineers.com
www.klhengineers.com

- force main continues into Mt. Vernon. A gravity sewer follows an existing drainage hollow to Boston Hollow Road. The gravity sewer follows Boston Hollow Road until it reaches the Boston Pump Station. The total length of the Alternative 2 alignment is approximately 21,500 LF. Assuming a 4' wide trench, the total earth disturbance for Alternative 2 is approximately 2.0 acres.

- Alternative 3 force main alignment follows Greenock Buena Vista Road to a new pump station near the intersection of Greenock Buena Vista Road and Broadlawn Drive. A force main continues along Broadlawn Drive. A gravity sewer follows Mansfield Road to Boston Hollow Road. The gravity sewer follows Boston Hollow Road until it reaches the Boston Pump Station. The total length of the Alternative 3 alignment is approximately 24,600 LF. Assuming a 4' wide trench, the total earth disturbance for Alternative 3 is approximately 2.3 acres.

Please feel free to contact our office should you have any questions or concerns.

Sincerely,

KLH ENGINEERS, INC.

Samuel R. Gibson, E.I.T.

Enclosure

0120-PM-PY0003 Rev. 5/2006
NOTICE

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

CULTURAL RESOURCE NOTICE

DEP USE ONLY
Date Received

Read the instructions before completing this form.

SECTION A. APPLICANT IDENTIFIER

Applicant Name	Elizabeth Township				
Street Address	522 Rock Run Road				
City	Elizabeth	State	PA	Zip	15037
Telephone Number	412-751-2880				
Project Title	Act 537 Sewage Facilities Plan Update				

SECTION B. LOCATION OF PROJECT

Municipality: Elizabeth Township | County Name: Allegheny | DEP County Code: 02

SECTION C. PERMITS OR APPROVALS

Name of Specific DEP Permit or Approval Requested: Act 537

Anticipated federal permits:

- ☐ Surface Mining
- ☐ Army Corps of Engineers
- ☐ 401 Water Quality Certification
- ☐ 404 Water Quality Permit
- ☐ Federal Energy Regulatory Commission
- ☐ Other:

SECTION D. GOVERNMENT FUNDING SOURCES

- ☒ State: (Name) PENNVEST
- ☐ Federal: (Name)
- ☐ Local: (Name)
- ☐ Other: (Name)

SECTION E. RESPONSIBLE DEP REGIONAL, CENTRAL, DISTRICT MINING or OIL & GAS MGMT OFFICE

DEP Regional Office Responsible for Review of Permit Application

- ☐ Central Office (Harrisburg)
- ☐ Southeast Regional Office (Norristown)
- ☐ Northeast Regional Office (Wilkes-Barre)
- ☐ Southcentral Regional Office (Harrisburg)
- ☐ Northcentral Regional Office (Williamsport)
- ☒ Southwest Regional Office (Pittsburgh)
- ☐ Northwest Regional Office (Meadville)
- ☐ District Mining Office:
- ☐ Oil & Gas Office:

SECTION F. RESPONSIBLE COUNTY CONSERVATION DISTRICT, if applicable.

County Conservation District	Telephone Number, if known
Allegheny County Conservation District	412-241-7645

SECTION G. CONSULTANT

Consultant, if applicable	KLH Engineers, Inc.				
Street Address	5173 Campbells Run Road				
City	Pittsburgh	State	PA	Zip	15205
Telephone Number	412-494-0510				

SECTION H. PROJECT BOUNDARIES AND DESCRIPTION

REQUIRED

Indicate the total acres in the property under review. Of this acreage, indicate the total acres of earth disturbance for the proposed activity.

Attach a 7.5' U.S.G.S. Map indicating the defined boundary of the proposed activity.

Attach photographs of any building over 50 years old. Indicate what is to be done to all buildings in the project area.

Attach a narrative description of the proposed activity.

Attach the return receipt of delivery of this notice to the Pennsylvania Historical and Museum Commission.

REQUESTED

Attach photographs of any building over 40 years old.

Attach site map, if available.

SECTION I. SIGNATURE BLOCK

Applicant's Signature	8/10/2016 Date of Submission of Notice to PHMC

EXHIBIT 11

542-04

KLH
5173 Campbell's Run Road
Pittsburgh, PA 15205
Phone: 412-494-0510
Fax: 412-494-0426
www.klhengineers.com

Legend

- Alternative 1
- Alternative 2
- Alternative 3
- Elizabeth Township Boundary
- Municipal Boundaries
- County Boundaries
- Boston Sewershed
- Buena Vista Sewershed
- Elizabeth Sewershed

ELIZABETH TOWNSHIP

ALLEGHENY COUNTY
PENNSYLVANIA

Planning Area Deliniation Alternatives

0 2,700 5,400
Feet

Author: RB
Date: 8/30/2016
NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
Projection: Transverse Mercator

S:\Active Clients\542 Elizabeth Township Sanitary\Act 537\Elizabeth_Township_Planning Area Deliniation Alternatives.mxd

APPENDIX M

Cost Estimates

Engineer's Opinion of Probable Construction Cost
Alternative 1 Allegheny Passage Forcemain
Allegheny County, Pennsylvania

Item	Quantity	Unit	Unit Price	Extend
E&S Controls	52,375	LF	$ 2.00	$ 104,750.00
Demolition Existing WWTP	1	LS	$ 150,000.00	$ 150,000.00
Off Trail Restoration	49,035	LF	$ 1.00	$ 49,035.00
Trail Select Backfill Restoration	1,980	CY	$ 30.00	$ 59,400.00
14" PVC Forcemain	43,750	LF	$ 170.00	$ 7,437,500.00
24" D.I. Forcemain	8,625	LF	$ 250.00	$ 2,156,250.00
Air/Vac Vault	17	EA	$ 20,000.00	$ 340,000.00
Stream Crossings	1480	LF	$ 100.00	$ 148,000.00
Boring & Casing	420	LF	$ 355.00	$ 149,100.00
Buena Vista Pump Station	1	EA	$ 1,954,566.00	$ 1,954,566.00
Equalization (Buena Vista)	1	EA	$ 3,890,605.00	$ 3,890,605.00
Boston Pump Station (Wet Weather)	1	EA	$ 2,686,510.00	$ 2,686,510.00
Total Capital Cost				**$ 19,125,716.00**
Rails-to-Trails Permitting Fees	43,750	LF	$ 1.63	$ 71,331.52
20% Soft Cost (Contingency, legal, engineering, etc.)				$ 3,825,143.20
Total Project Cost				**$ 23,022,190.72**

Engineer's Opinion of Probable Construction Cost
Buena Vista Pump Station
Allegheny County, Pennsylvania

Item	Quantity	Unit	Unit Price	Extend
E&S Controls	1	LS	$10,000.00	$35,000.00
Excavation	1,629	CY	$ 175.00	$ 285,075.00
Aggregate	328	Ton	$ 25.00	$ 8,200.00
Concrete (floor)	140	CY	$ 800.00	$ 112,000.00
Concrete (walls)	210	LF	$ 1,600.00	$ 336,000.00
Control Building	600	SF	$ 125.00	$ 75,000.00
Stormwater mangement	1	LOT	$ 10,000.00	$ 10,000.00
Retaining Wall	216	LF	$ 361.00	$ 77,976.00
Asphalt Paving	133	SY	$ 55.00	$ 7,315.00
18 PVC Sewer	100	LF	$ 165.00	$ 16,500.00
4' Diam Manhole Barrel	1	EA	$ 2,500.00	$ 2,500.00
6'Diam Manhole Barrel	1	EA	$ 6,500.00	$ 6,500.00
6'Diam Manhole Barrel (Over 8' Depth)	10	LF	$ 1,000.00	$ 10,000.00
Aggregate Paving	300	SY	$ 25.00	$ 7,500.00
Site Fence & Gates	0	LF	$ 100.00	$ -
Piping & Valves	1	LOT	$ 150,000.00	$ 150,000.00
Pumps	2	EA	$ 125,000.00	$ 250,000.00
Comminutors	2	EA	$ 50,000.00	$ 100,000.00
Monrail/Hoist	1	LOT	$ 50,000.00	$ 50,000.00
Electrical	1	LOT	$ 415,000.00	$ 415,000.00
Total Capital Cost				**$ 1,954,566.00**
20% Soft Cost (Contingency, legal, engineering, etc.)				$ 390,913.20
Total Project Cost				**$ 2,345,479.20**

Engineer's Opinion of Probable Construction Cost
Equalization Tank
Allegheny County, Pennsylvania

Item	Quantity	Unit	Unit Price	Extend
E&S Controls	1	LS	$10,000.00	$10,000.00
Excavation	33,368	CY	$ 10.00	$ 333,680.00
Sheet Piling	471	Tons	$ 2,175.00	$ 1,024,425.00
Foundation	1	LS	$ 400,000.00	$ 400,000.00
Tank & roof	1	LS	$ 1,635,000.00	$ 1,635,000.00
4' Diam Manhole Barrel	1	EA	$ 2,500.00	$ 2,500.00
18" RCP Gravity Sewer	120	LF	$ 175.00	$ 21,000.00
Pumps	2	EA	$ 50,000.00	$ 100,000.00
Piping & Valves	1	LOT	$ 25,000.00	$ 25,000.00
Blowers & Piping	1	LOT	$ 150,000.00	$ 150,000.00
Stormwater mangement	1	LOT	$ 10,000.00	$ 10,000.00
Monrail/Hoist	1	LOT	$ 50,000.00	$ 50,000.00
Electrical	1	LOT	$ 129,000.00	$ 129,000.00
Total Capital Cost				**$ 3,890,605.00**
20% Soft Cost (Contingency, legal, engineering, etc.)				$ 778,121.00
Total Project Cost				**$ 4,668,726.00**

Engineer's Opinion of Probable Construction Cost
Boston Pump Station
Allegheny County, Pennsylvania

Item	Quantity	Unit	Unit Price	Extend
E&S Controls	1	LS	$ 7,500.00	$ 7,500.00
Demolition Existing Pumps	1	LS	$ 20,000.00	$ 20,000.00
Excavation	1,385	CY	$ 175.00	$ 242,375.00
Aggregate	850	Ton	$ 25.00	$ 21,250.00
Concrete (floor)	138	CY	$ 800.00	$ 110,400.00
Concrete (walls)	219	LF	$ 1,600.00	$ 350,400.00
Control Building	840	SF	$ 125.00	$ 105,000.00
Stormwater mangement	1	LOT	$ 30,000.00	$ 30,000.00
Retaining Wall	230	LF	$ 214.00	$ 49,220.00
Site Fence & Gates	200	LF	$ 100.00	$ 20,000.00
30" PVC Sewer	447	LF	$ 295.00	$ 131,865.00
4' Diam Manhole Barrel	1	EA	$ 2,500.00	$ 2,500.00
6' Diam Manhole Barrel	2	EA	$ 6,500.00	$ 13,000.00
6' Diam Manhole Barrel (Over 8' Depth)	20	VF	$ 1,000.00	$ 20,000.00
Junction Vault	1	EA	$ 30,000.00	$ 30,000.00
Piping & Valves	1	LOT	$ 150,000.00	$ 150,000.00
Comminutor	2	EA	$ 50,000.00	$ 100,000.00
Pumps	2	EA	$ 83,000.00	$ 166,000.00
Pumps (storm)	4	EA	$ 83,000.00	$ 332,000.00
Monrails/Hoists	2	LOT	$ 125,000.00	$ 125,000.00
Electrical	1	LOT	$ 660,000.00	$ 660,000.00
Total Capital Cost				**$ 2,686,510.00**
20% Soft Cost (Contingency, legal, engineering, etc.)				$ 537,302.00
Total Project Cost				**$ 3,223,812.00**

Engineer's Opinion of Probable Construction Cost
Alternative 2 Ridge Avenue
Allegheny County, Pennsylvania

Item	Quantity	Unit	Unit Price	Extend
E&S Controls	29,940	LF	$ 2.00	$ 59,880.00
Demolition Existing WWTP	1	LS	$ 150,000.00	$ 150,000.00
Lawn Restoration	1	LS	$ 60,000.00	$ 60,000.00
14" PVC Forcemain	13,000	LF	$ 170.00	$ 2,210,000.00
24" D.I. Forcemain	8,625	LF	$ 250.00	$ 2,156,250.00
Air/Vac Vault	3	EA	$ 20,000.00	$ 60,000.00
12" SDR 35 Gravity Sewer	5,790	LF	$ 140.00	$ 810,600.00
24" SDR 35 Gravity Sewer	2,525	LF	$ 235.00	$ 593,375.00
Boring & Casing	300	LF	$ 300.00	$ 90,000.00
4' Diam Precast Concrete Manhole (0'-8' Depth)	24	EA	$ 2,500.00	$ 60,000.00
4' Diam Precast Concrete Manhole (8.1'-12' Depth)	3	EA	$ 3,000.00	$ 9,000.00
4' Diam Precast Concrete Manhole (12.1'-16' Depth)	4	EA	$ 3,500.00	$ 14,000.00
Off Trail Restoration	6,985	LF	$ 1.00	$ 6,985.00
Trail Select Backfill Restoration	980	CY	$ 30.00	$ 29,400.00
Select Backfill	31,330	CY	$ 30.00	$ 939,900.00
Asphalt Restoration	14,430	LF	$ 45.00	$ 649,350.00
Stream Crossing	4	EA	$ 11,400.00	$ 45,600.00
Buena Vista Pump Station	1	EA	$ 1,954,566.00	$ 1,954,566.00
Equalization (Buena Vista)	1	EA	$ 3,890,605.00	$ 3,890,605.00
Intermediate Pump Station	1	EA	$ 1,739,090.00	$ 1,739,090.00
Boston Pump Station (Wet Weather)	1	EA	$ 2,686,510.00	$ 2,686,510.00
Traffic Control	29,940	LF	$ 5.00	$ 149,700.00
Total Capital Cost				**$ 18,364,811.00**
20% Soft Cost (Contingency, legal, engineering, etc.)				$ 3,672,962.20
Total Project Cost				**$ 22,037,773.20**

Engineer's Opinion of Probable Construction Cost
Intermediate Pump Station
Allegheny County, Pennsylvania

Item	Quantity	Unit	Unit Price	Extend
E&S Controls	1	LS	$10,000.00	$35,000.00
Excavation	1,629	CY	$ 175.00	$ 285,075.00
Aggregate	328	Ton	$ 25.00	$ 8,200.00
Concrete (floor)	140	CY	$ 800.00	$ 112,000.00
Concrete (walls)	210	LF	$ 1,600.00	$ 336,000.00
Control Building	600	SF	$ 125.00	$ 75,000.00
Stormwater mangement	1	LOT	$ 10,000.00	$ 10,000.00
Retaining Wall	0	LF	$ 361.00	$ -
Asphalt Paving	133	SY	$ 55.00	$ 7,315.00
18 PVC Sewer	100	LF	$ 165.00	$ 16,500.00
4' Diam Manhole Barrel	1	EA	$ 2,500.00	$ 2,500.00
6' Diam Manhole Barrel	1	EA	$ 6,500.00	$ 6,500.00
6' Diam Manhole Barrel (Over 8' Depth)	10	LF	$ 1,000.00	$ 10,000.00
Aggregate Paving	0	SY	$ 25.00	$ -
Site Fence & Gates	200	LF	$ 100.00	$ 20,000.00
Piping & Valves	1	LOT	$ 150,000.00	$ 150,000.00
Pumps	2	EA	$ 130,000.00	$ 260,000.00
Comminutors	2	EA	$ 50,000.00	$ 100,000.00
Monrail/Hoist	1	LOT	$ 50,000.00	$ 50,000.00
Electrical	1	LOT	$ 255,000.00	$ 255,000.00
Total Capital Cost				**$ 1,739,090.00**
20% Soft Cost (Contingency, legal, engineering, etc.)				$ 347,818.00
Total Project Cost				**$ 2,086,908.00**

Engineer's Opinion of Probable Construction Cost
Alternative 3 Mansfield Street
Allegheny County, Pennsylvania

Item	Quantity	Unit	Unit Price	Extend
E&S Controls	35,994	LF	$ 2.00	$ 71,988.00
Demolition Existing WWTP	1	LS	$ 150,000.00	$ 150,000.00
Restoration	1	LS	$ 45,000.00	$ 45,000.00
14" PVC Forcemain	14,700	LF	$ 170.00	$ 2,499,000.00
24" D.I. Forcemain	8,625	LF	$ 250.00	$ 2,156,250.00
Air/Vac Vault	1	EA	$ 20,000.00	$ 20,000.00
12" SDR 35 Gravity Sewer	10,144	LF	$ 140.00	$ 1,420,160.00
24" SDR 35 Gravity Sewer	2,525	LF	$ 235.00	$ 593,375.00
Boring & Casing	350	LF	$ 300.00	$ 105,000.00
4' Diam Precast Concrete Manhole (0'-8' Depth)	24	EA	$ 2,500.00	$ 60,000.00
4' Diam Precast Concrete Manhole (8.1'-12' Depth)	3	EA	$ 3,000.00	$ 9,000.00
4' Diam Precast Concrete Manhole (12.1'-16' Depth)	4	EA	$ 3,500.00	$ 14,000.00
Wyes/Stubs	25	EA	$ 625.00	$ 15,625.00
Select Backfill	40,496	CY	$ 30.00	$ 1,214,889.00
Asphalt Restoration	24,531	LF	$ 45.00	$ 1,103,895.00
Stream Crossing	4	EA	$ 11,400.00	$ 45,600.00
Buena Vista Pump Station	1	EA	$ 1,954,566.00	$ 1,954,566.00
Equalization (Buena Vista)	1	EA	$ 3,890,605.00	$ 3,890,605.00
Intermediate Pump Station	1	EA	$ 1,739,090.00	$ 1,739,090.00
Boston Pump Station (Wet Weather)	1	EA	$ 2,686,510.00	$ 2,686,510.00
Traffic Control	35,994	LF	$ 5.00	$ 179,970.00
Total Capital Cost				**$ 19,974,523.00**
20% Soft Cost (Contingency, legal, engineering, etc.)				$ 3,994,904.60
Total Project Cost				**$ 23,969,427.60**

APPENDIX N

Present Worth Analysis

PRESENT WORTH ANALYSIS

	Alternative 1	Alternative 2	Alternative 3
Project Capital Cost [$M] [1]	$ 23.022	$ 22.038	$ 23.969
Balance of Existing Bonds [$M]	13.50	13.50	13.50
Less Project Tap Fees [$M] [2]	---	---	(0.192)
New Funding Required [$M]	9.52	8.54	10.28
New Yearly Debt Service (30 yr, 4%) [$M]	0.551	0.494	0.594
Projected Conveyance and Treatment Fees [$M]	2.245	2.245	2.245
Projected O&M Cost [$M] [4]	0.968	1.325	1.325
30-Year Debt Service [$M]	16.520	14.812	17.830
30-Year Treatment Fees [$M] [3]	84.000	84.000	84.000
30-YR O&M Cost [$M] [4]	41.805	54.244	54.244
TOTAL 30-YR PRESENT WORTH [$M]	**$ 142.32**	**$ 153.06**	**$ 156.07**
PERCENT DIFFERENCE	**---**	**7.54%**	**9.66%**

[1] Based on most recent Act 537 cost estimates

[2] Assumed 32 new customers along Mansfield for Alternative 3 - $6,000 tap fee

[3] Current conveyance and treatments rates escalated at 3% per year

[4] Additional pump station cost in Alternatives 2 and 3

O&M COST CALCULATION

OPTION 1 - BV TO BOSTON

Buena Vista Pumps

$	125,000.00	Cost per Each
	160	HP
	139.2	HP @ 87%
	103.704	KwH
	24	Operation Hours/Day
$	0.09	KwH Cost
$	232.71	Cost per Day
$	84,939.80	Cost per Year

TOTAL LOAD

	995	HP
	796	HP @ 80%
	593.02	KwH
	24	Operation Hours
$	0.09	KwH Cost
$	1,330.74	Cost per Day
$	485,718.96	Cost per Year

Year	Electric	Pump Replacement	Treatment	Other O&M
1	$ 485,718.96		$ 2,245,000.00	$ 481,600.00
2	$ 500,290.53		$ 2,312,350.00	$ 496,048.00
3	$ 515,299.25		$ 2,381,720.50	$ 510,929.44
4	$ 530,758.22		$ 2,453,172.12	$ 526,257.32
5	$ 546,680.97		$ 2,526,767.28	$ 542,045.04
6	$ 563,081.40		$ 2,602,570.30	$ 558,306.39
7	$ 579,973.84		$ 2,680,647.41	$ 575,055.59
8	$ 597,373.06		$ 2,761,066.83	$ 592,307.25
9	$ 615,294.25		$ 2,843,898.83	$ 610,076.47
10	$ 633,753.08	$ 163,096.65	$ 2,929,215.80	$ 628,378.77
11	$ 652,765.67		$ 3,017,092.27	$ 647,230.13
12	$ 672,348.64		$ 3,107,605.04	$ 666,647.03
13	$ 692,519.10		$ 3,200,833.19	$ 686,646.44
14	$ 713,294.67		$ 3,296,858.19	$ 707,245.84
15	$ 734,693.51		$ 3,395,763.93	$ 728,463.21
16	$ 756,734.32		$ 3,497,636.85	$ 750,317.11
17	$ 779,436.34		$ 3,602,565.96	$ 772,826.62
18	$ 802,819.43		$ 3,710,642.93	$ 796,011.42
19	$ 826,904.02		$ 3,821,962.22	$ 819,891.76
20	$ 851,711.14	$ 219,188.26	$ 3,936,621.09	$ 844,488.52
21	$ 877,262.47		$ 4,054,719.72	$ 869,823.17
22	$ 903,580.35		$ 4,176,361.31	$ 895,917.87
23	$ 930,687.76		$ 4,301,652.15	$ 922,795.40
24	$ 958,608.39		$ 4,430,701.72	$ 950,479.26
25	$ 987,366.64		$ 4,563,622.77	$ 978,993.64
26	$ 1,016,987.64		$ 4,700,531.45	$ 1,008,363.46
27	$ 1,047,497.27		$ 4,841,547.40	$ 1,038,614.35
28	$ 1,078,922.19		$ 4,986,793.82	$ 1,069,772.79
29	$ 1,111,289.85		$ 5,136,397.63	$ 1,101,865.97
30	$ 1,144,628.55	$ 294,570.69	$ 5,290,489.56	$ 1,134,921.95
Total	**$ 23,108,281.50**	**$ 676,855.59**	**$ 83,999,615.00**	**$ 18,019,694.69**

Total 30-Year O&M = $ 125,804,446.79

$ 41,804,831.78 w/o Treatment & Conveyance Fees

O&M COST CALCULATION

OPTION 2 & 3- BV TO INT TO BOSTON

BV PUMPS

$	125,000.00	Cost per Each
	250	HP
	200	HP @ 80%
	149	KwH
	24	Operation Hours
$	0.09	KwH Cost
$	334.36	Cost per Day
$	122,039.94	Cost per Year

INT PUMPS

$	130,000.00	Cost per Each
	335	HP
	268	HP @ 80%
	199.66	KwH
	24	Operation Hours
$	0.09	KwH Cost
$	448.04	Cost per Day
$	163,533.52	Cost per Year

TOTAL LOAD

		Cost per Each
	1470	HP
	1176	HP @ 80%
	876.12	KwH
	24	Operation Hours
$	0.09	KwH Cost
$	1,966.01	Cost per Day
$	717,594.85	Cost per Year

Year	Electric	Pump Replacement	Treatment	Other O&M
1	$ 717,594.85		$ 2,245,000.00	$ 481,600.00
2	$ 739,122.69		$ 2,312,350.00	$ 496,048.00
3	$ 761,296.37		$ 2,381,720.50	$ 510,929.44
4	$ 784,135.26		$ 2,453,172.12	$ 526,257.32
5	$ 807,659.32		$ 2,526,767.28	$ 542,045.04
6	$ 831,889.10		$ 2,602,570.30	$ 558,306.39
7	$ 856,845.78		$ 2,680,647.41	$ 575,055.59
8	$ 882,551.15		$ 2,761,066.83	$ 592,307.25
9	$ 909,027.68		$ 2,843,898.83	$ 610,076.47
10	$ 936,298.51	$ 502,337.68	$ 2,929,215.80	$ 628,378.77
11	$ 964,387.47		$ 3,017,092.27	$ 647,230.13
12	$ 993,319.09		$ 3,107,605.04	$ 666,647.03
13	$ 1,023,118.67		$ 3,200,833.19	$ 686,646.44
14	$ 1,053,812.23		$ 3,296,858.19	$ 707,245.84
15	$ 1,085,426.59		$ 3,395,763.93	$ 728,463.21
16	$ 1,117,989.39		$ 3,497,636.85	$ 750,317.11
17	$ 1,151,529.07		$ 3,602,565.96	$ 772,826.62
18	$ 1,186,074.94		$ 3,710,642.93	$ 796,011.42
19	$ 1,221,657.19		$ 3,821,962.22	$ 819,891.76
20	$ 1,258,306.91	$ 675,099.83	$ 3,936,621.09	$ 844,488.52
21	$ 1,296,056.12		$ 4,054,719.72	$ 869,823.17
22	$ 1,334,937.80		$ 4,176,361.31	$ 895,917.87
23	$ 1,374,985.93		$ 4,301,652.15	$ 922,795.40
24	$ 1,416,235.51		$ 4,430,701.72	$ 950,479.26
25	$ 1,458,722.58		$ 4,563,622.77	$ 978,993.64
26	$ 1,502,484.25		$ 4,700,531.45	$ 1,008,363.45
27	$ 1,547,558.78		$ 4,841,547.40	$ 1,038,614.35
28	$ 1,593,985.54		$ 4,986,793.82	$ 1,069,772.79
29	$ 1,641,805.11		$ 5,136,397.63	$ 1,101,865.97
30	$ 1,691,059.26	$ 907,277.72	$ 5,290,489.56	$ 1,134,921.95
	$ 34,139,873.16	**$ 2,084,715.23**	**$ 83,999,615.00**	**$ 18,019,694.69**

Total 30-Year O&M = $ 138,243,898.09

$ 54,244,283.08 w/o Treatment & Conveyance Fees

APPENDIX O

User Rate Analysis

USER RATE ANALYSIS

	Alternative 1	Alternative 2	Alternative 3
Project Capital Cost [$M] [1]	$ 23.022	$ 22.038	$ 23.969
Balance of Existing Bonds [$M]	13.50	13.50	13.50
Less Project Tap Fees [$M] [2]	---	---	(0.192)
New Funding Required [$M]	9.52	8.54	10.28
New Yearly Debt Service (30 yr, 4%) [$M]	0.551	0.494	0.594
Existing Yearly Debt Service [$M]	1.780	1.780	1.780
Projected Conveyance and Treatment Fees [$M]	2.245	2.245	2.245
Projected O&M Cost [$M] [3]	0.968	1.325	1.325
Debt Service Coverage (110%) [$M]	0.233	0.227	0.237
Less Other Revenue [$M] [4]	(0.165)	(0.165)	(0.165)
Total Yearly Cost [$M]	5.611	5.906	6.016
Number of Customers [2]	6,164	6,164	6,196
YEARLY COST PER CUSTOMER	**$ 910.34**	**$ 958.10**	**$ 971.01**
MONTHLY COST PER CUSTOMER	**75.86**	**79.84**	**80.92**

[1] Based on most recent Act 537 cost estimates
[2] Assumed 32 new customers along Mansfield for Alternative 3
[3] Additional pump station cost in Alternatives 2 and 3
[4] Tap-In fees, conveyance fees, and other miscellaneous income

CURRENT BUDGET
PER 2015 CE REPORT

		PROJECTIONS
OPERATING REVENUES		
Sewer Charges Revenue	$	4,075,000
Conveyance Fees		44,800
Tap-In Fees		12,000
Subtotal Operating Revenues	**$**	**4,131,800**
NON-OPERATING REVENUES		
Capitalized Bond Interest	$	2,500
Miscellaneous		57,800
Subtotal Non-Operating Revenues	**$**	**60,300**
GROSS REVENUES	**$**	**4,192,100**
OPERATING EXPENSES		
General Administration	$	166,000
Accounting Services		4,100
Consulting Services		16,000
Law / Legal Fees		40,000
Litigation		40,000
Engineering Fees		259,000
Sewage Treatment Plant		130,000
Treatment/Transport Fees		1,165,184
MACM		-
Elizabeth Borough		-
Sludge Disposal		145,000
Sanitary Lines / O&M		495,000
Pump Stations		100,000
Sanitary Vehicles		8,400
Sanitary Benefits Payroll Expense		210,000
Veolia Subcontract		268,657
Subcontract Labor		216,000
Refunds / Reimbursements		2,500
TOTAL OPERATING EXPENSES	**$**	**3,265,841**
NET REVENUES	**$**	**926,259**
DEBT SERVICE REQUIREMENTS		
Existing Debt Service (2.15 to 4.625%)	$	1,777,504
Total Debt Service Requirement	**$**	**1,777,504**
SURPLUS(DEFICIT)	**$**	**(851,245)**
BOND COVERAGE, ACTUAL		**52%**
BOND COVERAGE, REQUIRED		**110%**

CURRENT BUDGET
REVISED FOR RATE INCREASE

		PROJECTIONS
OPERATING REVENUES		
Sewer Charges Revenue	$	5,087,745
Conveyance Fees		44,800
Tap-In Fees		12,000
Subtotal Operating Revenues	**$**	**5,144,545**
NON-OPERATING REVENUES		
Capitalized Bond Interest	$	2,500
Miscellaneous		57,800
Subtotal Non-Operating Revenues	**$**	**60,300**
GROSS REVENUES	**$**	**5,204,845**
OPERATING EXPENSES		
General Administration	$	166,000
Accounting Services		4,100
Consulting Services		16,000
Law / Legal Fees		40,000
Litigation		40,000
Engineering Fees		259,000
Sewage Treatment Plant		130,000
Treatment/Transport Fees		1,165,184
MACM		-
Elizabeth Borough		-
Sludge Disposal		145,000
Sanitary Lines / O&M		495,000
Pump Stations		100,000
Sanitary Vehicles		8,400
Sanitary Benefits Payroll Expense		210,000
Veolia Subcontract		268,657
Subcontract Labor		216,000
Refunds / Reimbursements		2,500
TOTAL OPERATING EXPENSES	**$**	**3,265,841**
NET REVENUES	**$**	**1,939,004**
DEBT SERVICE REQUIREMENTS		
Existing Debt Service (2.15 to 4.625%)	$	1,777,504
Total Debt Service Requirement	**$**	**1,777,504**
SURPLUS(DEFICIT)	**$**	**161,500**
BOND COVERAGE, ACTUAL		**109%**
BOND COVERAGE, REQUIRED		**110%**

PROJECTED REVENUES AND EXPENSES
AFTER IMPLENTATION OF ACT 537

		PROJECTIONS
OPERATING REVENUES		
Sewer Charges Revenue	$	5,621,568
Conveyance Fees		44,800
Tap-In Fees		60,000
Subtotal Operating Revenues	**$**	**5,726,368**
NON-OPERATING REVENUES		
Capitalized Bond Interest	$	2,500
Miscellaneous		57,800
Subtotal Non-Operating Revenues	**$**	**60,300**
GROSS REVENUES	**$**	**5,786,668**
OPERATING EXPENSES		
General Administration	$	40,000
Accounting Services		4,100
Consulting Services		10,000
Law / Legal Fees		5,000
Litigation		-
Engineering Fees		20,000
Sewage Treatment Plant		-
Treatment/Transport Fees		
MACM		1,577,000
Elizabeth Borough		668,000
Sludge Disposal		-
Sanitary Lines / O&M		200,000
Pump Stations		150,000
Electricity		486,000
Sanitary Vehicles		-
Sanitary Benefits Payroll Expense		-
Collection System Operation Contract		50,000
Subcontract Labor		-
Refunds / Reimbursements		2,500
TOTAL OPERATING EXPENSES	**$**	**3,212,600**
NET REVENUES	**$**	**2,574,068**
DEBT SERVICE REQUIREMENTS		
Existing Debt Service (2.15 to 4.625%)	$	1,777,504
2017 Debt Service	$	550,669
Total Debt Service Requirement	**$**	**2,328,173**
SURPLUS(DEFICIT)	**$**	**245,895**
BOND COVERAGE, ACTUAL		**111%**
BOND COVERAGE, REQUIRED		**110%**