EXHIBIT P1

EASTERN SERVICE AREA ACT 537 PLAN

ACT 537 SPECIAL STUDY PLAN

of

DELCORA
Central Delaware Pump Station

Sellers Avenue, Ridley Township
Delaware County, PA

Prepared for
DELCORA
100 E. Fifth Street
Chester, Pa 19013

On Behalf of:

Edgmont Township
P.O. Box 267
Gradyville, Pa 19039

Marple Township
227 S. Sproul Road
Broomall, Pa 19008

Nether Providence Township
214 Sykes Lane
Wallingford, Pa 19086

Newtown Township
209 Bishop Hollow Road
Newtown Square, Pa 9073

Ridley Township
100 E. MacDade Boulevard
Folsom, Pa 19033

Springfield Township
50 Powell Road
Springfield, Pa 19064

Swarthmore Borough
121 Park Avenue
Swarthmore, Pa 19081

Upper Providence Township
935 N Providence Road
Media, Pa 19063

Catania Engineering Associates, Inc.
520 West MacDade Boulevard
Milmont Park, Pa 19033

June 28, 2018
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File #81600-CDPS-2018

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Executive Summary:

This Act 537 Special Study Plan is being prepared to review the wet weather capacity issues at the DELCORA Central Delaware Pump Station. This is a multi-municipal plan for eight (8) towns within a portion of DELCORA's Eastern Service Area, namely the towns served by the Central Delaware County Authority's Crum Creek Pump Station.

- Edgmont Township
- Marple Township
- Nether Providence Township
- Newtown Township
- Ridley Township
- Springfield Township
- Swarthmore Borough
- Upper Providence Township

The purpose of the study is to review the feasibility to construct a new force main to divert flows from the Central Delaware County Authority's Crum Creek Pump Station directly to the DELCORA Central Diversion Force Main, diverting flow away from the DELCORA Central Delaware Pump Station. The study will also review alternate routes for the new force main.

The DELCORA Central Delaware Pump Station is rated for 40 MGD. Average Daily Flow over the last five (5) years has been approximately 9.4 MGD with wet weather peak flows exceeding 40 MGD. The wet weather peak flows have caused multiple sanitary sewer overflows in that time period. The CDCA Crum Creek Pump Station conveys flows from the CDCA Crum Creek Interceptor. The CDCA Crum Creek Pump Station is currently in design to increase the capacity to 24 MGD to meet future flow demands. The proposed flow diversion will reduce the flow demand at the DELCORA Central Delaware Pump Station to below the pumping capacity. Alternatives to the construction of a new force main were investigated in a separate Feasibility Study for the Central Delaware Pump Station. The Feasibility Study determined that the new force main was the most cost-effective solution.

The Preferred Alternate Route is construction of a new force main from the Central Delaware County Authority's Crum Creek Pump Station, along Crum Creek through the Baldwin Towers Office Complex and the Liberty Electric Power Plant to the DELCORA Central Diversion Force Main in Route 291 – Industrial Highway. The proximity of multiple petroleum pipelines and uncertainty with acquisition of right of way from private property owners could affect the feasibility of this alternate. If these issues become unreasonable to address, a secondary route along Chester Pike and local Eddystone streets is reasonable options and should be pursued.

The cost for the new force main is estimated at $8.6 million. The Project includes the additional work required at the CDCA Crum Creek Pump Station, the construction of the new force main, and the improvements required on the DELCORA Central Diversion force main. A summary is as follows:

CDCA Crum Creek Pump Station	$1,294,000
CCPS Diversion Force Main	$6,911,600
DELCORA Central Diversion FM Improvements	$ 414,000
Total	$8,619,600

The cost per household is estimated at $14.25 based upon an estimated annual debt service of $600,000 and 42,370 units in the CDCA Service Area.

The project scheduled completion is within three (3) years of the Plan approval. Key milestone dates are as follows:

PaDEP Act 537 Special Study Plan Submission	Dec	2018
PaDEP Act 537 Special Study Plan Approval	Nov	2019
Final Engineering Design	Jun	2020
PaDEP Part 2 Approval	Dec	2020
Project Construction Completion	Dec	2022

Plan Summary:

This Act 537 Special Study Plan is being prepared to review the wet weather capacity issues at the DELCORA Central Delaware Pump Station. This is a multi-municipal plan for eight (8) towns within a portion of DELCORA's Eastern Service Area, namely the towns served by the Central Delaware County Authority's Crum Creek Pump Station.

- Edgmont Township
- Marple Township
- Nether Providence Township
- Newtown Township
- Ridley Township
- Springfield Township
- Swarthmore Borough
- Upper Providence Township

DELCORA owns and operates the 40 MGD Central Delaware Pump Station (CDPS) located on Sellers Avenue in Ridley Township, Delaware County. Central Delaware County Authority owns and operates the 24 MGD Crum Creek Pump Station located along Crum Creek near Chester Pike in Ridley Township. The CDCA Crum Creek Pump Station conveys flows to the DELCORA Central Delaware Pump Station.

Based upon guidance from PaDEP, this Special Study Plan investigates the feasibility of diverting the flows from the CDCA Crum Creek Pump Station directly to the DELCORA Central Diversion Force Main, bypassing the DELCORA Central Delaware Pump Station. Initial design calculations estimate the proposed force main to be a 36" pipe. The flow diversion will reduce the flow demand at the DELCORA Central Delaware Pump Station to below the flow capacity and eliminate the wet weather capacity issues. A Feasibility Study for Central Delaware Pump Station has been completed as a supplementary document to review alternatives to the Crum Creek Bypass Force Main.

Further, the Act 537 Special Study Plan reviews the potential route for the proposed force main. The two (2) alternate routes reviewed are: (1) along Chester Pike and through local streets in Eddystone Borough and (2) along Crum Creek through Baldwin Towers Office Complex and through Liberty Electric Power Plant.

The costs for the new force main is estimated at $8.6 million. The Project includes the additional work required at the CDCA Crum Creek Pump Station, the construction of the new force main, and the improvements required on the DELCORA Central Diversion force main. A summary is as follows:

CDCA Crum Creek Pump Station	$1,294,000
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DELCORA Central Diversion FM Improvements	$ 414,000
Total	$8,619,600

The cost per household is estimated at $14.25 based upon an estimated annual debt service of $600,000 and 42,370 units in the CDCA Service Area.

Current agreements between DELCORA and CDCA and between CDCA and member municipalities provide the necessary authority for DELCORA to complete the project. No updates to the agreements appear to be necessary. Each member identified above in the CDCA Crum Creek Pump Station service area will be required to approve this Plan.

The project scheduled completion is within three (3) years of the Plan approval. Key milestone dates are as follows:

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Section I: Previous Wastewater Planning

Wastewater planning in Delaware County dates back to the early 1930s with a Delaware County Board of Engineers report and the formation of six (6) watershed sewerage systems:

- Central Delaware County Authority,
- City of Chester,
- Darby Creek Joint Authority,
- Muckinipates Authority,
- Marcus Hook,
- Eddystone

In the early 1970s, Delaware County prepared a County-wide Sewerage Facilities Plan. The Plan resulted in the regionalization of sewage treatment into basically the current sewage conveyance and treatment facilities; a series of pumping stations and two (2) regional treatment facilities.

In 1997, DELCORA completed an Act 537 Plan Update for the Treatment and Disposal of Wastewater from the Central Delaware County Authority Service Area. The Plan addressed the diversion of flow from the DELCORA Central Delaware Pump Station to the DELCORA Western Regional Treatment Plant to address peak wet weather flow exceedances at the Philadelphia sewage treatment facility. Recommendations of the Plan included upgrades to the DELCORA Central Delaware Pump Station, construction of a new Central Diversion force main along Route 291 toward the DELCORA treatment facility, and upgrades to the DELCORA treatment facility.

In 2002, the Delaware County Planning Department in cooperation with DELCORA completed an Act 537 Plan Update for the Eastern Service Area. The Eastern Service Area consists of 27 municipalities in the Darby Creek Joint Authority, Muckinipates Authority and Central Delaware County Authority. The 2002 Plan Update recommendations focused on-line maintenance and inflow & infiltration reduction programs. Furthering that goal, DELCORA sponsored inflow & infiltration reduction studies for all of the municipalities.

In 2007, Central Delaware County Authority, on behalf of Edgmont Township, Newtown Township, and Upper Providence Township, completed an Act 537 Plan Update for the Crum Creek Watershed. The 2007 Plan Update addressed the addition of flows from the three above-mentioned towns into the Central Delaware County Authority system and, in particular, improvements required in the CDCA Crum Creek Interceptor conveyance system.

In 2013, the Delaware County Planning Department and DELCORA prepared a Delaware County Act 537 Sewage Facilities Plan Update – Eastern Service Area. The plan was never adopted and subsequently withdrawn from PaDEP. The purpose of the Plan Update was to investigate alternatives to sewage

treatment facilities. While not adopted, the Plan Update provided information on the Philadelphia Long Term Control Plan and costs of the same charged to DELCORA.

In 2014, Central Delaware County Authority, on behalf of Edgmont Township, Newtown Township, and Upper Providence Township, completed an Act 537 Plan Update for the Crum Creek Watershed. The plan addressed the improvements to the CDCA Crum Creek Pump Station, the CDCA Chester Pike Force main, and the CDCA gravity interceptors downstream of the force main.

The CCPS Diversion is a cost-effective and timely solution to the periodic wet weather capacity issues currently experienced at DELCORA's CDPS. This project represents DELCORA's continued commitment to improving system performance while simultaneously accommodating the long-term growth of the service area.

In addition to DELCORA's capital investment in the CCPS Diversion, the Authority also acknowledges the opportunity for I/I reduction as a cost-effective means to address peak wet weather flows. DELCORA is continuing its program of I/I evaluation and remediation in areas where DELCORA owns the sewer infrastructure. A representative list of activities undertaken by DELCORA to date is enclosed in Appendix 14. DELCORA plans to expand upon these efforts in the future.

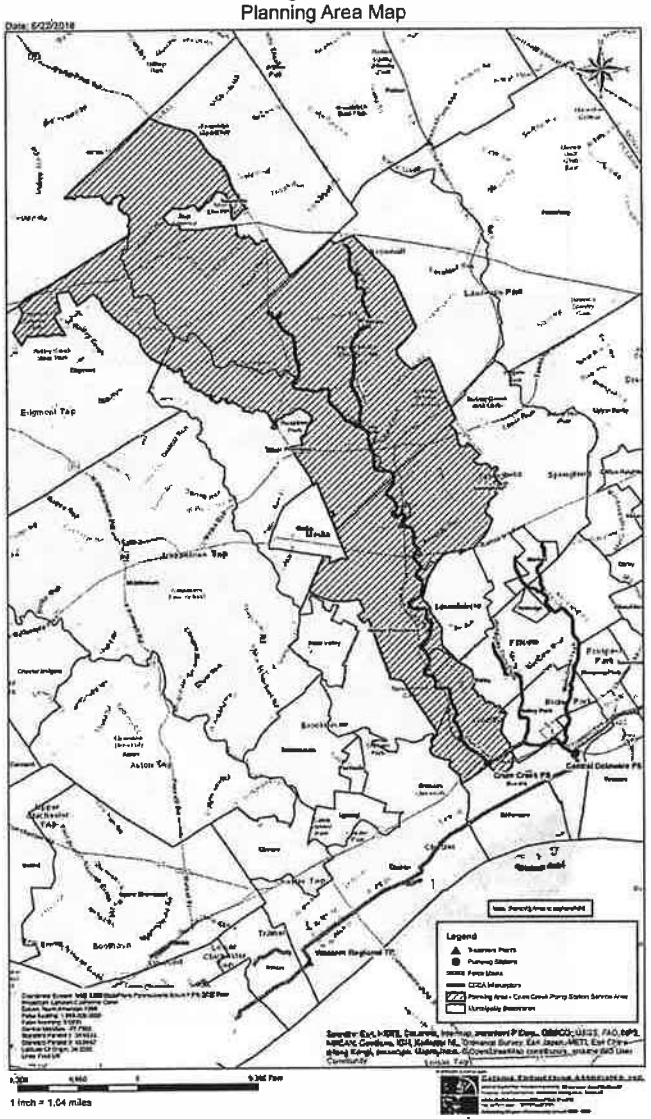
Concurrent with DELCORA's system wide I/I evaluation strategy, CDCA is currently engaged in a variety of I/I reduction efforts. A representative list of activities undertaken by DELCORA to date is enclosed in Appendix 15. This includes an annual program to review metering data for member municipalities and coordination with member municipalities to identify areas of concern. In addition, CDCA monitors its system on a regular basis by video inspection and corrects any deficiencies found. The collection systems are not owned nor maintained by CDCA and the I/I reduction efforts vary widely among towns. Activities in these systems are generally reported in the annual Chapter 94 reports.

Section II: Physical and Demographic Analysis

2.1 Identification of Planning Area

The Planning Area is identified as those towns which have sewage flows conveyed through the CDCA Crum Creek Pump Station located along Crum Creek near Chester Pike in Ridley Township, Delaware County. The facility serves portions of Edgmont Township, Marple Township, Nether Providence Township, Newtown Township, Ridley Township, Springfield Township, Swarthmore Borough and Upper Providence Township. The Planning Area is shown in Figure 2.1.1.

Figure 2.1.1
Planning Area Map

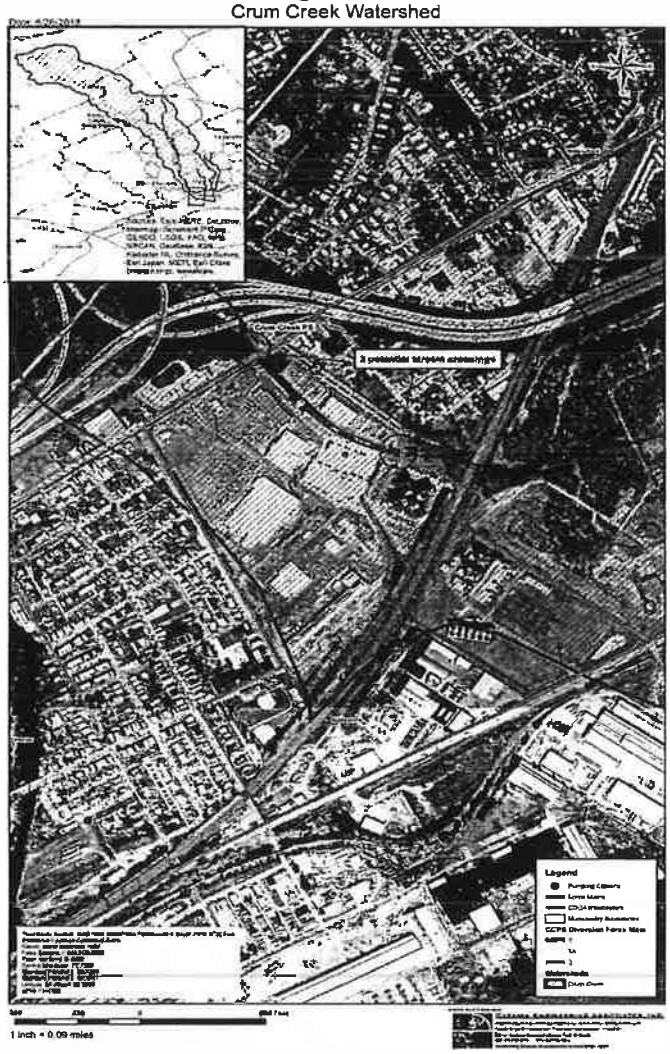


Full size map is located in Appendix 12

2.2 Identification of Physical Characteristics

The Planning Area is within the Crum Creek Watershed. Crum Creek is designated as a warm water fishery, migratory fishery under Pa Code Chapter 93. It should be noted that Crum Creek from its headwaters to the boundary of Newtown, Edgmont and Willistown Township is designated as High Quality Cold Water Fishery. However, the study area and proposed work is within the segment of Crum Creek designated as Warm Water Fishery. The proposed force main route will require a crossing of Crum Creek. Most of the proposed force main route will be within existing paved roads and driveways. The Crum Creek Watershed and potential stream crossing are shown in Figure 2.2.1.

Figure 2.2.1
Crum Creek Watershed

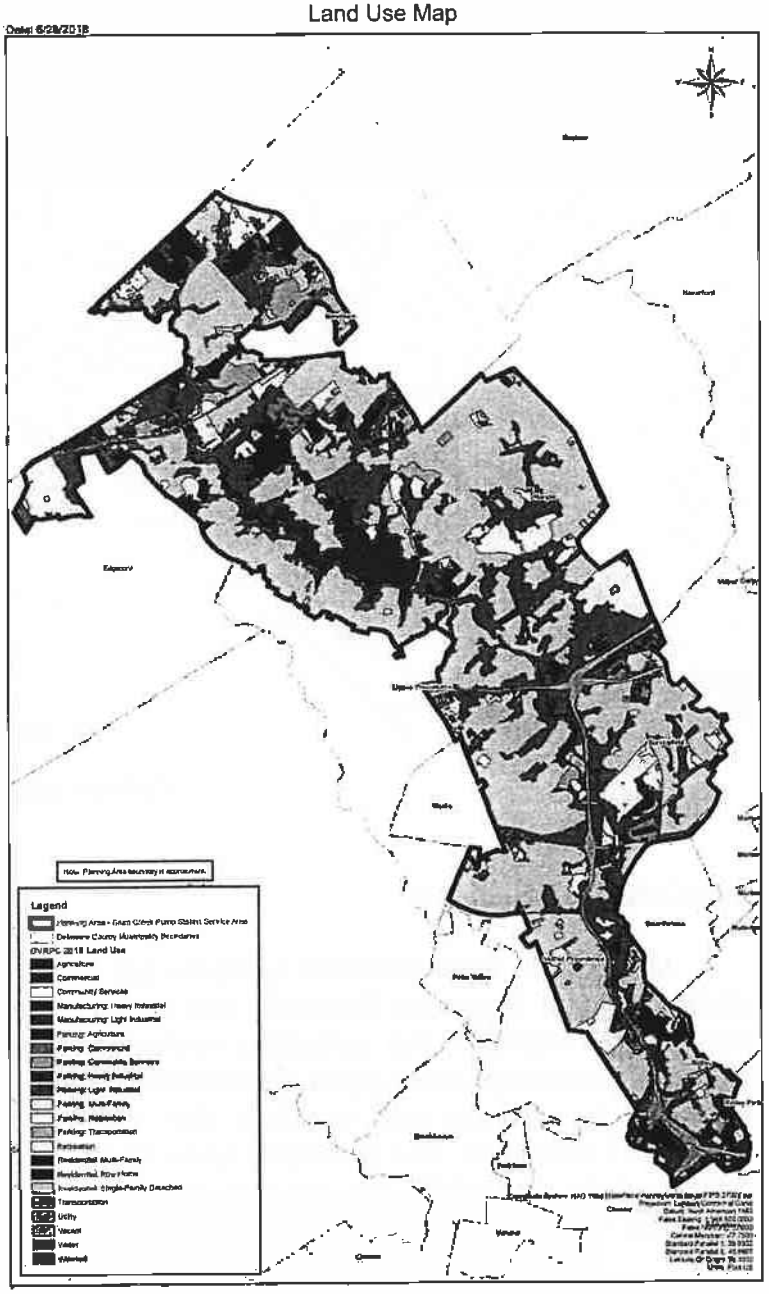


Full size map is located in Appendix 12

2.3 Identification of Demographics

The Planning Area land use varies throughout the Planning Area but is primarily residential. The lower Crum Creek areas are mainly developed with limited opportunities for infill development. The upper Crum Creek areas have potential for future development. The future development projections were covered in the 2007 Act 537 Plan Update on behalf of Edgmont, Newtown and Upper Providence Townships. A Land Use Map is included in Figure 2.3.1.

Figure 2.3.1
Land Use Map



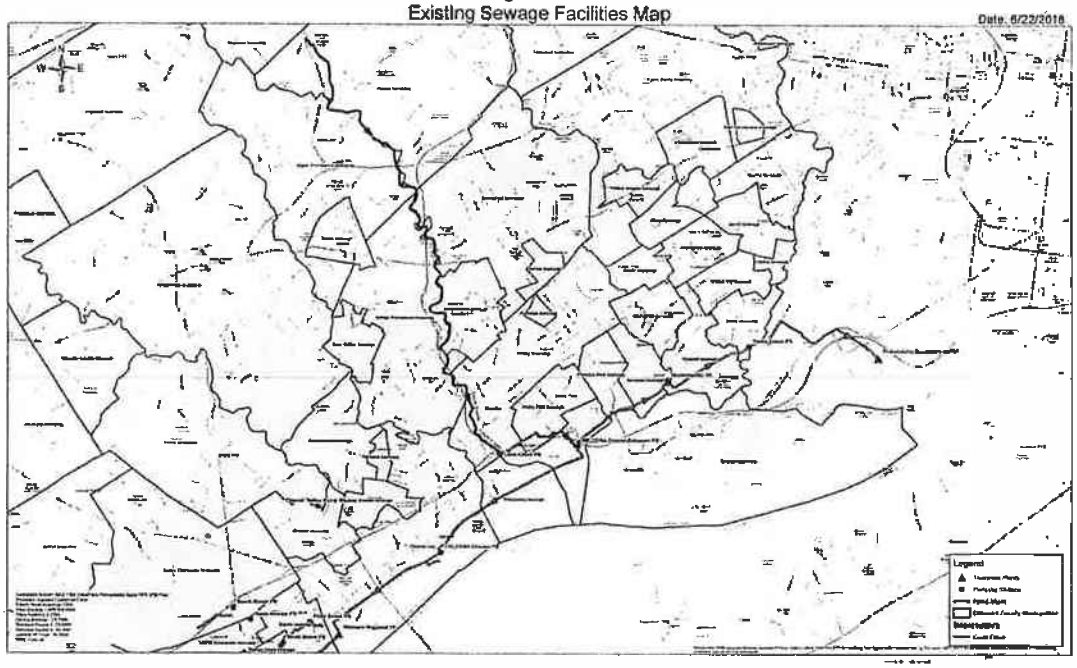
Full size map is located in Appendix 12

Section III: Existing Sewage Facilities in the Planning Area

3.0 General

The Planning Area is served by municipal sewerage systems. Flows from the Area are collected by local collection system, conveyed by a Central Delaware County Authority interceptor and pump station and by a DELCORA pump station, and treated at either the DELCORA treatment facility or the Philadelphia Southwest treatment facility. An Existing Sewage Facilities Map is shown in Figure 3.0.1.

Figure 3.0.1
Existing Sewage Facilities Map



Full size map is located in Appendix 12

3.1 Local Collection Systems

Most of the local collection systems are owned and operated by the individual towns. Edgmont Township has an agreement with DELCORA to operate and maintain the collection system within Edgmont Township. Newtown Township and Upper Providence Township have local sewer authorities to operate and maintain the collection systems within the respective Townships. The collection systems range in age with the earliest dating back to the 1930s and the newest under construction at this time. Most were constructed in the 1950s as development prospered in the area.

3.2 Conveyance Systems

3.2.1 Central Delaware County Authority

Central Delaware County Authority owns and maintains approximately 21 miles of interceptor sewer pipe and one pump station. Within the Planning Area, flow though the CDCA would utilize the following:

- Crum Creek Interceptor - The Crum Creek Interceptor consists of approximately 10 miles of sewer pipe ranging in size from 12" to 42" pipe. The Crum Creek Interceptor was rehabilitated in 2012 as part of the project to increase capacity.
- Crum Creek Pump Station - The Crum Creek Pump Station was constructed in 1939 and upgraded several times. It currently consists of four (4) 100 HP pumps with a capacity of approximately 17.5 MGD. The current daily average dry weather flow is 5.2 MGD with a wet weather peak at 17.5 MGD. A new Crum Creek Pump Station is currently in design stage to replace the existing and increase capacity to 24 MGD. Planning for this upgrade was approved in 2016.
- Chester Pike Force Main - The Crum Creek Pump Station conveys flow through a CDCA 24" Chester Pike Force Main to the CDCA Little Crum Creek Interceptor. The Chester Pike Force Main is currently under construction to increase size to 36" and capacity to 24 MGD. The project is expected to be operational in late 2018.
- Little Crum Creek Interceptor – the Little Crum Creek Interceptor extends from Sellers Avenue in Ridley Park Borough to upstream of Yale Avenue in Swarthmore Borough. The 0.65 mile portion below Chester Pike in Ridley Park Borough is used by flows from the Crum Creek Pump Station. This section of the Little Crum Creek Interceptor is currently being rehabilitated and is expected to be completed in late 2018. The capacity is approximately 36 MGD.
- Sellers Ave Interceptor – this pipe is also known as the Special Section and runs along Sellers Avenue from I-95 to the DELCORA Central Delaware Pump Station. The Sellers Avenue Interceptor starts at a point of confluence of the Little Crum Creek Interceptor and the CDCA Stoney Creek Interceptor. It is currently a 7 feet by 4 feet box culvert and a 36" pipe. The box culvert and pipe are being replaced by a 48" pipe currently under construction and is expected to be completed in late 2018. The capacity is approximately 55 MGD.

A map of the Central Delaware County Authority facilities is included as Figure 3.2.1.

Figure 3.2.1
Central Delaware County Authority Facilities

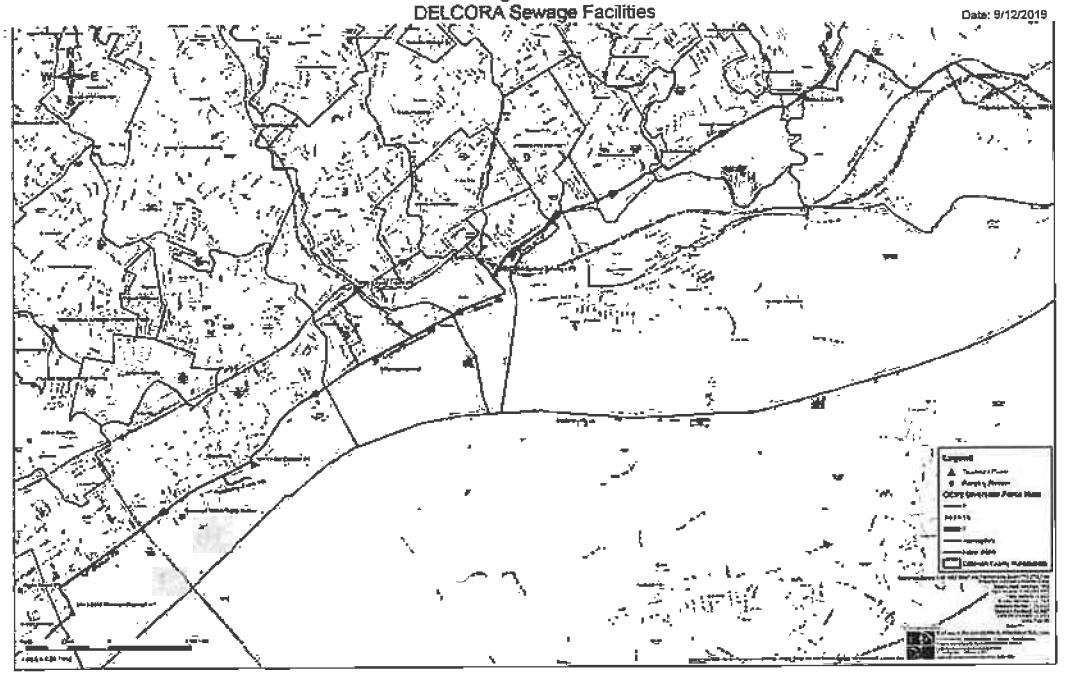
Full size map is located in Appendix 12

The comparison of dry weather flow to wet weather flows indicate that there is an issue with inflow/infiltration (I/I) in the Central Delaware County Authority tributary systems. While I/I is outside of the scope of this study, DELCORA and CDCA are committed to addressing the I/I issue. A listing of DELCORA's efforts to address the issue on a system-wide basis is included in Appendix 14. A listing of CDCA's efforts is included in Appendix 15. Both DELCORA and CDCA have limited ability to address the issues in the municipal collection system. To incentivize towns to address the issue, DELCORA sponsored a system-wide metering program and CDCA adopted a meter-based billing system. Therefore, towns that remove I/I flow from the system are rewarded in lower billing. Further, CDCA reviews all meter data in the system on an annual basis and notifies towns of unusually high flows in particular meter areas.

3.2.2 DELCORA

DELCORA owns and operates the Central Delaware Pump Station and related force mains. For the purpose of this report, the conveyance systems to the Philadelphia treatment facility are omitted from the discussion. A map of the DELCORA facilities is shown as Figure 3.2.2.

Figure 3.2.2
DELCORA Sewage Facilities



Full size map is located in Appendix 12

- Central Delaware Pump Station – The DELCORA Central Delaware Pump Station is located on Sellers Avenue in Ridley Township and conveys all flows from the Central Delaware

County Authority. The CDPS is currently permitted at 40 MGD. The CDPS was upgraded in 2002 which included the construction of an additional force main to allow flows to be directed to the Philadelphia treatment facility, the DELCORA treatment plant, or both. Flows are controlled by a flow-monitored modulating valve in the force main to the Philadelphia treatment plant. The valve is programmed to open and close to maintain a constant flow of 20 MGD to the DELCORA treatment plant and any additional flow is diverted to the Philadelphia treatment plant. Over the period of 2013 to 2016, the annual average flow was 9.4 MGD with a daily peak flow of approximately 15 MGD. During rain events, the flow spikes to 40 MGD. Over the same time period, there have been 7 sanitary sewer overflows at DELCORA Central Delaware Pump Station due to the peak wet weather flows. There have been 3 additional events in 2017 and 2018.The peak hourly flows are metered at DELCORA's Central Delaware Pump Station and several wet weather events in 2018 are shown in Table 3.2.2.1

Table 3.2.2.1: Wet Weather Peak Flows of DELCORA's CDPS

Date		CDPS-Peak Hourly Flow (MGD)	DELCORA WRTP Daily Average Flow (MGD)	PWD SWWPCP Daily Average Flow (MGD)[2]
1/12/2018		36.28	20.17	16.11
2/11/2018		36.65	20.11	16.54
3/2/2018		33.63	20.10	13.53
4/16/2018		36.48	25.56	10.92
5/17/2018		28.74	21.12	7.62
8/13/2018		26.55	20.28	6.27
9/9/2018		36.73	20.04	16.69
11/16/2018		35.51	20.07	15.44
11/24/2018		35.75	20.04	15.71
11/26/2018		35.66	20.05	15.61
12/21/2018		38.31	16.39	21.92
12/28/2018		39.73	16.79	22.94
1/16/2018	[1]	9.52	9.50	0.02

[1] peak flow on dry weather day

[2] note that flow to PWD was adjusted to correspond to same hour as peak hour to WRTP

Peak hourly flow to PWD varied slightly due to hourly deviation

- Central Diversion Force Main – The 36" Central Diversion Force main was constructed in 2002 to divert flows from the

Philadelphia treatment facility to the DELCORA treatment plant to address peak wet weather surcharges. The Central Diversion Force main is currently operating at a peak flow of 20 MGD. A recent flow study completed by Flow Science Inc. for DELCORA indicates that the design capacity of the CDFM can be re-rated to up to 32 MGD. A revision to the PaDEP WQM Part 2 permit will be required as part of this project to increase the permitted capacity.

The Central Diversion Force Main flow is controlled by a flow-monitored modulating valve which maintains a constant flow. The force main also conveys flow from Boeing Center North and Liberty Electric. The flows from those sources combined are less than 1 MGD.

- Chester Force Main –The 54" Chester Force Main was reconstructed in 2012 and conveys flow from the Chester Pump Station to the DELCORA Western Regional Treatment Plant. The original Chester Force Main was constructed prior to the Water Quality Management Program and in accordance with the Planning Consultation and Task Activity Report from the Pennvest Wastewater Facilities Loan Program dated Thursday, February 19, 2009 ,a Part II WQM Construction permit was not required for the reconstruction that was completed in 2012. The design peak flow of 65 MGD is stated in the WQM permit for the Chester Pump Station. The Central Diversion Force Main connects directly to the Chester Force Main. The Chester Force Main has a current operating capacity of 54 MGD with an existing flow of 15 MGD average, and 30 MGD peak. In order to clarify the miscellaneous and apparent conflicting flow data, a revision to the PaDEP WQM Part 2 Permit will be required as part of this project to document the capacity.

- Chester Pump Station - According to the DEP Permit for the Chester Pump Station, it has a design peak flow capacity of 55 MGD. The current average flow is 7.6 MGD and the current peak flow is 38.62 MGD. Furthermore, the Chester Pump Station is offline from the Chester Force Main, meaning it pumps into the Chester Force Main, therefore the Chester Pump Station would not be taking on the flows from the new Crum Creek Diversion Force Main.

3.3 Treatment Facility

The DELCORA Western Regional Treatment Plant is located along the Delaware River at Booth Street in the City of Chester and discharges to the Delaware River under NPDES Permit PA 0027103. The design capacity of WRTP is as follows:

Average:	50 MGD
Maximum:	88 MGD
Peak/ Instantaneous Wet Weather:	120 MGD 128 MGD (future)

All permits are in place for the 50 MGD capacity. One permit is conditional on constructing a new outfall pipe into the Delaware River to achieve better mixing.

Current flows at WRTP are as follows:

Average:	33.7 MGD (5-year average)
Dry Weather Peak:	34.4 MGD
Wet Weather Peak:	89.25 MGD to 112.32 MGD.

The current peak hourly flows are shown in Table 3.3.1.

Table 3.3.1: Wet Weather Peak Flows of DELCORA's WRTP

Date	WRTP Hr Flow (MGD)
1/12/2018	97.98
2/11/2018	97.85
3/2/2018	92.58
4/16/2018	112.32
5/17/2018	89.25
8/13/2018	100.68
9/9/2018	104.15

Date	WRTP Hr Flow (MGD)
11/16/2018	92.65
11/24/2018	107.82
11/26/2018	99.5
12/21/2018	91.45
12/28/2018	106.04
1/16/2018*	34.38
Max	**112.32**

* Peak hourly flow on a dry day

Projected flows with this Project will divert 4 MGD of additional flow to WRTP.

The peak plant capacity of 88 MGD is discussed in DELCORA's draft Long-Term Control Plan Update (LTCPU) which is under review by the Department. The peak wet weather flow to WRTP is often much higher than the 88 MGD with the objective of "Maximizing Flow to the POTW for Treatment" as defined in EPA's Guidance for Nine Minimum CSO Controls.

Recent WRTP hydraulic modifications to the headworks and improvements to the secondary clarifiers have facilitated increasing the Peak Wet Weather Flow to 120 MGD provided the plant biological conditions (settleability) are good. System flows in excess of what WRTP can accommodate would result in a slight reduction in the wet weather capture ratio until the LTCP is implemented. Upon full implementation of the LTCP improvements in 2028, an addition 40 MGD of wet weather treatment capacity is proposed in the LTCPU. With this additional treatment in place, the Peak Wet Weather capacity will be at least 128 MGD (refer to the draft LTCP for more discussion).

Section IV: Future Growth and Land Development

Future growth and land development was addressed in the 2014 Act 537 Plan Update for the Crum Creek Watershed. There has been no change in the projections.

Section V: Identify Alternatives

5.0 General

Under guidance from PaDEP, the alternatives to be reviewed in this report were to be (1) to construct a force main from the CDCA Crum Creek Pump Station to the DELCORA Central Diversion Force main or (2) not to construct a force main from the CDCA Crum Creek Pump Station to the DELCORA Central Diversion Force main. The proposed force main would divert flow from the DELCORA Central Delaware Pump Station.

Secondarily, alternate routes of the proposed Crum Creek Pump Station (CCPS) Bypass Force main will be evaluated.

5.1 Crum Creek Pump Station (CCPS) Bypass Force Main

This alternative consists of the construction of a new force main from the CDCA Crum Creek Pump Station to the DELCORA Central Diversion Force main. The CCPS Diversion Force Main map is shown in Figure 5.1.1. The new force main will divert up to 24 MGD from the Crum Creek Pump Station away from the DELCORA Central Delaware Pump Station. Based upon recent metering as part of a CDCA Service Area study, the peak flow to the pump station was approximately 40.2 MGD during a storm event in September of 2018. For the purposes of this study, a conservative factor of safety of 10% was added to that flow to compensate for the limited data period of that study. Therefore, for the purposes of this study, the expected peak hourly flow at the pump station is 44.2 MGD. By diverting the flow from the DELCORA Central Delaware Pump Station, the expected dry weather flow will be 4.2 MGD (current 9.4 MGD at CDPS minus current 5.2 at CCPS) and the peak flow demand will be approximately 30 MGD (44 MGD estimated at CDPS minus 24 MGD at CCPS), The peak flow will be below the 40 MGD pumping capacity of the DELCORA Central Delaware Pump Station. The flow diversion will require design modifications to the CDCA Crum Creek Pump Station project which is in preliminary design and will not affect the overall project schedule. The CCPS Bypass Force Main will be designed to accommodate the total flows flowing from CDCA CCPS as defined in the Part II Permit for the CDCA CCPS upgrade the at an annual average flow of 7.84 MGD and peak capacity of 24 MGD. Improvements to the air release valves on the DELCORA Central Diversion Force Main will also be required.

5.1.1 Alternate Routes – Mapping of the Alternative Routes are shown in Figure 5.1.1.

5.1.1.1 Alternate 1: Chester Pike-Simpson Ave-Saville Ave

Alternate Route 1 follows Chester Pike from Angelo Drive to Simpson Street, continues in Simpson Street to 9th Street, continues in 9th Street to Saville Avenue, and continues in Saville Avenue to Route 291. A stream crossing under Crum Creek will be required near Angelo Drive and a railroad crossing will be required under the AMTRAK railroad at the Saville Avenue underpass.

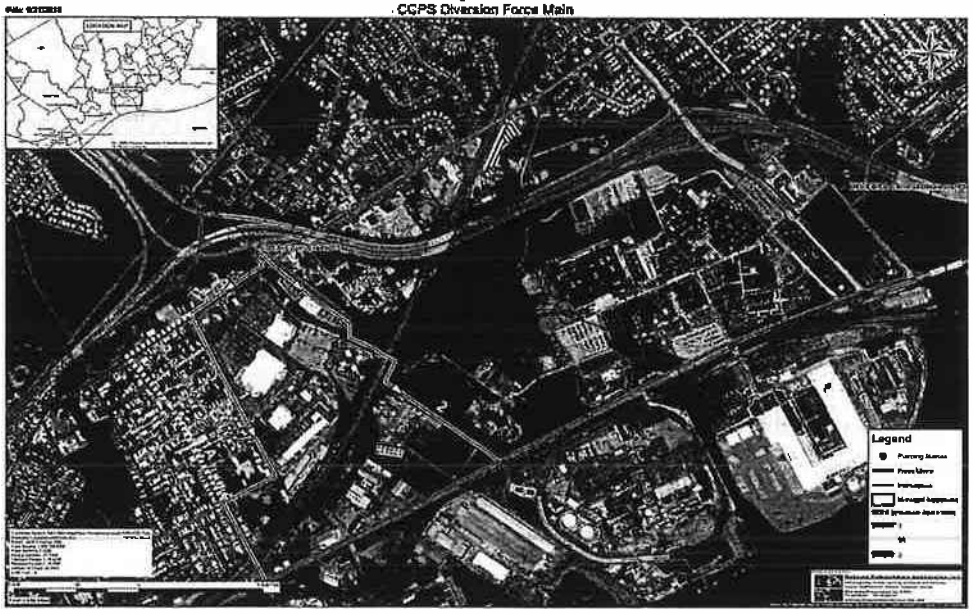
5.1.1.1A Alternate 1A: Chester Pike-Saville Ave

Alternate Route 2 follows Chester Pike from Angelo Drive to Saville Avenue, and continues in Saville Avenue to Route 291. A stream crossing under Crum Creek will be required near Angelo Drive and a railroad crossing will be required under the AMTRAK railroad at the Saville Avenue underpass.

5.1.1.2 Alternate 2: Crum Creek

Alternate Route 3 generally follows Crum Creek from Chester Pike to Route 291. The route is through private property of Baldwin Towers and Liberty Electric. The proposed route would be along the access drive of Baldwin Towers to an existing utility underpass under the AMTRAK railroad and along the access drive of Liberty Electric to Route 291. A stream crossing under Crum Creek will be required near the access drive bridge and a railroad crossing will be required under the AMTRAK railroad at the utility underpass.

Figure 5.1.1
CCPS Diversion Force Main



Full size map is located in Appendix 12

Section VI: Evaluation of Alternatives

6.1 Not Construct CCPS Bypass Force Main

The capacity issues at the DELCORA Central Delaware Pump Station need to be addressed. The capacity issues are wet weather peak flow related and therefore occur several times per year. If no action is taken, capacity issues will potentially result in environmental issues, fines from regulatory agencies, moratorium on connections, and other legal actions. The PaDEP fine schedule is based upon a matrix which includes multipliers for repeat offenses and it is expected that additional sanitary sewer overflows will result in increasing fines. Fines resulting from wet weather peak flows are allocated to the overall cost to maintain the system. Failure to address may also result in a PaDEP mandated sewer connection ban. Ultimately, a Consent Order for the correction of the capacity issues can be issued by PaDEP ordering work to be completed within a defined time.

6.2 Construct CCPS Bypass Force main

The CDCA Crum Creek Pump Station Diversion project is feasible to address the wet weather peak flow capacity issues in that it redirects flow from the DELCORA Central Delaware Pump Station. The reduced flow at the DELCORA Central Pump Station can be handled by the existing pumps. The CDCA Crum Creek Pump Station is already planned to be replaced and the timing to include design to divert flows is ideal.

The flow diversion will convey a 24 MGD of flow that currently flows to the DELCORA Central Delaware Pump Station and pump it directly to the DELCORA treatment plant, reducing the flow demand at the DELCORA Central Delaware Pump Station to a peak flow of 30 MGD as explained in Section 5.1. Since the current flow capacity is 40 MGD, no upgrades will be required at the DELCORA Central Delaware Pump Station. In addition, the flow diversion will increase the flow that currently is conveyed to the DELCORA treatment plant from 20 MGD to 24 MGD. The effectiveness of the project will be complete.

Implementation of the project will require permitting from PaDEP for construction of sewage facility, permitting from PaDEP for stream crossing, permitting from PaDOT for work within State Highway Route 291 Industrial Highway and Route 13-Chester Pike, coordination/authorization and occupancy agreement from AMTRAK, PUC approval for railroad crossing, approval from Delaware County Conservation District for erosion control, and local street opening permits from Eddystone Borough and/or Ridley Township. None of the approvals appear to be problematic.

The project schedule is reasonable with an expected completion date within 3 years of Act 537 Special Study Plan approval. A tentative schedule is included in Section 8.3.

The cost of the project includes the additional work required at the CDCA Crum Creek Pump Station, the construction of the new force main, and the improvements required on the DELCORA Central Diversion Force Main. A detailed cost estimate is included in Appendix 8. A summary is as follows:

CDCA Crum Creek Pump Station	$1,294,000
CCPS Diversion Force Main	$6,911,600
DELCORA Central Diversion FM Improvements	$ 414,000
Total	$8,619,600

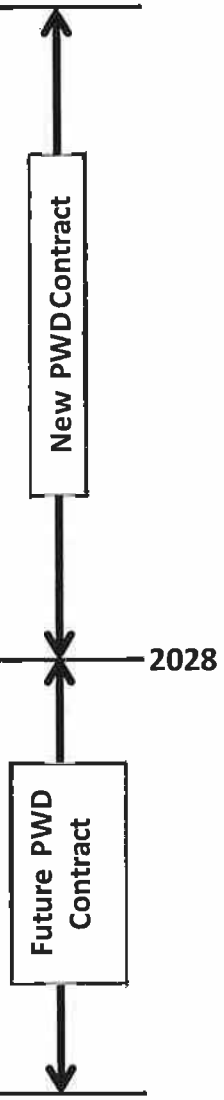
Consideration of the expenses for the project should include a cost savings from Philadelphia exceedance charges, and potential reduction in Philadelphia Long Term Control Plan costs. According to an Official Statement for a 2017 City of Philadelphia Water and Wastewater Revenue Bond dated March 28, 2017, the cost of the Long Term Control Plan is estimated at $4.5 billion. The flow diversion will have a net reduction of approximately 4% of flow to Philadelphia. The 4% reduction is based on an additional 4 MGD being diverted to the DELCORA treatment facility and 100 MGD limit at the Philadelphia plant. If the current agreement is renewed or extended, the DELCORA share of the project can be reduced by the flow reduction. While 4% is a minimal amount, the total value of the LTCP project creates a significant savings. A conservative estimate is as follows:

Exceedance Charges Savings	$ 100,000
LTCP Charges Savings	$11,800,000

The estimated savings is based upon Table 6-3 of the 2013 Delaware County Act 537 Sewage Facilities Plan Update – Eastern Service Area. The cost in that table has been adjusted from the original estimated cost of the Long Term Control Plan to the $4.5 billion. The savings are calculated based upon charges after the expiration of the DELCORA-PWD agreement. A revised version of table is included as Table 6.2.1.

Table 6.2.1: Adjusted Annual LTCP Cost Table

Year	Annual LTCP Cost	Adjusted Annual LTCP Cost
1	$ 230,995	$ 597,401
2	$ 687,359	$ 1,777,653
3	$ 1,188,556	$ 3,073,852
4	$ 1,726,102	$ 4,464,057
5	$ 2,337,680	$ 6,045,724
6	$ 2,912,908	$ 7,533,383
7	$ 3,548,720	$ 9,177,724
8	$ 4,184,531	$ 10,822,063
9	$ 4,820,343	$ 12,466,404
10	$ 5,456,154	$ 14,110,743
11	$ 6,091,966	$ 15,755,084
12	$ 6,727,777	$ 17,399,423
13	$ 7,363,589	$ 19,043,765
14	$ 7,999,401	$ 20,688,106
15	$ 8,635,212	$ 22,332,445
16	$ 9,271,024	$ 23,976,786
17	$ 9,906,835	$ 25,621,125
18	$ 10,542,647	$ 27,265,466
19	$ 11,178,458	$ 28,909,805
20	$ 11,687,358	$ 30,225,926
21	$ 11,893,341	$ 30,758,641
22	$ 12,099,324	$ 31,291,355
23	$ 12,305,307	$ 31,824,070
24	$ 12,511,290	$ 32,356,784
25	$ 12,717,273	$ 32,889,499
Total for years 16-25		$ 295,119,458
4% of years 16-25		$ 11,804,778



Section VII: Institutional Evaluation

7.0 General

The Crum Creek Bypass Force main would be constructed, owned and operated by DELCORA. DELCORA has existing legal authority, staff, and financial resources to implement the project.

DELCORA's agreement with the Philadelphia Water Department for the treatment of sewage from DELCORA's Eastern Service Area will not need to be amended due to the diversion of flow from DELCORA's Central Delaware Pump Station. The current agreement does not have any minimum flow requirements for flows from DELCORA's Central Delaware Pump Station. Section IV. Billing, Payments and Change in Rates, specifically section IV.A.5 of the agreement reads as follows:

> *(5) DELCORA agrees that it shall not bypass or reroute any existing dry weather sanitary flow that is currently coming into the City's Southwest Wastewater Treatment Plant to DELCORA's Western Plant or to any other sewage treatment facility.*

Currently all dry weather sanitary flow from DELCORA's Central Delaware Pump Station ("CDPS") is sent to DELCORA's Western Regional Treatment Plant.

Under the existing service agreement between DELCORA and CDCA, any improvements to the CDCA system is billed to CDCA. While it may not be apparent that the proposed diversion force main is an improvement to the CDCA system, the project was originally proposed by CDCA and ultimately determined to be a better coordinated with DELCORA's systems if constructed and operated by DELCORA. Under the existing service agreement among CDCA and CDCA's member municipalities, the costs are distributed to each CDCA member municipality based upon percentages established in the service agreement. Therefore, Morton Borough, Ridley Park Borough, Prospect Park Borough, and Rutledge Borough will be charged a percentage of the costs associated with the CDCA CCPS Bypass Force Main. Alternatively, if DELCORA's CDPS was upgraded, Morton Borough, Ridley Park Borough, Prospect Park Borough, and Rutledge Borough would be paying a higher cost. Conversely, Morton Borough, Ridley Park Borough, Prospect Park Borough, and

Rutledge Borough will realize any savings associated with the diversion of flows from PWD.

Section VIII: Implementation Schedule and Justification for Selected Alternative

8.0 General

The Selected Alternative is to construct the Crum Creek Pump Station Bypass Force main. Aside from appearing to be the most economical choice, the CCPS Flow Diversion provides a definitive solution within a reasonable and definitive timeline.

A secondary factor in the decision-making process is the costs associated with the Philadelphia treatment facility. Aside from the normal treatment costs, Philadelphia has exceedance charges for flows over established thresholds, but more ominous are the charges associated with the Philadelphia Long Term Control Plan (LTCP). The Philadelphia LTCP was originally projected to cost $2.4 billion dollars. Current cost estimates for the LTCP exceed $4.5 billion and this does not include administration and other charges added by Philadelphia. Based upon the DELCORA-Philadelphia service agreement, the DELCORA share is 9.4% of the cost as each project is completed and operational. That equates to over $432 million in costs over the next 20 years. However, the Philadelphia-DELCORA service agreement is set to expire in 2028 and alternative treatment options are being reviewed. The diversion of the CDCA Crum Creek Pump Station flows is a relatively low-cost method to reduce the flows to Philadelphia. There is a potential significant savings for a minimal flow reduction.

8.1 Selected Alternate Route

The Preferred Alternate Route is Alternate Route 2. Alternate Route 2 is less expensive than Alternate Route 1/1A by approximately 14% of total cost and has a lesser impact on the surrounding communities. The proximity of multiple petroleum pipelines and uncertainty with acquisition of right of way from private property owners could affect the feasibility of this alternate. The costs for right of way acquisition were assumed based upon best available data and not an appraisal of the properties in question. Actual right of way acquisition costs may vary and affect the cost-effectiveness of Alternate Route 1. Further, Alternate Route 2 goes through several industrial and commercial properties. Private utilities in those properties are unknown and may affect the feasibility. If these issues become unreasonable to address, Alternate 1/1A are reasonable options and should be pursued.

Alternate Routes 1 and 1A are generally the same route. Alternative Route 1 would be the preferred route in that it would create less disruption to the Eddystone residents. The work would be along the Eddystone Crossing Shopping Center, the PECO Baldwin Service Center, Eddystone Elementary School, and Lighthouse Hall Recreation Center, thereby affecting less of the residential homes. However, the same argument can be made to avoid construction activities near those uses. Ultimately, the decision to construct Alternative Route 1 and

Alternative Route 1A will be made after consulting with appropriate officials of Eddystone Borough.

The Preferred Alternate Route and Secondary Route were reviewed for consistency and compliance with the objective and policies of various local, state and federal plans including but not limited to Chapter 94 Municipal Wastewater Load Management Plans, Pennsylvania Municipalities Planning Code, Anti-degradation requirements of PA Code, Title 25, Chapters 93, 94 and 102, Pennsylvania Prime Agricultural Land Policy, County Stormwater Management Plans, Wetlands Protection, Protection of Endangered Plant or Animal Species, and Protection of Historic and Archeological Resources. During design, consistency with Ridley Township and Eddystone Borough Stormwater Management Ordinances and Floodplain Ordinances should be reviewed for compliance. Particular attention to the requirements of stormwater best management practices (BMPs) should be given to the stream crossings.

8.3 Implementation Schedule

	Days	Cumulative Days
PaDEP Act 537 Special Study Plan Approval	0	0
Preliminary Engineering Design	150	150
Final Engineering Design	120	270
PaDEP Part 2 Permit Submission	30	300
PaDEP Part 2 Approval	180	480
Final Plans, Specifications, and Bid Documents	90	570
Project Construction	465	1,035

APPENDIX 1

ACT 537 PLAN CONTENT CHECKLIST

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 theUniformEnvironmental Review Processin 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.

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 CCPS Diversion Force Main

2. Brief Project Description Construct a diversion force main to take flow from the Crum Creek Pump Station to DELCORA Central Diversion Force Main.

B. Client (Municipality) Information

Municipality Name	County	City	Boro	Twp
DELCORA - Ridley Township	Delaware	☐	☐	☒

Municipality Contact Individual - Last Name	First Name	MI	Suffix	Title
Hurst	Charles			P.E.

Additional Individual Last Name	First Name	MI	Suffix	Title

Municipality Mailing Address Line 1	Mailing Address Line 2
100 E 5th Street	P.O. Box 999

Address Last Line -- City	State	ZIP+4
Chester	PA	19016-0999

Phone + Ext.	FAX (optional)	Email (optional)
(610) 876-5523 Ext. 297		hurstc@delcora.org

C. Site Informatio

Site (or Project) Name	
DELCORA CCPS Diversion Force Main	(Municipal Name) Act 537 Plan

Site Location Line 1	Site Location Line 2
Crum Creek Pump Station	

D. Project Consultant Information

Last Name	First Name	MI	Suffix
Catania	Charles	J	Jr

Title	Consulting Firm Name
Vice President	Catania Engineering Associates

Mailing Address Line 1	Mailing Address Line 2
520 W MacDade Boulevard	

Address Last Line – City	State	ZIP+4	Country
Milmont Park	PA	19033-3311	USA

Email	Phone + Ext.	FAX
cjcjr@cataniaengineering.com	(610) 532-2884	(610) 532-2923

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)).
____	24	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)).
____	1	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)).
____	2	D. Identify the municipal commitments necessary to implement the Plan. (Reference - 25 *Pa. Code*§71.21(a)(7)(iii)).
____	2	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)).
____	49	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.
____	58	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.
____	96	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.
____	99	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.
____	25	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)).
____	93,108	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
_____	3	I.	**Previous Wastewater Planning**
			A. Identify, describe and briefly analyze all past wastewater planning for its impact on the current planning effort:
_____	3		1. Previously undertaken under the Pennsylvania Sewage Facilities Act (Act). (Reference - Act 537, 35 P.S. §750.5(d)(1)).
_____	n/a		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.
_____	n/a		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.
_____	n/a		4. Through planning modules for new land development, planning "exemptions" and addenda. (Reference - 25 *Pa. Code*§71.21(a)(5)(i)(A)).
_____	5	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).
_____	5		A. Identification of planning area(s), municipal boundaries, Sewer Authority/Management Agency service area boundaries. (Reference – 25 *Pa. Code*§71.21(a)(1)(i)).
_____	6		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)).
_____	n/a		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)).
_____	n/a		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)).
_____	n/a		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)).
_____	n/a		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.

DEP Use Only	Indicate Page #(s) in Plan	Item Required
_____	n/a	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.
_____	8	**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:
_____	9	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)).
_____	n/a	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)).
_____	11-12	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)).
_____	n/a	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)).
_____	n/a	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)).
_____	n/a	6. Disposal areas, if other than stream discharge, and any applicable groundwater limitations. (Reference - 25 *Pa. Code*§71.21(a)(4)(i& ii)).
_____	n/a	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:

n/a 1. The types of onlot systems in use. (Reference - 25 *Pa. Code*§71.21(a)(2)(ii)(A)).

n/a 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)).

n/a 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)).

n/a 4. An individual water supply survey to identify possible contamination by malfunctioning onlot sewage disposal systems consistent with DEP's *Act 537 SewageDisposal Needs Identification* publication. (Reference – 25 *Pa. Code*§71.21(a)(2)(ii)(B)).

n/a 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)).

n/a C. Identify wastewater sludge and septage generation, transport and disposal methods. Include this information in the sewage facilities alternative analysis including:

n/a 1. Location of sources of wastewater sludge or septage (Septic tanks, holding tanks, wastewater treatment facilities). (Reference – 25*Pa. Code*§71.71).

n/a 2. Quantities of the types of sludges or septage generated. (Reference - 25 *Pa. Code* §71.71).

n/a 3. Present disposal methods, locations, capacities and transportation methods. (Reference - 25 *Pa. Code*§71.71).

16 **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:

n/a 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)).

n/a 2. Zoning or subdivision regulations that establish lot sizes predicated on sewage disposal methods. (Reference – 25 *Pa. Code*§71.21(a)(3)(iv)).

n/a

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.

n/a

B. Delineate and describe the following through map, text and analysis.

n/a

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)).

n/a

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)).

n/a

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)).

n/a

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

n/a

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)).

n/a

A. Conventional collection, conveyance, treatment and discharge alternatives including:

n/a

1. The potential for regional wastewater treatment. (Reference - 25 *Pa. Code*§71.21(a)(4)).

n/a 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)).

n/a 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)).

n/a a. Repair. (Reference - 25 *Pa. Code*§71.21(a)(4)(ii)(A)).

n/a b. Upgrading. (Reference - 25 *Pa. Code*§71.21(a)(4)(ii)(B)).

n/a c. Reduction of hydraulic or organic loading to existing facilities. (Reference - 25 *Pa. Code*§71.71).

n/a d. Improved O & M. (Reference - 25 *Pa. Code*§71.21(a)(4)(ii)(C)).

n/a e. Other applicable actions that will resolve or abate the identified problems. (Reference - 25 *Pa. Code*§71.21(a)(4)(ii)(D)).

n/a 4. Repair or replacement of existing collection and conveyance system components. (Reference - 25 *Pa. Code*§71.21(a)(4)(ii)(A)).

n/a 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)).

n/a 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)).

n/a B. The use of individual sewage disposal systems including IRSIS systems based on:

n/a 1. Soil and slope suitability. (Reference - 25 *Pa. Code*§71.21(a)(2)(ii)(C)).

n/a 2. Preliminary hydrogeologic evaluation. (Reference - 25 *Pa. Code*§71.21(a)(2)(ii)(C)).

n/a 3. The establishment of a SMP. (Reference - 25 *Pa. Code*§71.21(a)(4)(iv)). See also Part "F" below.

n/a 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)).

n/a a. Existing technology and sizing requirements of 25 *Pa. Code* Chapter 73. (Reference - 25 *Pa. Code*§73.31-§73.72).

n/a b. Use of expanded absorption areas or alternating absorption areas. (Reference - 25 *Pa. Code*§73.16).

n/a c. Use of water conservation devices (Reference - 25 *Pa. Code*§71.73(b)(2)(iii)).

n/a 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)).

n/a 1. Treatment and discharge requirements. (Reference - 25 *Pa. Code*§71.64(d)).

n/a 2. Soil suitability. (Reference - 25 *Pa. Code*§71.64(c)(1)).

n/a 3. Preliminary hydrogeologic evaluation. (Reference - 25 *Pa. Code*§71.64(c)(2)).

n/a 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.

n/a D. The use of community land disposal alternatives including:

n/a 1. Soil and site suitability. (Reference - 25 *Pa. Code*§71.21(a)(2)(ii)(C)).

n/a 2. Preliminary hydrogeologic evaluation. (Reference - 25 *Pa. Code*§71.21(a)(2)(ii)(C)).

n/a 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.

n/a 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.

n/a E. The use of retaining tank alternatives on a temporary or permanent basis including: (Reference - 25 *Pa. Code*§71.21(a)(4)).

n/a 1. Commercial, residential and industrial use. (Reference - 25 *Pa. Code*§71.63(e)).

n/a 2 Designated conveyance facilities (pumper trucks). (Reference - 25 *Pa. Code*§71.63(b)(2)).

n/a 3. Designated treatment facilities or disposal site. (Reference - 25 *Pa. Code*§71.63(b)(2)).

n/a 4. Implementation of a retaining tank ordinance by the municipality. (Reference - 25 *Pa. Code*§71.63(c)(3)). See Part "F" below.

n/a 5. Financial guarantees when retaining tanks are used as an interim sewage disposal measure. (Reference - 25 *Pa. Code*§71.63(c)(2)).

n/a F. SMPs to assure the future O & M of existing and proposed sewage facilities through:

n/a 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)).

n/a 2. Required inspection of sewage disposal systems on a schedule established by the municipality. (Reference - 25 *Pa. Code*§71.73(b)(1)).

n/a 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)).

n/a 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:

n/a a. Aggressive pro-active enforcement of ordinances that require O & M and prohibit malfunctioning systems. (Reference - 25 *Pa. Code*§71.73(b)(5)).

n/a b. Public education programs to encourage proper O & M and repair of sewage disposal systems.

n/a 5. Establishment of joint municipal SMPs. (Reference - 25 *Pa. Code*§71.73(b)(8)).

n/a 6. Requirements for bonding, escrow accounts, management agencies or associations to assure O & M for non-municipal facilities. (Reference - 25 *Pa. Code*§71.71).

n/a 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:

n/a a. Land use designations. (Reference - 25 *Pa. Code*§71.21(a)(4)).

n/a b. Densities. (Reference - 25 *Pa. Code*§71.21(a)(4)).

n/a c. Municipal ordinances and regulations. (Reference - 25 *Pa. Code*§71.21(a)(4)).

n/a d. Improved enforcement. (Reference - 25 *Pa. Code*§71.21(a)(4)).

n/a e. Protection of drinking water sources. (Reference - 25 *Pa. Code*§71.21(a)(4)).

n/a 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)).

n/a 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)).

n/a 4. Evaluation of existing local agency programs and the need for technical or administrative training. (Reference - 25 *Pa. Code*§71.21(a)(4)).

n/a 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)).

n/a

1. Water quality/public health. (Reference - 25 *Pa. Code*§71.21(a)(4)).

n/a

2. Growth potential (residential, commercial, industrial). (Reference - 25 *Pa. Code*§71.21(a)(4)).

n/a

3. Community economic conditions. (Reference - 25 *Pa. Code*§71.21(a)(4)).

n/a

4. Recreational opportunities. (Reference - 25 *Pa. Code*§71.21(a)(4)).

n/a

5. Drinking water sources. (Reference - 25 *Pa. Code*§71.21(a)(4)).

n/a

6. Other environmental concerns. (Reference - 25 *Pa. Code*§71.21(a)(4)).

19

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)).

n/a

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.

n/a

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.

n/a

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.

n/a

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.

n/a

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.

n/a

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.

_____ n/a

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.

_____ 25

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.

_____ n/a

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.

_____ n/a

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.

_____ n/a

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.

_____ n/a

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.

_____ n/a

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)).

23 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)).

n/a 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)).

n/a 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)).

n/a 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)).

n/a 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)).

22 G. Evaluate administrative organizations and legal authority necessary for plan implementation. (Reference - 25 *Pa. Code*§71.21(a)(5)(vi)(D)).

22 **VII. Institutional Evaluation**

A. Provide an analysis of all existing wastewater treatment authorities, their past actions and present performance including:

n/a 1. Financial and debt status. (Reference - 25 *Pa. Code*§71.61(d)(2)).

n/a 2. Available staff and administrative resources. (Reference - 25 *Pa. Code*§71.61(d)(2))

n/a 3. Existing legal authority to:

n/a a. Implement wastewater planning recommendations. (Reference - 25 *Pa. Code*§71.61(d)(2)).

n/a b. Implement system-wide O & M activities. (Reference - 25 *Pa. Code*§71.61(d)(2)).

n/a c. Set user fees and take purchasing actions. (Reference - 25 *Pa. Code*§71.61(d)(2)).

n/a d. Take enforcement actions against ordinance violators. (Reference - 25 *Pa. Code*§71.61(d)(2)).

n/a e. Negotiate agreements with other parties. (Reference - 25 *Pa. Code*§71.61(d)(2)).

n/a f. Raise capital for construction and O & M of facilities. (Reference - 25 *Pa. Code*§71.61(d)(2)).

n/a B. Provide an analysis and description of the various institutional alternatives necessary to implement the proposed technical alternatives including:

n/a 1. Need for new municipal departments or municipal authorities. (Reference - 25 *Pa. Code*§71.61(d)(2)).

n/a 2. Functions of existing and proposed organizations (sewer authorities, onlot maintenance agencies, etc.). (Reference - 25 *Pa. Code*§71.61(d)(2)).

n/a 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)).

n/a C. Describe all necessary administrative and legal activities to be completed and adopted to ensure the implementation of the recommended alternative including:

n/a 1. Incorporation of authorities or agencies. (Reference - 25 *Pa. Code*§71.61(d)(2)).

n/a 2. Development of all required ordinances, regulations, standards and inter-municipal agreements. (Reference - 25 *Pa. Code*§71.61(d)(2)).

n/a 3. Description of activities to provide rights-of-way, easements and land transfers. (Reference - 25 *Pa. Code*§71.61(d)(2)).

n/a 4. Adoption of other municipal sewage facilities plans. (Reference - 25 *Pa. Code*§71.61(d)(2)).

n/a 5. Any other legal documents. (Reference - 25 *Pa. Code*§71.61(d)(2)).

n/a 6. Dates or timeframes for items 1-5 above on the project's implementation schedule.

n/a 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)).

24 **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:

n/a 1. Existing wastewater disposal needs. (Reference - 25 *Pa. Code*§71.21(a)(6)).

n/a

2. Future wastewater disposal needs. (5 and 10 year growth areas). (Reference - 25 *Pa. Code*§71.21(a)(6)).

n/a

3. O & M considerations. (Reference - 25 *Pa. Code*§71.21(a)(6)).

n/a

4. Cost-effectiveness. (Reference - 25 *Pa. Code*§71.21(a)(6)).

n/a

5. Available management and administrative systems. (Reference - 25 *Pa. Code*§71.21(a)(6)).

n/a

6. Available financing methods. (Reference - 25 *Pa. Code*§71.21(a)(6)).

n/a

7. Environmental soundness and compliance with natural resource planning and preservation programs. (Reference - 25 *Pa. Code*§71.21(a)(6)).

n/a

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))

n/a

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))

n/a

IX. Environmental Report (ER) generated from the UER Process

n/a

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. _____

ADDITIONAL 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
_____	n/a	1. Environmental Impact Assessment. (Planning Phase) The UER replaces the Environmental Impact Assessment that was a prev requirement for PENNVEST projects.
_____	n/a	2. Cost Effectiveness (Planning Phase) The cost-effectiveness analysis should be a present-worth (or equivalent unif annual) cost evaluation of the principle alternatives using the interest rate, tha published annually by the Water Resources Council. Normally, for PENNVI projects the applicant should select the most cost-effective alternative based upon above analysis. Once the alternative has been selected the user fee estimates sh be developed based upon interest rates and loan terms of the selected fun 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)

I/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 2

TASK ACTIVITY REPORT

Delcora Central Delaware Pump Station Upgrade
Act 537 Planning Study
Task/Activity Report Narrative

The Central Delaware County Authority (CDCA) has a commitment to its member municipalities to provide sanitary sewer conveyance, as required and approved by the Pa DEP, in accordance with the provisions of the Pennsylvania Sewage Facilities Act. With the addition of Edgmont, Newtown and Upper Providence Townships and in preparation of receiving additional sewage flows being generated (0.35 MGD, 0.976 MGD and 0.479 MGD Average Daily Flow respectively) within the Crum Creek basin increasing the peak flow to 24 MGD. Flow from these towns are conveyed by the local municipal collections systems, the CDCA Crum Creek Interceptor, the CDCA Crum Creek Pump Station (CCPS), the CDCA Chester Pike Forcemain, the CDCA Little Crum Creek Interceptor, and ultimately pumped to the treatment plant by the Delcora Central Delaware Pump Station (CDPS). Sewage can be treated at either the Delcora Western Regional Treatment Plant (WRTP) via the Delcora Central Diversion Forcemain or Philadelphia Southwest Water Pollution Control Plant (PSWPCP) via the Delcora PWD forcemain.

In advance of the anticipated flows, CDCA has completed upgrades to the Crum Creek Interceptor, is currently upgrading the Chester Pike Forcemain and the Little Crum Creek Interceptor, and has a project in design phase to upgrade the Crum Creek Pump Station.

In order to address the increased flows, Delcora has commissioned this study to review alternatives to address the conveyance from the Central Delaware Pump Station. The initial alternatives to be reviewed are:

- Upgrade available pumping capacity and associated piping at Delcora Central Delaware Pump Station.
- Construct a forcemain from CDCA Crum Creek Pump Station to Delcora Central Diversion forcemain, thereby bypassing the Delcora Central Delaware Pump Station
- Develop and implement system-wide inflow and infiltration abatement measures to reduce wet weather peak flows.
- Additional alternatives may be reviewed as the study is developed

The study will consider information on the existing and future flows, existing and future capacity of the Delcora Central Delaware Pump Station, the Delcora Central Diversion Forcemain, and the CDCA Crum Creek Pump Station. The report will include conceptual level design and supporting information on permitting requirements, necessity of land acquisition, conceptual level cost estimates, and tentative project timeline.

3850-FM-BCW0005 3/2016

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CLEAN WATER

TASK/ACTIVITY REPORT

DELCORA (Municipality) | Delaware (County) | Ridley Township, Eddystone Borough (Proposed Planning Area (Attach Map)) | _____ (Date of Report)

Date completed plan will be submitted to DEP _____ Estimated Cost of Plan _____

Column Headings May Be Changed To Suit the Needs of the Planning Effort Use Additional Sheets if Necessary Sheet 1 of 1

TASK ACTIVITY NUMBER FROM APPENDIX I	PRINCIPAL HR/RATE		PROJECT ENG. HR/RATE		SR. ENG. HR/RATE		ENGINEER HR/RATE		PLANNER HR/RATE		DRAFTSMAN HR/RATE		CLERICAL HR/RATE		LEGAL HR/RATE		SUB TOTAL
	HRS.	COST	HRS.	COST	HRS.	COST	HRS.	COST	HRS.	COST	HRS.	COST	HRS.	COST	HRS.	COST	
I	4	540	24	2928			0	0			0	0					3468
II	0	0	16	1952			4	340			0	0					2292
III	4	540	16	1952			8	680			8	560					3732
IV	0	0	16	1952			8	680			12	840					3472
V	16	2160	60	7320			24	2040			32	2240					13760
VI	0	0	10	1220			4	340			0	0					1560
VII	0	0	16	1952			0	0			0	0					1952
VIII	0	0	16	1952			0	0			0	0					1952

Charles J. Catania, Jr. (Name of Person Completing Report) | _____ (Signature) | Vice President (Title) | _____ (Municipal Secretary Signature)

APPENDIX 3

MUNICIPAL RESOLUTIONS

EDGMONT TOWNSHIP
DELAWARE COUNTY, PENNSYLVANIA

RESOLUTION NO. 2019-23

A RESOLUTION OF EDGMONT TOWNSHIP AMENDING DELCORA'S OFFICIAL SEWAGE FACILITIES PLAN (ACT 537 PLAN) FOR THE CENTRAL DELAWARE PUMP STATION

WHEREAS, Section 5 of the Act of January 24, 1966, P.L. 1535, No. 537, known as the "Pennsylvania Sewage Facilities Act," as amended, and the Rules and Regulations of the Department of Environmental Protection ("**Department**") adopted there under, Chapter 71 of Title 25 of the **Pennsylvania Code**, requires Edgmont Township (the "**Township**") to adopt an Official Sewage Facilities Plan ("**Act 537 Plan**") providing for sewage services adequate to prevent contamination of waters and/or environmental health hazards with sewage wastes, and to revise said plan whenever it is necessary to meet the sewage disposal needs of the municipality; and

WHEREAS, DELCORA has prepared an Act 537 special Study Plan of DELCORA Central Delaware Pump Station which provides for sewage facilities in a portion of Edgmont Township, and the alternative of choice to be implemented is construction of a new Crum Creek Pump Station Diversion Force Main. The key implementation activities/dates include:

PaDEP Act 537 Special Study Plan Submission	September 2018
PADEP Act 537 Special Study Plan Approval	February 2019
Final Engineering Design	June 2019
PaDEP Part 2 Approval	April 2020
Project Construction	May 2022

WHEREAS, Edgmont Township finds that the facility Plan 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, THERFORE, IT BE RESOLVED that the Supervisors of the Township of Edgmont hereby adopt and submit to the Department of Environmental Protection for its approval as a revision to the "Official Plan" of the municipality, the above referenced Facility Plan. The municipality 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 this 14th day of May, 2019, by the Board of Supervisors of Edgmont Township.

BOARD OF SUPERVISORS
EDGMONT TOWNSHIP

Ronald Gravina, Chairman

Henry Winchester III, Vice Chairman

James Hallam, Member

I, Catherine Ricardo, Secretary, Edgmont Township Board of Supervisors, hereby certify that the forgoing is a true copy of resolution No. 2019-23, on May 14, 2019.

ATTEST:

Catherine Ricardo, Secretary

TOWNSHIP OF MARPLE
DELAWARE COUNTY, PA

RESOLUTION NO. 3927

RESOLUTION FOR PLAN REVISION

RESOLUTION OF THE COMMISSIONERS OF MARPLE TOWNSHIP, DELAWARE COUNTY, PENNSYLVANIA (hereinafter "the municipality").

WHEREAS, Section 5 of the Act of January 24, 1966, P.L. 1535, No. 537, known as the "Pennsylvania Sewage Facilities Act," as amended, and the Rules and Regulations of the Department of Environmental Protection (Department) adopted there under, 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 with sewage wastes, and to revise said plan whenever it is necessary to meet the sewage disposal needs of the municipality, and

WHEREAS, DELCORA has prepared an Act 537 Special Study Plan of DELCORA Central Delaware Pump Station which provides for sewage facilities in a portion of Marple Township, and

The alternative of choice to be implemented is construction of a new Crum Creek Pump Station Diversion Force Main. The key implementation activities/dates include:

PaDEP Act 537 Special Study Plan Submission	Sept	2018
PaDEP Act 537 Special Study Pan Approval	Feb	2019
Final Engineering Design	June	2019
PaDEP Part 2 Approval	April	2020
Project Construction Completion	May	2022

WHEREAS, Marple Township finds that the Facility Plan 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 the Commissioners of the Township of Marple hereby adopt and submit to the Department of Environmental Protection for its approval as a revision to the "Official Plan" of the municipality, the above referenced Facility Plan. The municipality 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).

RESOLVED, this 10TH day of September 2018

Township of Marple
Board of Commissioners

By: _____
Joseph Rufo, President

Attested: _____
Sharon Angelaccio
Township Secretary

I, Sharon Angelaccio, Township Secretary, Marple Township Board of Commissioners hereby certify that the foregoing is a true copy of Resolution No.3927, adopted September 10, 2018.

AUTHORIZED SIGNATURE

_____

MUNICIPAL SEAL

RESOLUTION FOR PLAN REVISION NO 2018-9

RESOLUTION OF THE COMMISSIONERS OF NETHER PROVIDENCE TOWNSHIP, DELAWARE COUNTY, PENNSYLVANIA (hereinafter "the municipality").

WHEREAS, Section 5 of the Act of January 24, 1966, P.L. 1535, No. 537, known as the "Pennsylvania Sewage Facilities Act," as amended, and the Rules and Regulations of the Department of Environmental Protection (Department) adopted there under, Chapter 71 of Title 25 of the **Pennsylvania Cod**e, 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 with sewage wastes, and to revise said plan whenever it is necessary to meet the sewage disposal needs of the municipality, and
WHEREAS, DELCORA has prepared an Act 537 Special Study Plan of DELCORA Central Delaware Pump Station which provides for sewage facilities in a portion of Nether Providence Township, and

The alternative of choice to be implemented is construction of a new Crum Creek Pump Station Diversion Force Main. The key implementation activities/dates include

PaDEP Act 537 Special Study Plan Submission	Sept	2018
PaDEP Act 537 Special Study Pan Approval	Feb	2019
Final Engineering Design	June	2019
PaDEP Part 2 Approval	April	2020
Project Construction Completion	May	2022

WHEREAS, Nether Providence Township finds that the Facility Plan 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 the Commissioners of the Township of Nether Providence hereby adopt and submit to the Department of Environmental Protection for its approval as a revision to the "Official Plan" of the municipality, the above referenced Facility Plan. The municipality 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).

I, GARY J. CUMMINGS, Secretary, Nether Providence Township Board of Commissioners hereby certify that the foregoing is a true copy of Resolution No. 2018-9, adopted SEPTEMBER 27, 2018.

AUTHORIZED SIGNATURE

MUNICIPAL SEAL

RESOLUTION 2018-31 537 PLAN REVISION

RESOLUTION OF THE SUPERVISORS OF NEWTOWN TOWNSHIP, DELAWARE COUNTY, PENNSYLVANIA (hereinafter "the municipality").

WHEREAS, Section 5 of the Act of January 24, 1966, P.L. 1535, No. 537, known as the "Pennsylvania Sewage Facilities Act," as amended, and the Rules and Regulations of the Department of Environmental Protection (Department) adopted there under, 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 with sewage wastes, and to revise said plan whenever it is necessary to meet the sewage disposal needs of the municipality, and

WHEREAS, DELCORA has prepared an Act 537 Special Study Plan of DELCORA Central Delaware Pump Station which provides for sewage facilities in a portion of Newtown Township, and

The alternative of choice to be implemented is construction of a new Crum Creek Pump Station Diversion Force Main. The key implementation activities/dates include

PaDEP Act 537 Special Study Plan Submission	Sept 2018
PaDEP Act 537 Special Study Pan Approval	Feb 2019
Final Engineering Design	June 2019
PaDEP Part 2 Approval	April 2020
Project Construction Completion	May 2022

WHEREAS, Newtown Township finds that the Facility Plan 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 the Supervisors of the Township of Newtown hereby adopt and submit to the Department of Environmental Protection for its approval as a revision to the "Official Plan" of the municipality, the above referenced Facility Plan. The municipality 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).

RESOLVED, this 10th day of September, 2018.

BOARD OF SUPERVISORS
NEWTOWN TOWNSHIP

By: _____
John A. Nawn, Chairman

I, Stephen M. Nease, Secretary, Newtown Township Board of Supervisors hereby certify that the foregoing is a true copy of Resolution No. 2018-31, adopted September 10, 2018.

ATTEST:

Stephen M. Nease

Stephen M. Nease, Secretary

Township of Ridley

RESOLUTION

A RESOLUTION OF THE BOARD OF COMMISSIONERS OF RIDLEY TOWNSHIP, DELAWARE COUNTY, PENNSYLVANIA (hereinafter "the municipality")

WHEREAS, Section 5 of the Act of January 24, 1966, P.L. 1535, No. 537, known as the "Pennsylvania Sewage Facilities Act", as amended, and the Rules and Regulations of the Department of Environmental Protection (hereinafter the "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 with sewage wastes, and to revise said plan whenever it is necessary to meet the sewage disposal needs of the municipality, and

WHEREAS, DELCORA has prepared an Act 537 Special Study Plan of DELCORA Central Delaware Pump Station which provides for sewage facilities in a portion of Ridley Township, and

WHEREAS, the alternative of choice to be implemented is construction of a new Crum Creek Pump Station Diversion Force Main. The key implementation activities/dates include:

PA DEP Act 537 Special Study Plan Submission	September 2018
PA DEP Act 537 Special Study Plan Approval	February 2019
Final Engineering Design	June 2019
PA DEP Part 2 Approval	April 2020
Project Construction Completion	May 2022

WHEREAS, Ridley Township finds that the Facility Plan 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 the Commissioners of the Township of Ridley hereby adopt and submit to the Department of Environmental Protection for its approval as a revision to the "Official Plan" of the municipality, the above referenced Facility Plan. The municipality 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 this 26th day of **September, 2018.**

TOWNSHIP OF RIDLEY
BOARD OF COMMISSIONERS

ATTEST: _____
Edmond J. Pisani
Township Manager/Secretary

BY: _____
Robert J. Willert
President

I, Edmond J. Pisani, Township Manager/Secretary, of the Township of Ridley, hereby certify that the foregoing is a true copy of the Resolution adopted September 26, 2018.

_____
Edmond J. Pisani
Township Manager/Secretary

(SEAL)

SPRINGFIELD TOWNSHIP

RESOLUTION FOR PLAN REVISION

RESOLUTION #16-18

RESOLUTION OF THE COMMISSIONERS OF SPRINGFIELD TOWNSHIP, DELAWARE COUNTY, PENNSYLVANIA (hereinafter "the Municipality").

WHEREAS, Section 5 of the Act of January 24, 1966, P.L. 1535, No. 537, known as the "Pennsylvania Sewage Facilities Act," as amended, and the Rules and Regulations of the Department of Environmental Protection (Department) adopted there under, 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 with sewage wastes, and to revise said plan whenever it is necessary to meet the sewage disposal needs of the Municipality, and

WHEREAS, DELCORA has prepared an Act 537 Special Study Plan of DELCORA Central Delaware Pump Station which provides for sewage facilities in a portion of Springfield Township, and

The alternative of choice to be implemented is construction of a new Crum Creek Pump Station Diversion Force Main. The key implementation activities/dates include

PaDEP Act 537 Special Study Plan Submission	Sept 2018
PaDEP Act 537 Special Study Pan Approval	Feb 2019
Final Engineering Design	June 2019
PaDEP Part 2 Approval	April 2020
Project Construction Completion	May 2022

WHEREAS, Springfield Township finds that the Facility Plan 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 the Commissioners of the Township of Springfield hereby adopt and submit to the Department of Environmental Protection for its approval as a revision to the "Official Plan" of the Municipality, the above referenced Facility Plan. The Municipality 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).

I, J. Lee Fulton, Township Manager, of Springfield Township hereby certify that the foregoing is a true copy of Resolution No. 16-18, adopted September 11, 2018.

(SEAL)

Attest: _____
Township Manager

By: _____
President, Board of Commissioners

BOROUGH OF SWARTHMORE
RESOLUTION 2018-07

RESOLUTION OF THE BOROUGH COUNCIL OF THE BOROUGH OF SWARTHMORE, DELAWARE COUNTY, PENNSYLVANIA (hereinafter "the Municipality")

WHEREAS, Section 5 of the Act of January 24, 1966, P.L. 1535, No. 537, known as the "Pennsylvania Sewage Facilities Act," as amended, and the Rules and Regulations of the Department of Environmental Protection (Department) adopted there under, 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 with sewage wastes, and to revise said plan whenever it is necessary to meet the sewage disposal needs of the municipality, and WHEREAS, DELCORA has prepared an Act 537 Special Study Plan of DELCORA Central Delaware Pump Station which provides for sewage facilities in a portion of Swarthmore Borough, and

The alternative recommended by DELCORA is construction of a new Crum Creek Pump Station Diversion Force Main. The key implementation activities/dates include

PaDEP Act 537 Special Study Plan Submission	Sept 2018
PaDEP Act 537 Special Study Pan Approval	Feb 2019
Final Engineering Design	June 2019
PaDEP Part 2 Approval	April 2020
Project Construction Completion	May 2022

WHEREAS, the Borough of Swarthmore finds that the Facility Plan 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 the Borough Council of the Borough of Swarthmore hereby adopt and submit to the Department of Environmental Protection for its approval as a revision to the "Official Plan" of the municipality, the above referenced Plan. The municipality 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 THIS 12th DAY OF September, 2018.

David J Creagan
Council President

I Jane C. Billings, Manager/Secretary, Swarthmore Borough, do hereby certify that the foregoing is a true copy of Resolution 2018-07, adopted September 12, 2018.

MUNICIPAL SEAL

UPPER PROVIDENCE TOWNSHIP
DELAWARE COUNTY, PENNSYLVANIA
RESOLUTION NO 2018 - 17

A Resolution of Upper Providence Township, Delaware County, Pennsylvania (hereinafter "the municipality").

WHEREAS, Section 5 of the Act of January 24, 1966, P.L. 1535, No. 537, known as the "Pennsylvania Sewage Facilities Act," as amended, and the Rules and Regulations of the Department of Environmental Protection (Department) adopted there under, 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 with sewage wastes, and to revise said plan whenever it is necessary to meet the sewage disposal needs of the municipality, and

WHEREAS, DELCORA has prepared an Act 537 Special Study Plan of DELCORA Central Delaware Pump Station which provides for sewage facilities in a portion of Upper Providence Township, and

The alternative of choice to be implemented is construction of a new Crum Creek Pump Station Diversion Force Main. The key implementation activities/dates include

PaDEP Act 537 Special Study Plan Submission	September	2018
PaDEP Act 537 Special Study Plan Approval	February	2019
Final Engineering Design	June	2019
PaDEP Part 2 Approval	April	2020
Project Construction Completion	May	2022

WHEREAS, Upper Providence Township finds that the Facility Plan described above conforms to applicable zoning, subdivision, other municipal ordinances and plans to a comprehensive program of pollution control and water quality management.

NOW, THEREFORE, BE IT RESOLVED that the Township Council of Upper Providence Township hereby adopt and submit to the Department of Environmental Protection for its approval as a revision to the "Official Plan" of the municipality, the above referenced Facility Plan. The municipality 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).

Resolved this 11th day of October, 2018.

UPPER PROVIDENCE TOWNSHIP

Attest:

Gregory C. Lebold
Township Secretary

TOWNSHIP OF UPPER PROVIDENCE
TOWNSHIP COUNCIL:

By: Timothy Broadhurst

Timothy Broadhurst, Chairman

APPENDIX 4

MUNICIPAL PLANNING COMMISSION REVIEWS

EDGMONT TOWNSHIP PLANNING COMMISSION
REGULAR MEETING MINUTES
August 27, 2018

Work Session – Members of the Planning Commission, Township Engineer, Township Manager, and Township Administrative Assistant attended an advertised Work Session at 6:30 p.m. Those in attendance generally discussed items on the agenda. No action was taken.

1. **Open Meeting & Pledge of Allegiance**: Mr. Miller called the meeting to order at 7:00 p.m. with the Pledge of Allegiance. In attendance were Chip Miller, Chairman; Joseph Raspa, Vice-Chairman; John Kusturiss, Member; Eleanor Tickner, Member; Michael Conrad, P.E., Township Engineer; Catherine Ricardo, Township Manager; and Lacey Faber, Township Administrative Assistant. Ira Dunoff, Member; Patrick McKenna, Esq., Planning Commissioner Solicitor; and Thomas Comitta, AICP, Township Land Planner, were absent. There were three (3) guests.

2. **Public Comment**:
   - **Stuart Rosenberg, a resident of Green Lane**, asked the Planning Commission to post the website when the monthly meeting has been cancelled. Mrs. Ricardo stated the Township posts the front door but would be happy to send Mr. Rosenberg and e-mail when meetings are cancelled. Mr. Rosenberg thanked Mrs. Ricardo. There was no further discussion.

3. **Approve Agenda:** Mr. Raspa made a motion to approve the agenda as presented. Mrs. Tickner seconded the motion. There was no further discussion and the motion passed unanimously.

4. **Meeting Minutes:** Mrs. Tickner made a motion to approve the minutes from the June 25, 2018, Regular Meeting incorporating the corrections made to the announcement dates. Mr. Raspa seconded the motion. There was no further discussion and the motion passed unanimously.

5. **Manager's Report:** Mrs. Ricardo presented the Manager's Report as follows:
   - **SUNOCO Pipeline Mariner East I and II Pipelines**: Remediation work on Valley Road: Sunoco began remediation of contaminated soils related to the April 2015 release on Valley Road. First reports indicate that they were pleased to find hydrocarbon at levels much lower than expected within the soils. Work consists of removing contaminated soils and replacing with clean fill and also extracting contaminated water from the aquifer, filtering it through carbon filters, and discharging directly to the stream. The Township and DEP have issued permits for these activities, which are being closely monitored for compliance. Mariner East II Construction: The Township has received notice that a portion of the 12-inch Point Breeze to Montello pipeline will be used as an interim solution to transport natural gas liquids as a result of numerous delays with the Mariner East II project. In 2016 this line underwent a substantial upgrade and inline and hydrostatic testing, which now exceeds PUC and PHMSA requirements for transmission. Mariner East II construction is also still ongoing. Only concerns of property owners on or near the pipeline construction project may be directed to the SUNOCO 24-hour HOTLINE. All nonemergency calls, complaints, questions, claims to **855-430-4491**. This is a Sunoco HOTLINE to operate and be answered 24 hours a day, 7 days a week, and all calls are recorded and answered. **In emergency, call 911.** Edgmont is maintaining up-to-date information for resident's information on the website at**www.edgmont.org.**
   - **Traffic Signal at Middletown and Valley Roads:** Township officials are happy to announce that the intersection is now fully signalized and shall be up and running on red, green, and amber within the next few weeks.
   - **Edgmont Township Summer Newsletter:** The Summer 2018 Edgmont Township

Newsletter was mailed in mid-July. If you have not received one, please contact the Township Office or stop by during regular business hours to pick one up.

- **Runnymeade Phase VII Development Update:** Township representatives recently met with GMH Developers regarding proposed development of the Phase VII Runnymeade Farms site. It is anticipated that GMH will re-submit revised plans in early Fall with a revised design concept for the site. This matter will come back before the Planning Commission, scheduled at a time and venue to accommodate the significant public interest, which will be advertised via the Township website and sent directly to those who have asked to be notified. If you would like to be added to the distribution list, please email cricardo@edgmont.org.

- **Edgmont Township Fire Company 75th Anniversary Celebration:** The Edgmont Township Fire Company is celebrating its 75th year and they are excited to share this accomplishment of service with the community. Mark your calendars for September 29th for a community celebration which will be held at the firehouse. All public is invited to attend. More information to come.

Mr. Miller thanked Mrs. Ricardo for the report. There was no further discussion.

6. New Business:

a.Planning Commission Organization:

i. Chairman: Mr. Raspa made a motion to nominate Chip Miller for the Planning Commission Chairman. Mrs. Tickner seconded the motion. There was no further discussion and the motion passed unanimously.

ii. Vice-Chairman: Mr. Miller made a motion to nominate Joseph Raspa for the Planning Commission Vice-Chairman. Mrs. Tickner seconded the motion. There was no further discussion and the motion passed unanimously.

b.Proposed DELCORA Act 537 Amendment:

Present: Michael Ciocco, P.E., DELCORA's Engineer
Charlie Hurst, Vice President of DELCORA

Mrs. Ricardo stated Edgmont Township recently received Sewage Facility Planning documents from Catania Engineering on behalf of DELCORA, which show portions of the DELCORA Central Delaware Pump Station diverting flows from CDCA to the Philadelphia Water Department Southwest Pollution Control Plant. Mrs. Ricardo continued that the pump station has significant wet weather events with high flows carrying financial penalties for treatment. Mrs. Ricardo stated DELCORA and Catania Engineering are here to give a presentation of the report.

Mr. Ciocco stated Catania Engineering prepared the Act 537 Plan for DELCORA and he and Mr. Hurst are here to receive public comments on the report. Mr. Ciocco presented a slide show report that showed the service area in which eight (8) municipalities collect to the Central Delaware Pump Station (CDPS). Mr. Ciocco stated the flows from these eight (8) municipalities all end up at DELCORA's Central Pump Station. Mr. Ciocco continued to say that the central station is experiencing high wet weather flows. Mr. Ciocco stated they have come up with a solution to relieve the wet weather flows by diverting the overflow to the Philadelphia Water Department Southwest Pollution Control Plant. Mr. Raspa asked where the overflow is currently going. Mr. Ciocco stated that the CDPS is rated for 40 million gallons per day of flow

and during times of dry weather flows are approximately ten million gallons per day. Mr. Ciocco stated that anything over 20 million gallons per day go to Philadelphia. Mr. Conrad asked about the frequency of flows going to Philadelphia. Mr. Ciocco stated typically this occurs when an inch of rain in a day or more is incurred. Mr. Hurst stated this happens about twenty (20) times a year. Mr. Ciocco stated that they have met with DEP and there have unfortunately been numerous violations for overflows into the creek over the last several years. Mr. Miller stated that Edgmont has a brand-new sewer system and asked if the trouble spots have been identified. Mr. Ciocco stated they are hard to pinpoint. Mr. Raspa stated there are other municipalities that have problems with their pipes and because Edgmont is a new system and not significantly contributing to the issue, they shouldn't have to pay to fix it.

Mr. Miller asked if the Act 537 Plan Amendment is implemented, would the flows to Philadelphia decrease. Mr. Ciocco stated it would be a cost savings to all users of approximately $11.8 million which represents a 4% reduction of all flows to Philadelphia. Mr. Kusturiss asked within what period the savings would take place. Mr. Ciocco stated there is a Delaware County Act 537 Sewage Facilities Plan Update that outlines the savings over time. Mr. Raspa asked what the benefit is to put in the new diversion pipe. Mr. Ciocco stated it will reduce overflow and satisfy DEP for the current overages. Mr. Raspa stated the way the plan is structured now, Edgmont users would be expected to pay a proportionate share of expenses to construct the diversion pipe and it doesn't address the issue of wet weather flow into the system. Mr. Raspa asked how many municipalites will be paying for the $8.6 million force main. Mr. Hurst stated all twelve (12) municipalities will be paying for the force main on a proportionate basis. Mr. Raspa stated to ignore the infiltration and inflow (I & I) issue by creating more flow storage then DELCORA is essentially utilizing a temporary fix. Mr. Raspa stated that the issue of infiltration and inflow needs to be addressed to create a more long-term resolution. Mr. Ciocco stated that the alternative to implement the I& I corrections are much costlier than this alternative, but they do recommend the preparation of a systemwide I&I reduction plan. Mr. Conrad asked if there are any costs associated to Western Regional. Mr. Hurst stated they have the capacity at Western Regional. Mr. Raspa stated implementing a plan that offers a long-term solution will satisfy DEP more than just fixing the issue temporarily. Mr. Hurst stated that they are concerned that DEP might put a moratorium on them if they solely address I&I without the diversion pipe because they need an immediate solution to control the overages.

Mr. Miller stated that the I&I problems need to be fixed in order to address the overall issue. Mr. Hurst stated the most recent data isn't clear enough to pinpoint the problem areas and it would take years to prepare something to reduce the flows. Mrs. Ricardo stated that the Feasibility Study notes that in 1996 a comprehensive I&I reduction plan was prepared which indicates this isn't a new issue and has been ongoing without resolution for many years. Mr. Raspa asked what the reduction would be if they implemented the projected $34 million I&I reduction alternative. Mr. Ciocco stated there would be a ten percent (10%) reduction which is projected to relieve DELCORA's system of reliance on Philadelphia. Mr. Conrad stated they should focus on some of the issues that would be easier to address such as: repairing terracotta pipes, brick manholes, etc. and start there to address the I& I problems. Mr. Ciocco stated they have started to do that and every year the central pump station lines are videoed and cleared.

Stuart Rosenberg, a resident of Green Lane, stated for DELCORA not to be able to track where the problems are coming from is unacceptable. Mr. Rosenberg stated they should be able to see where the flows are coming. Mr. Rosenberg continued that there are sensors and other technology out today that they can use to track the problem. Mr. Rosenberg stated the issue needs a long-term solution, not a band-aid.

Mr. Raspa stated I & I resale requirements need to be implemented in other municipalities to start to address the issue. Mr. Kusturiss asked how diverting the flows satisfies DEP if it is not fixing the underlying problem. Mr. Ciocco stated because this gives us the ability to divert the flows and this will address the current overflows. Mr. Kusturiss stated his concern is that they do not know where the issues are as they have stated several times this evening. Mr. Kusturiss continued that he had to get an internal inspection of his house when he was put on the public sewer system and would have to hire a contractor to inspect his private sewer lateral when he sells his home. Mr. Hurst stated that most municipalities do not have that same re-sale requirement and it can be challenging to get them to implement it. Mrs. Ricardo stated they should be working with the municipalities to adopt one given the overages discussed this evening.

Mr. Miller stated the Planning Commission will not be giving a recommendation for the Act 537 Plan Amendment this evening. Mr. Miller stated there is not enough information and he recommends looking at the I& I issue more and coming back when they have more definitive answers and information to share. Mr. Hurst stated they know what the problem is, but they cannot pinpoint exactly where it is coming from. Mr. Hurst continued that they understand from the letter they received from the Board of Supervisors that they would not be getting a recommendation. Mr. Conrad suggested that they outline the specific plans they plan to take to address the I&I issue at the next meeting. Mr. Miller thanked Mr. Ciocco and Mr. Hurst for their presentation.

There was no further discussion. No action was taken.

7. **Old Business**: There were no 'Old Business' items to discuss.

8. **Miscellaneous Discussion:**
   a. **Delaware County Transportation Improvements Inventory (TII)**: The Planning Commission generally discussed The Delaware County Planning Department's project to develop a Transportation Improvements Inventory (TII) to identify unfunded transportation projects throughout Edgmont. The Planning Commission identified the following signal upgrades as a high priority: Crum Creek Road and West Chester Pike, Middletown Road and Gradyville Road, and Rock Ridge Road and West Chester Pike; the following intersection improvements as a high priority: Delchester Road and Gradyville Road, Providence Road (across from Canter Drive) Shoulder/Intersection Improvement, and Providence Road and West Chester Pike; the following shoulder improvements as high priority: Delchester Road, Gradyville Road, Middletown Road, and Stackhouse Mill Road (at the intersection with Delchester Road). Mr. Miller directed Mrs. Ricardo to give the Planning Commission's feedback to the County as discussed this evening. There was no further discussion.

9. **Announcements:**
   a. The **Board of Supervisors** will meet on **Tuesday, September 11, 2018, at 7:30 p.m.** with a work session beginning at **6:30 p.m.**
   b. The **Planning Commission** will meet **Monday, September 24, 2018, at 7:00 p.m.**, with a work session at **6:30 p.m.**
   c. The **Zoning Hearing Board** will not meet in August as the application for 7 Knights Way has been tabled pending submission of the associated Conditional Use Application.

10. **Adjournment**: At 8:25 p.m., Mr. Raspa made a motion to adjourn the meeting. Mr. Miller seconded the motion. There was no further discussion and the motion passed unanimously.

Respectfully submitted,

Catherine Ricardo, Planning Commission Secretary
Township Manager

Chip Miller, Chairman
Planning Commission

TOWNSHIP OF MARPLE
227 S. SPROUL ROAD
BROOMALL, PENNSYNVANIA

AGENDA

Planning Commission
Marple Township
July 26, 2018

1. Pledge of Allegiance
2. Roll Call
3. Approval of Minutes from March 22, 2018
4. **Land Development – 820 Springfield Road - VCA Animal Hospital** – proposes to partially redevelop the existing site to include replacement of the kennel facility, parking lot modifications and site landscaping. The existing site is non-conforming and is in the B-1 Zoning District.
5. **Review Act 537 Plan for DELCORA**

Planning Commission Committee
July 26th, 2018
7:00 p.m.

1. **PLEDGE OF ALLEGIANCE**
Chairperson, Pat Henigan, led the room in the Pledge of Allegiance.

2. **ROLL CALL**
Present was, Chairperson, Pat Henigan, Vice Chairperson, Nick Siano and Board Members Tom Tobin, Tim Moore, Patricia Fanelli and Jack Savage. Also present was Township Engineer Joe Mastronardo, and Recording Secretary Lauren Crudele. Absent but excused was Director of Code Enforcement, Joe Romano and Mike Noonan.

3. **APPROVEAL OF MINUTES – MARCH 22ND, 2018**
A motion was made by Nick Siano and 2nd by Jack Savage to approve the March 22nd, 2018 Planning Commission Minutes. Board Member, Patricia Fanelli obstained.

4. **VCA ANIMAL HOSPITAL – 820 SPRINGFIELD ROAD**
VCA Animal hospital was before the board for a Sketch Plan approval. Present for the case was Senior Engineer, Linda Layer from Momenee, Inc. The applicant is proposing to partially redevelop the existing site including replacement of the kennel facility, parking lot modifications, and site landscaping. The existing site is zoned B-1 Business. The hospital is 1.22 acres of land. VCA would like to demolish and redo the kennel portion at the rear of the site, keeping the original carriage site (875sq.st). The site currently has 100 kennels; the new facility will have 64 larger, more pleasant housing for animals. They will also be adding an outdoor patio run for the dogs. The applicant will have to attend the Zoning Hearing Board for lot size and building and parking setbacks and will comply with all the comments in the Engineer's letter.

BOARD COMMENTS
- Were there any issues in the Engineer letter that weren't addressed? No
- The brown fence in the back does the animal hospital own that? The bowling alley actually does but they a good relationship with the animal hospital.
- The cats are boarded in the main house? Yes
- The kennel is just for dogs? Yes
- There isn't much green area to walk the dogs? They actually walk them all the way around; it's a pretty long walk. With the new open space they will be able to bring a couple dogs out at a time.
- What are your plans for the animals when the building is under construction? The carriage house currently has kennels they will house them in there until they are done.

ENGINEERS COMMENTS
No comment at this time.

CODE ENFORCEMENT COMMENTS
No comment at this time.

PUBLIC COMMENTS
No public comment.

5. **MOTION**
A motion was made by Patricia Fanelli and 2nd by Tim Tobin to approve VCA Animal hospital plans going forward provided the applicant conforms to July 16th, 2018 engineering review letter.

6. **REVIEW ACT 537 PLAN FOR DELCORA**
Act 537 Plan is being prepared to review wet weather capacity issues at the DELCORA central pump station. It is a municipal plan for 8 townships within the DELCORA service area. Present to answer questions was Dan Archdeacon from Catania Engineers.

See the attached Act 537 Special Study Plan.

BOARD COMMENTS
- What is the relationship of Philadelphia to the townships involved? During regular flow everything from the Crum Creek service area gets pumped to DELCORA's pump station, when the flow goes above the regular amount it gets pumped to Philly.
- That's how it's engineered right now? Yes, right now
- If it's an extreme flow Philadelphia is going to charge for the extra amount? That is correct
- This fix will eliminate Philadelphia? It will take everything from the Crum Creek service are and take it to DELCORA.
- Is there a freeze on tie-ins in certain areas? Yes
- Will this plan help free up more tie-ins? No, I don't think you will be able to add new ones.
- Is the Don Guanella property in this? No, they are served by R.H.M
- Part of Marple is on R.H.M? All of Marple is on DELCORA some get there via RHM some get there CDCA
- What action is expected to tonight? Just recommending acceptance of the study to move forward
- The $14.25 per household is paid in the sewer tax? Yes

7. **MOTION**
A motion was made by Tim Moore and 2nd by Patricia Fanelli to recommend DELCORA continue with the study; the board understands the plan before them.

8. **REVIEW ORDINANCE AMENDING CHAPTER 300, SECTION 300-15**
Proposed Ordinance amending Chapter 300, Section 300-15 of the Township Code to define classification of animals and to further prohibit the use of animals in special events. The Delaware County Planning Commission has recommended approval.

BOARD COMMENTS
- This expands what's already in the Zoning code? Yes it just adds another layer of protection for animals in performance
- What is different? They added the definition for companion, domestic, live stock and wild or exotic animal.
- Does this include petting zoos? I don't think it does, but the commissioners have the ability to review that
- Is this an exclusion of circus? Yes I think that is ouy

9. **MOTION**
A motion was made by Nick Siano and 2nd by Jack Savage to approve prohibiting the use of animals during special events.

10. **ADJOURNMENT**

A motion was made by Tom Tobin and 2nd by Nick Sinao to adjourn.

Meeting was adjourned 7:40pm

Respectfully submitted by Lauren Crudele

Lauren Crudele

MEETING MINUTES
August 6, 2018
PLANNING COMMISSION MEETING
NETHER PROVIDENCE TOWNSHIP

Agenda Item 1

Conceptual Sketch Plan

Proposed 5 Lot Subdivision

Wallingford Realty Partners c/o D'Anjolell

Present for Planning Commission:

Robert Bode – Chairman

Dan Green- Vice Chairman

John Dickerson

Bob Linn

Maureen Feyas- Zoning Officer

Township Engineer:

Not in attendance (Sketch plan)

Applicant:

Mr. D'Anjolell, Wallingford Realty Partners, LP

Represented by: Alex Rodriguez, Catania Engineering Associates, Inc.

Other Attendance:

Owner (not resident) of house on parcel B, Joseph & Diane Moderski

Action: None

PLANNING COMMISSION DIALOGUE of August 6, 2018

Mr. D'Anjolellappered and gave a brief history of his acquisition of the funeral Home. He cited improvements made and made a point that the director was a resident on the second floor (a requirement of certification/licensure) and that no crematory was permitted on the site.

Alex Rodriguez appeared presenting the plan to combine two parcels and subdivide them into five (5) lots. Access to the new lots would be provided by upgrading the existing 20' easement to a 50' easement/right of way with a 20' cartway. He noted that lot 1 would have a 37% impervious cover and would require a variance. The plan adds additional parking on lot 1 to offset spaces lost by the wider access way. There was a suggestion by the Planning Commission that pervious pavers be considered for the new paving. Mr. Rodriguez felt that managing the storm water would be a more reliably permanent option.

The Planning Commission responded that lots 3 and 4 require 110' of frontage on a right of way to be considered conforming lots. Suggestions were made how to achieve this. Also when using an accessway to reach lots behind the front tier, per section 289-7(c)(3), a 50' right of way must be provided all the way to Providence Road; that an access easement across lot 1 would not be sufficient. This raised the issue of the closeness of the existing building to the new right of way, 0.75'. Mr. Rodriguez said he would look at the possibility of moving the accessway away from the Funeral Home. The question was also raised whether a right of way can cross a lot without dividing it into two lots, and if so does a building need to be a set distance from a right of way within a lot as it does from a right of way at the edge of a lot? One commission member noted that they were aware of r.o.w. crossing properties in rural areas but unsure about suburban areas. Mr. Rodriguez was asked if the easements for the force main were netted out of the lot areas. He responded that he would have to check. He also noted that the new lots will have individual grinder pumps that will move sewage out to the main in Providence Road. They will apply for PennDOT HOP for the new accessway

There was discussion around parking.

- Whether moving the accessway away from the building woud impact spaces in the lot but potentially open up the possibility of spaces closer to the building.
- Whether there was a prescribed amount of parking required by the code
- What the occupancy of the building was during a funeral (50 – 80 average, 120 high, beyond capacity for a prominent individual per Mr. D'Anjolell)

Next step for the Applicant will be to go before the Zoning Hearing Board to apply for relief from impervious cover limitation on lot 1.

END OF August 6, 2018 PC MINUTES Item 1

Agenda Item 2

Sewage Facilities Planning -Draft Act 537 Special Study Plan

Central Delaware Pump Station, Sellers Avenue, Ridley Township Delaware County, PA

Present for Planning Commission:

Robert Bode – Chairman

Dan Green- Vice Chairman

John Dickerson

Bob Linn

Maureen Feyas- Zoning Officer

Township Engineer:

Not in attendance

Delaware County Planning Review:

None

Applicant:

DELCORA

Represented by: Charles Catania, Jr., Catania Engineering Associates, Inc.

Other Attendance:

Christine Reuther, Nether Providence appointed member on the Sewer Authority

Action:

Motion Approved:

The Planning Commission recommends that the Board of Commissioners approve the Act 537

Plan Application, following alternative no. 2 of the Catania Engineering Feasibility Study for Central Delaware Pump Station, of June 28, 2018. Alternate no. 2 is to divert 24 MGD of the flow from the CDCA Crum Creek Pump Station, with the construction of a new force main to pump flow to the DELCORA Central Diversion Force Main in Route 291.

Furthermore, it is recommended that proposed route 2, running past the Baldwin Towers be the pursuit of first choice, with option 1 or 1A being fall back positions, should the cost of obtaining easements for option 2 be cost prohibitive relative to budget projections.

PLANNING COMMISSION DIALOGUE of August 6, 2018

Background:

The Central Delaware County Authority (CDCA) Crum Creek pump Station flow usually goes to the Chester plant via the Central Delaware Pump Station (CDPS). Ten times, in the recent past, during rain events, flows have exceeded the 40 MGD capacity of the CDPS and had to be diverted to Philadelphia (a more costly option).

Mr. Catania reviewed the Feasibility Study for, and the Act 537 Special Study Plan of DELCORA Central Delaware Pump Station, of June 28, 2018 which the planning commission found thorough and clearly presented. The four options include:

1. Upgrade DELCORA Central Delaware Pump Station Estimated Cost: $11.4 Million
2. Divert flow from CDCA Crum Creek Pump Station Estimated cost: $7.733 Million (based on information gained, since the completion of the Feasibility Study, from Aqua encountering rock in the area when boring under the creek, they increased this estimate to $8.6 million.)
3. Reduce Inflow/Infiltration Estimated Cost: $34.2 million
4. Do Nothing Estimated cost: Indeterminate
   (more than 0)

Mr. Catania was asked, since the excessive flow is intermittent (around heavy rain events) and normal flow is well within capacity, is it possible to somehow "buffer" the heavy flow and then catch up? He stated that storage tanks could be used for that purpose and the cost would be marginally lower than the proposed option but because of the approach of State regulators, installing tanks is considered a sign that the system is not functioning and triggers a connection moratorium. This situation renders this strategy a non-starter. There can also be political issues with tank location.

Because of myriad variables and the complexity of the upstream system previous attempts to reduce I&I have yielded less than projected results.

Of the projected $4.5 billion Philadelphia long term plan, $15 million will come from Nether Providence over the next 25 years. Reducing CDCA flow to Philadelphia, currently 4%, will save $11 million over that period.

Discussion of the proposed routes included:

- 1 and 1A are through more densely populated areas causing greater disruption to residents.
- 1A has a concentration of underground utilities that could complicate the process.
- 2 is most direct, and mostly under private access roads and would seem to have the least population disruption, and lowest estimated cost. This was selected as the more desirable route provided easements could be obtained near the study estimates.
- 1 and 1A are viable options that should be kept as fall back positions. Having options may strengthen the negotiating position with regard to obtaining easements for option

2.

- Included in option 2 are improvements to the DELCORA Central Diversion Force Main in Route 291 to increase usable capacity, and modifications to the Crum Creek Pump Station.

END OF August 6, 2018 PC MINUTES Agenda item 2

John Dickerson

John Dickerson Design Group
610 .368 . 2075

Township of **Newtown*PLANNING***
COMMISSION
209 Bishop Hollow Road***BOARD***
Newtown Square, PA 19073
610-356-0200 ***Public Meeting: 7:00 PM***www.newtowntownship.org

July 26, 2018

Proposed Minutes

IN ATTENDANCE

BOARD MEMBERS:
Chairman Silva
Vice-Chairman Guy
Member Altieri
Member French
Member Frissora

STAFF/CONSULTANTS:
Engineer - Iacono
Manager - Nease
Director of Codes- Reczek

NOT IN ATTENDANCE:
Member Stephanou
Member Evans

1. CALL TO ORDER:

2. ROLL CALL:

3. MOMENT OF SILENCE AND PLEDGE OF ALLEGIANCE:

4. AGENDA:

4.1 Consider approving the agenda.

5. MINUTES:

5.1 Consider approving the minutes from June 28, 2018.

Motion to approve was made by Mr. Silva, Approved by a vote of 5 to 0.

5.2 Minutes from February 2018 pending.

6. PLAN REVIEW:

6.1 **p2018-08** MNHS Athletic Fields Sketch Plan

Mr. Altieri recused himself from this discussion since he is a sitting school board member. Mr. Gallagher, Director of Operations for Marple Newtown School District, represented the school administration for the presentation of the proposed sketch plan for the athletic fields at the high school. Mr. Danley, presented the engineered plans for the School District on behalf of Pennoni, the engineer for the school district. Mr. Danley reviewed the project and indicated that the school district has obtained an NPDES permit. There will be a regrading of the fields to flatten them out. Improvements include new turf fields for two of the fields, new dugouts, batting cages and field house along with new ADA accessible paths. Stormwater is located under the fields. Zoning issues include the dugouts being treated as accessory structures, and buffer strips along property lines. The school district will be requesting waivers for infiltration, water quality, and minimum pipe sizes. Conditional use approval will be required to steep slope disturbance for the retaining wall. Lighting will also need to be approved.

6.2 **P2018-07**: The Applicant, BPG Real Estate Investors, Straw Party-2 L.P., 3843 West Chester Pike, Newtown Square, PA 19073, is seeking approval for the Final PRD plan for the Ellis Preserve Town Center for the development of a 5-story, 378,000SF office building, and a 3-level parking structure.

Final PRD plan, following the tentative plan. Nothing has changed regarding the footprint and layout for the office building footprint and parking garage. The engineering details have been fine-tuned and updated renderings for the office building. While the planning commission requested renderings for the parking garage, they have not been completed yet. The applicant proposed if in favor of moving forward that a condition be imposed on the final plan approval that the applicant come before the planning commission again to show them the renderings for the garage prior to building permit issuance. The building will be 60% glass and 40% metal panel.The applicant will also return to show the planning commission the final landscape plan. No major issues associated with the latest review letter dated 7/19/18 except for the usual waiver for the HDPE pipe. There is an additional waiver to allow 11 parking spaces in a row instead of 10. The design guidelines call for what would amount to 51 benches based upon the size of the proposed office building, the applicant is proposing 25 benches. The applicant is willing to do fee in lieu for benches elsewhere throughout the township.

Public Comment: None

Motion to recommend approval for Final PRD plan for the Ellis Preserve Town Center for the development of a 5 story, 378,000sf office building with a 3 level parking structure subject to the applicants indication they will comply with all aspect of the July 19th Stantec letter, additionally they have requested two waivers: one to allow the HDPE stormpipe to be in lieu of the concrete and one additional to allow eleven parking spaces in a row within the modified parking area to the east of the proposed office building was made by Mr. Silva, seconded by Mr. Guy Approved by a vote of 5 to 0.

7. ADDITIONAL BUSINESS:

7.1 Ellis Stacked Townhouses Rendering update- information pending

Ordinance allows for 65ft, the proposed buildings will be 62ft; however, what the renderings shown in the original approval for the multifamily, showed buildings that were 52ft. The buildings are actually below 52ft, but the height comes from an architectural feature- a false front (13.5ft), that serves to hide the mechanical equipment. They are 4 story buildings, 2 units stacked on top of each other where they tried to blend elements of very modern with more traditional; building that is on the campus. They are requesting now changes to the approved plans. Parking is in the rear with each unit having a 1-car garage. The builder, Rockwell Development Group, reviewed the layout of the stacked townhouses, indicating the lower levels are 1600sf house and the upper levels are a 3000sf house. The Planning Commission generally endorsed the architectural massing, materiality, and vocabulary depicted in the renderings presented by Rockwell, with and expectation that the completion of the design, specifically the rear and side building elevations, will be consistent with that same architectural vocabulary. No review from Stantec was available.

7.2 Draft Act 537 Special Study Plan of DELCORA Central Delaware Pump State - a plan to review wet weather capacity issues at DELCORA's Central Delaware Pump Station and alternatives to correct the same.

When changes are made to the 537 Plan in the CDCA sewer district to handle the flow that is generated by Newtown and goes to the CDCA, it still requires and action by us to change our 537 Plan. This requires planning commission review and recommendation. There are no physical changes happening within the Township regarding the handling of the sewer. Catania Engineering completed a Special Act 537 Plan to address wet weather issues and identify alternatives to correct the issues for the DELCORA pump station located by Boeing in Ridley Township. The planning commission reviewed the ACT 537 Special Study plan, the Feasibility Study, the associated maps, and presentation from Catania Engineering.

Public Comment:
Nate Glazier, 3538 Caley Rd - this is a no-brainer as the sewage needs to go somewhere.

Motion to recommend approval and adoption of the Draft Act 537 Special Study of option number two was made by Mr. Shimon, seconded by Mr. French Approved by a vote of 6 to 0.

8. PUBLIC COMMENT:

9. ADJOURNMENT:

TOWNSHIP OF RIDLEY

PLANNING COMMISSION
MINUTES

AUGUST 7, 2018

** ALL MEMBERS PRESENT**

MEMBERS:

Drew Baum
Louis DePietro Jr.
George Buckley
Kenneth Wochele
David A. Marofsky
James Tomaino
Joseph Calamita
James Cartafalsa
Tony Calise

A. OLD BUSINESS

B. NEW BUSINESS

1. Zoning Hearing Notice #18-13 – Felicia Ritter - 345 Sylvania Avenue, Folsom, PA – Front yard fencing.

Committee: _____
Comments: _____

Approved XXXX Rejected _____
Author George Buckley Seconded Kenneth Wochele

2. Zoning Hearing Notice #18-14 – Nancy Bair – 341 Lincoln Street, Folsom, PA – In-Law Quarters.

Committee: _____
Comments: Applicant had petition stating neighbors were not opposed.

Approved XXXX Rejected _____
Author Joseph Calamita Seconded James Cartafalsa

3. Zoning Hearing Notice #18-15 – Nassif Samarani – 1011 Kedron Avenue, Morton, PA – Use Variance.

Committee_____
Comments:_____

Approved XXXX Rejected_____
Author George Buckley Seconded Joseph Calamita

4. Township of Ridley – Sewage Facilities Planning- Draft Act 537 Special Study Plan.

Committee:_____
Comments:_____

Approved XXXX Rejected_____
Author George Buckley Seconded Tony Calise

SPRINGFIELD TOWNSHIP PLANNING COMMISSION

Meeting Minutes

Meeting Date: August 16, 2018

Meeting Time: 7:30 P.M. (E.D.T.)

Meeting Place: Township Municipal Building, 50 Powell Road, Springfield PA 19064

Members Present: Mr. Gorgone, Mr. Arrell, Mr. McGann, Mr. Gagliardi and Mr. Cortese.

Also Present: Eric Johnson, P.E., Pennoni Engineers, William J. Cervino, Zoning Officer James J. Byrne, Jr., Esq. and Joseph Mastronardo, PE

Approval of Minutes: A motion was made by Mr. McGann second by Mr. Arrell to approve the June 7th minutes.

Roll Call Vote on Motion:

Mr. Gorgone	■ AYE	□ NAY
Mr. Arrell	■ AYE	□ NAY
Mr. McGann	■ AYE	□ NAY
Mr. Gagliardi	■ AYE	□ NAY
Mr. Cortese	■ AYE	□ NAY

THE MOTION WAS APPROVED.

- The first order of business was the Delcora Act 537 Update-Crum Creek Pump Station Diversion. Mr. Charles Catania was present to represent Delcora and gave an overview of the plan update and indicated the following:

  - Central Delaware County Authority Pump Station
  - Capacity Issues-Overflows
  - Met with DEP and they told them the process they had to do
  - Feasibility Study to address overflows.
  - Looked at different alternatives to upgrade Central Delaware County Authority Pump Station. Diverting flow from Crum Creek Pump station west or south to Delcora's plant in Chester the cost for this was $8.6 million.

    - The least cost would be the Crum Creek Pump diversion at 8.6 million. This solves the problem in a definitive time period and puts an end to the problem.
    - It averages out to about $14.00 a user over the twenty five year debt service.

- The diversion will take 24 million gallons of flow away from the pump station.

Planning Commission Comment and concerns:

- Will the Diversion adequately take care of the problem immediately?

Motion: Mr. Arrell made a motion second by Mr. McGann to recommend to the Board of Commissioners approval of the Delcora Act 537 Plan Update and to make sure that the Act 537 Special Study Plan conforms to the applicable zoning, subdivision, other municipal ordinances and plans, and to the comprehensive program of pollution control and water quality management.

- The second order of business was the Conditional Use Application and the Preliminary/Final Plan for the Estates at Coventry Woods, LLP: Mr. Joseph Damico, Mr. Tom Committa, Mr. Chris Williams, Traffic Engineer and Mr. Joseph Platt's, Traffic Study, were all present to represent the applicant.

Mr. Joseph Damico gave an overview of the plans submitted and indicated the following:

- All abutting landowners have been notified.
- The TND-5 Active Adult Village Ordinance #1586 was adopted on July 10, 2018.
- Phase 1 A will need Zoning Relief from the following TND Amendments.
    - Parking Reductions up to 30% to cut down on Impervious Surface. If zoning relief is not granted then as a backup we have asked for a variance to permit that amount of parking.
    - 50 ft. Setbacks from the top of bank is a Zoning Ordinance requirement. It's not located in the flood plain area.
    - The area between Alberts Run which is in the middle of the two tracks of land will be dedicated to Springfield Township if the Township is willing to accept.
    - Alberts Run is not on the Flood Plain Map for Springfield Township. Will comply with the Engineers comments and add to the Flood Plain Map as per FEMA rules.

Mr. Tom Committa was present to represent the applicant. Mr. Committa gave an overview of the plans as submitted and indicated the following:

- The applicant will comply with all comments noted in the Township Engineers reports dated July 12, July 16, 2018 and the Delaware County

Planning Department report dated July 19, 2018.

- Revised the landscape plan.
- Extend sidewalks.
- Open space is increased from 40% to 46.3%
- Removed nine townhomes.
- Reduced impervious coverage.
- The Medical Office Building site will include the open space to the west as part of Phase 1A.
- In Phase 1A, there is one access proposed across from Weymouth Road and another one further down slope.
- Asking for approval recommendation by the Planning Commission.

Mr. Chris Williams with McMahon Associates gave an overview of the parking study performed and indicated the following:

- Table 1 summarizes the parking spaces allowed by Springfield Township Ordinance. Phase 1A proposes 125 spaces, which is 15 spaces in excess of what is required.
- Table 2 elevates same three land uses based on transportation and planning industry data, peek parking demand rates. The institute of Transportation Engineers would suggest 110 parking spaces.
- American Planning Associates is 20% lower. 88 parking spaces are needed. There is adequate parking for phase 1A.
- Looked at truck circulation with regards to fire trucks and delivery trucks and the figures show that both trucks can turn effectively on the site.

Mr. Joe Platt's gave an overview of the traffic study performed and indicated the following:

- Early July a traffic study was done.
- Will go back in September and do another study. Traffic counts are scheduled for the second week of September.
- The present study looks at site access and Weymouth Road across the street.
- Future studies will look at Rolling and Springfield Roads as far as signal timing.
- The study recommends a left turn lane into the site off of Route 1 as well as a right turn lane.
- Increasing the left turn lane onto Weymouth.
- Only traffic count that was done was done at the site access.

Planning Commission Comments and Concerns:

- Traffic concerns
- Seeking Zoning relief.

Eric Johnson's Comments and Concerns:

- Stated that they have to review the plans that were submitted on August 16, 2018 to confirm the amount of open space is sufficient and will send their comments.

Bill Cervino's comments and concerns:

- The conservation easement dedication and Letter of Map Amendment for Alberts Run regarding the first two phases of Coventry Woods is to be supplemented with the conditional use.

Public Comment :

- Pamela Ficorella, 112 Broadview Road, concerns will there be one access road into the proposed development.

Motion: Mr. Gagliardi made a motion second by Mr. McGann to recommend approval of the Conditional Use application for the Estates at Coventry Woods subject to the following conditions:

- Resolution of comments provided by the Township Engineer's report dated July 12, 2018.
- The density of the residential units and nonresidential gross floor area may be subject to change upon submission of final plan for each phase; however, the density is not to exceed what is provided on the Conditional use/Sketch Plan.
- A Final Plan for each phase of the project is to be submitted to the Township Board of Commissioners for review and approval.
- Development is not to encroach into required riparian buffers with the exception of minor road/ pedestrian crossings and underground utilities unless given relief by the Zoning Hearing Board.
- Interconnected open space areas and required open space amenities are to be reserved in the amount necessary to support development not less than on the open space plan dated 8-16-2018.

- The developer is responsible for acquiring the necessary sanitary sewer capacity from the appropriate downstream collection, conveyance and treatment authorities for the overall development.
- The Transportation Impact Study is to be supplemented with field measured traffic counts during the normal school year. Traffic improvements are to be provided to the satisfaction of the Township Engineer along the State Road corridor p to and including the Meetinghouse Road to Rolling Road intersections, as required to support the overall development. All required traffic improvements are to be constructed and completed prior to issuance of the first certificate of occupancy for the site.
- A Floodplain Study for the Alberts Run tributary to Darby Creek is to be completed and submitted to the Federal Emergency Management Agency (FEMA) to acquire a Letter of Map Amendment (LOMA) for the stream corridor through the development property to the confluence with Darby Creek.
- The Conservation Easement identified on the Coventry Woods Subdivision and referenced in the related Land Development Agreement (December 30, 2004) is to be completed and recorded upon approval of the Conditional Use Plan.

Roll Call Vote on Motion:

Mr. Gorgone	■ AYE	■ AYE
Mr. Arrell	■ AYE	■ AYE
Mr. McGann	■ AYE	■ AYE
Mr. Gagliardi	■ AYE	■ AYE
Mr. Cortese	■ AYE	■ AYE

THE MOTION WAS APPROVED.

Motion: Mr. McGann made a motion second by Mr. Gagliardi to recommend approval of the Preliminary/Final Plan for the Estates of Coventry Woods Phase 1A; waiver of §123.41.1, steep slopes; §123-10.A, preliminary plan; and §119-17.C riparian buffers, subject to the following conditions:

- Resolution of comments provided by the Township Engineer's report dated July 16, 2018.
- Compliance with any of the Board of Commissioner's conditions of Conditional Use approval for the property.
- The applicant acquiring approval of requested variances and Special Exception by the Zoning Hearing Board and compliance with any conditions imposed by the Board.
- The development is not to encroach the required riparian buffers with the exception necessary road/pedestrian crossings and underground utilities unless given relief by the Zoning Hearing Board.

- Compliance with the Delaware County Planning Commission comments dated July 19, 2018.
- Open space and required open space amenities are to be reserved to support Phase 1A.
- The developer is responsible for purchasing and/or reserving the necessary sanitary sewer capacity from the appropriate downstream collection, conveyance and treatment authorities; and, obtaining Sewage Facilities Planning Module approval from PA Department of Environmental Protection for Phase 1A.
- An easement is to be provided for the existing and proposed Township sanitary sewer main and the sanitary sewer facilities are to be constructed and protected from damage due to proposed structures within the easement.
- The developer is responsible for obtaining an NPDES Permit for construction activities and all other environmental permits from PA DEP necessary for Phase 1A construction.
- Providing a fee-in-lieu of recreational land and facilities or confirmation of the required land and facilities is provided.
- The applicant is responsible for obtaining a Highway Occupancy Permit and traffic signal permit from the Pennsylvania Department of Transportation for the proposed State Road intersection and any other required traffic improvement, subject to PennDOT approval.
- The approval is for Phase 1A only and all subsequent Phases of development are to be submitted to the Planning Commission and Board of Commissioners for Final Plan approval.

Roll Call Vote on Motion:

Mr. Gorgone	■ AYE	□ NAY
Mr. Arrell	■ AYE	□ NAY
Mr. McGann	■ AYE	□ NAY
Mr. Gagliardi	■ AYE	□ NAY
Mr. Cortese	■ AYE	□ NAY

THE MOTION WAS APPROVED.

- Mr. Gorgone entertained a motion to adjourn.

Motion: Mr. Arrell made a motion second by Mr. Cortese to adjourn the meeting.

Roll Call Vote on Motion:

Mr. Gorgone	■ AYE	□ NAY
Mr. Arrell	■ AYE	□ NAY
Mr. McGann	■ AYE	□ NAY
Mr. Gagliardi	■ AYE	□ NAY
Mr. Cortese	■ AYE	□ NAY

THE MOTION WAS APPROVED.

Meeting

Planning Commission Meeting Minutes
July 18, 2018

Present: Denise Disney, Elizabeth Jenkins, Chris DeBruyn (Chair), Steve Minton, Nancy Templeton
Not Present: Rex Brien, Don Jones, James LeVine, Laura Poltronieri, David Virgil

Act 537 Presentation – DELCORA's Feasibility Study for the Central Delaware Pump Station

Summary: Motion was made to approve the proposal with the recommended alternative (Option #2) so long as steps were also taken to address inflow and infiltration (e.g. do updated studies, provide recommendations on best practices to municipalities).

- Representatives from the Delaware County Regional Water Quality Control Authority (DELCORA) were present to discuss the approval of alternatives to address capacity issues at the Central Delaware Sewage Pump Station
- Central Delaware Pump Station has had a series of overflow events during peak wet weather oAct 537 – Each town must plan how to treat and collection their sewage. Plan must be approved by PaDEP. Once you have overflows, fines increase for every overflow. We are one of 12 towns whose sewage flows through this location.
- Options to address overflow:
    - 1: Upgrade DELCORA Central Delaware pumping station ▪Install additional and larger pumps.
        - Est. Cost: $11.4M o2: Divert flow from Central Delaware Pumping Station to the Crum Creek Pump Station.
        - Would require the construction of a new force main and adding capacity to the Crum Creek Pumping station.
        - More sewage would be pumped to the Western Regional Treatment Plant (Chester) vs. Philadelphia Southwest Treatment Plant.
        - Est. Cost: $8.6M o3: Fix inflow and infiltration issues
        - Reduce stormwater inflow and infiltration into the sanitary sewage lines.
        - Est. Cost: $34.2M o4: Do nothing
        - Est. Cost: Indeterminate □Option 2:
    - Preferred option of DELCORA consultants
    - Already planning on upgrading capacity of Crum Creek Pumping station; can piggyback on that project
    - Philadelphia SW Plant is going to have increasing costs for DELCORA based on their PaDEP requirements over time (Philly is being required to reduce I&I).
      Option 2 would send more to the Chester treatment plant and so reduce volume sent to Philly.

- Inflow and Infiltration oIsn't likely to be a "smoking gun" institution. Probably small-scale residential problems (e.g. sewer curb traps, sump pumps connected to sewer lines) on a massive scale
    - Based on other studies: $34M would be the likely cost to study and achieve a roughly 10% reduction. Hard to predict the actual amount that will be able to be changed and when.
    - Storm events over 2 inches seems to be the point where the overflows start.
    - No towns in this study have combined sewer systems.
- Option 2's New Forced Main Pipe has 3 Proposed Routes:
    - Routes 1, 1A, 2 - all located in Eddystone o1A: Would include more residential construction areas
    - 1: Lots of utility buildings, don't know what they're going to hit when they start digging
    - Preferred Route: #2
        - Less cost (if everything goes well when acquiring right of way), more commercial properties and fewer residential
- Planning Commission Recommendation oApprove but ask that DELCORA put together inflow and infiltration (I&I) plan and take action toward reducing I&I as well.
    - Focus on I&I is important. Need to address the long-term problem.
        - I&I issue in residential homes mostly addressed at point of sale. Is there something that could be done for homeowners in the meantime? Information advertised by town & EACs etc.?
        - Can also reduce some capacity in homes (low flow showerheads, etc) but that is planned use (dry weather flow rates) and overflow problems are due to rainwater events (stormwater).
- Motion: Motion was made to approve the proposal with the recommended alternative (Option #2) so long as steps were also taken to address inflow and infiltration (e.g. do updated studies, provide recommendations on best practices to municipalities).
    - All in favor

Review of Draft Family/Caregiver Suite Ordinance for Swarthmore Borough

- Some members thought that we should just define kitchen and not the additional requirements around who can live in the suite (i.e. a family member or caregiver for an elderly individual or a person with a disability) because it would be too hard to enforce. Cited the Aging in Place report's recommendation around having the ability to rent out a space as an extra income stream. oBasically, enhance the lodger/border requirement (currently, you can have up to 2 unrelated persons) by allowing homeowners to put in an efficiency kitchen.
    - Planning Commission had moved away from accessory dwelling units (i.e. separate structures) because of all of the restrictions that we felt we'd need to include.
- A majority of members wanted to keep the spirit of the requirement (i.e. a family or caregiver suite) clear.
    - Would be a Special Exception.

        - Current homeowner would be asked to annually register who is occupying the space.
        - Provides some leverage for neighbors to address their concerns to the Borough (if necessary).
        - If sold, new homeowners would still need to meet requirements or take out the efficiency kitchen. Clear language would hopefully help keep real estate agents and prospective home buyers on the same page.
- Jane Billings, Borough Manager: "Mother-In-Law" suites are what I have been asked the most questions about by residents. This draft would meet that need.
- Carol Meneke, Aging in Place representative: This is good first step.
- Is it ready to go to Borough Council's Planning and Zoning Committee? Jane and Betsy will bring two drafts (Chris's and Jane's) with edits indicated below for review and comment.
- Edits to document:
    - Edited "Preamble" to reflect "Providing alternative living arrangements...for an age friendly community."
    - Take out 500 sq. ft, just have percentage. oChange the code reference to special exception (incorrect in current doc) oEdit efficiency kitchen definition: Change to something like "can't have built in appliances" vs. limited to microwave oven, etc.
        - Goal: Can't have an oven or a stovetop with more than 2 burners
- Motion: Send drafts of ordinance to Planning and Zoning for review and comment?
    - All in favor.
- Motion to adjourn the meeting.

Upper Providence Township

Planning Commission

Regular Meeting

September 24, 2018

The Upper Providence Township Planning Commission held its regular monthly business meeting on Monday, September 24, 2018 in the Township Council room. The meeting was called to order at 7:00 PM. The meeting was opened with the Pledge of Allegiance. PC members present were Michael Crotty, Joseph Maylish, Dr. David Thomas, Brianna Schehr, Jackie Larkin, Brian Carr and James Zaccaria. Also present were: Elizabeth Naughton-Beck, Esq., Township Solicitor; James P. Kelly, P.E., Township Engineer; Gregory Lebold,Township Manager and Kim McCloskey, Administrative Assistant

Approval of Minutes

Mr. Crotty made a motion seconded by Ms. Schehr to approve the minutes of June 25, 2018.

Mr. Carr – Yes	Ms. Schehr– Yes
Ms. Larkin – Yes	Mr. Zaccaria - Abstain
Mr. Maylish – Yes	Mr. Crotty - Yes
Dr. Thomas – Yes	

Motion passed 7-0

Public Comments and Questions

Liz Linton of 14 Spring Street inquired about the status of the proposed hotel on State Road. She was advised that no action has been taken and the Township has not received anything new regarding the project.

Communications

None

Special Reports by Officers or Committees
None

Old Business

Comprehensive Plan

New Business
923-923 N. Orange Street Preliminary Subdivision/Land Development

Mr. Lee Stivale gave a brief background on the proposed project. Plans were previously submitted two years ago, initially as five dwellings and then revised to four dwellings during that review process. Planning did give a recommendation on the last submitted plans for four homes to be presented to Council for approval subject to zoning compliance. Attorney Stivale noted that the Zoning Hearing Board did not grant the applicant's request, and, due to riparian buffer and net out issues Applicant is back with a 3 dwelling land development. The proposed plan has a total impervious surface of approximately 12,000 to 13,000 sq. ft. They must still go to the ZHB to obtain certain required zoning relief. Two forms of relief will be required. The total area is 2.65 acres of which 50 % is riparian buffer.

According to the applicant, the project includes three lots situated in a manner designed to minimize impact on the steep slopes, very steep slopes and prohibited steep slopes. The homes will be craftsman style approximately 3500 sq. ft. with a design consistent with architecture in this area.

Michael Ciocco from Catania Engineering commented on the review from JP Kelly dated September 2, 2018. They will comply with and address the items in the review letter.

JP Addressed an issue with lot 1 the driveway it is 20' which will fit 1 car – Catania will look into at pushing the garage back or shift it to accommodate additional parking – this can be satisfied.

There was a discussion on how the mail will be delivered. The mailboxes will be at the bottom of the common drive with room for people to stop to get the mail. They can

also widen the entrance. The school bus stop will mirror exactly what is across the street where there are 5 houses on a private drive. They can install la bench for the kids to sit for the bus if it is recommended. Plans for lighting were discussed. They don't want lighting to disturb the current neighboring residents, but will install lamp post at each driveway on timers so that there is adequate lighting for the shared driveway. They will establish an HOA or other agreement between the homeowners, which will be responsible for all common improvements (including stormwater improvements).

Ms. Beck questioned the status of the 4 lot plan that is at the County for review. Attorney Stivale stated that this 3 lot plan will replace the 4 lot plan (which will be nullity if this plan is approved).

Mr. Crotty made a Motion, seconded by Mr. Carr to recommend that Council approve the Preliminary 3 lot Subdivision/Land Development application for 923-925 N. Orange Street prepared by Catania Engineering Associates, Inc. dated July 25, 2018, subject to:

1. Satisfaction of all open comments in the Township Engineer's review letter dated September 21, 2018, including but not limited to those related to:
    a. The planning, design and operation of the stormwater management facilities;
    b. Ensuring that clear sight triangles are provided;
    c. Applicant obtaining all required zoning relief from the ZHB;
    d. Applicant establishing a shared driveway agreement for maintenance of the same between the lot owners, as well as all appropriate agreements for the long-term maintenance of the storm water management facilities and other public improvements;
2. Installation of light posts at the ends of each of the proposed driveways in order to provide some minimal amount of lighting for the shared driveway;
3. Clean up/correction to the plan notes on Sheet 3 of the plans (referencing 5 lots and a private road – instead of 3 lots and a shared driveway); and
4. Review/revise the driveway length on lot 1.

Mr. Carr – Yes
Ms. Larkin – Yes
Mr. Maylish – Yes
Dr. Thomas – Yes
Ms. Schehr– Yes
Mr. Zaccaria - Abstain
Mr. Crotty - Yes

Motion passed 7-0

DELCORA – Sewage Facilities Planning – ACT 537

Mr. Crotty explained that DELCORA provides sewage treatment and disposal for the Township as well as 12 other municipalities in the region. The pump station in Ridley Township which services Upper Providence where all of our sewage goes – whenever it rains it gets overloaded (under its permitted capacity), which could potentially cause the water to push back into basements. Infiltration and inflow (water seeping into the pipes when there are heavy rains) which could be caused by a combination of people that have their sump pumps hooked up illegally to the sewer lines, cracks in the pipes, or a host of other issues. DELCORA needs to address it. Whenever they go above and have these overload, they get fined by the DEP. They have come up with four options.

1. Increase their Central Pump Station; Upgrade from 40 million gallons a day to 50 million gallons a day at a cost of $11.4 Million.
2. Increase the DELCORA Pump Station in Ridley Township; Upgrade from 16 million gallons per day to 24 and would reroute those flows away from the central pump station at a cost of $7.4 million.
3. Undertake a project to reduce the infiltration inflow $34.2 Million
4. Do nothing, which will cost nothing until they start getting fined by the DEP and hit with lawsuits.

DELCORA's recommendation in the 537 Plan is #2 to upgrade the Ridley Township Station.

Mr. Ciocco from Catania Engineering stated that DELCORA is putting together a steering committee to address the I&I issues. They have started test metering programs in some areas to take a look to see if they can target some of the I&I issues in some of the neighborhoods. I&I reduction is not a quick fix, it happens over years and can be costly. The Central Pump Station in Ridley Township is on the DEP's radar because they have had a number of overflow events.

The Crum Creek Pump Station now pumps to the central Delaware pump station – we will now take 24 million gallons a day instead of just 20 million and take it out of Philadelphia and send it to DELCORA. Philadelphia has many charges so the more flow they can take out of Philadelphia the better. It will be a cost savings not having

to pay the City of Philadelphia. This proposal will increase the flow to DELCORA as it will reinforce Crum creek and avoid flow charges into Philadelphia. They want to take as much as they can out of Philadelphia.

Mr. Kelly added that in option #1, to upgrade the DELCORA Central Pump Station for 11.4 million, the end user would end up paying for that, the municipalities, and it will essentially send more flow to Philadelphia which is what they want to avoid. The CDCA consists of 12 member municipalities – 8 of which flow into the Crum Creek Station. DELCORA would do the project and then bill the CDCA for the total project cost and that would be split up based on the current agreement. Upper Providence is 5%. Mr. Ciocci stated that an addendum was sent and the cost for #2 may be potentially be in the 8.4 or 8.5 million range. DELCORA will issue a 20 year bond based on all users in CDCA will be approximately an increase of $15 - $20 per user.

Mr. Kelly advised that Upper Providence has zero I&I because it is all low pressure sewer. JP agrees with the recommended option #2.

Mr. Crotty made a motion that the Planning Commission recommend approval of the 537 Study Plan pursuing diversion from the CDCA Crum Creek Pump Station seconded by Mr. Carr. Mr. Lebold stated that the Resolution regarding this would be announced at the October 11, 2018 Council meeting.

Mr. Carr – Yes

Ms. Larkin – Yes

Mr. Maylish – Yes

Dr. Thomas – Yes

Ms. Schehr– Yes

Mr. Zaccaria - Abstain

Mr. Crotty - Yes

Motion passed 7-0

Adjournment

With no further business to conduct, Mr. Crotty adjourned the meeting at 7:58 PM.

Submitted by:

Kim McCloskey

Administrative Assistant

APPENDIX 5

DELAWARE COUNTY PLANNING DEPARTMENT REVIEW

DELAWARE COUNTY PLANNING DEPARTMENT

1055 E. Baltimore Pike
Media, PA 19063
Phone: (610) 891-5200
Email: planning_department@co.delaware.pa.us

November 2, 2018

Charles J. Catania, Jr. P.E.
Vice President,
Catania Engineering Associates, Inc.
520 W. MacDade Boulevard
Milmont Park, PA 19033

RE: Sewage Facilities Planning – Draft Act 537
Special Study Plan DELCORA's Central
Delaware Pump Station

Dear Mr. Catania:

The Delaware County Planning Department (DCPD) has completed a review of the DELCORA's Draft Act 537 Special Study Plan. The following comments are submitted for your consideration.

Section 2.2 describes Crum Creek as a Warm Water Fishery and migratory fishery under PA Code Chapter 93. While this may be true for the section of Crum Creek in the proposed Study Area, according to the Crum Creek Watershed Act 167 Stormwater Management Plan (2011), "Title 25, Chapter 93 of the Pennsylvania code designates the Crum Creek from its headwaters to the boundary of Newtown, Edgmont, and Willistown Townships as High Quality Cold Water Fishery (HQ-CWF). The furthest downstream segment in the non-tidal portion of the basin is designated a Warm Water Fishery (WWF)." By further distinguishing that the Study Area is within the "WWF portion of Crum Creek" further confusion may be avoided as HQ-CWF and WWF follow different regulations.

Section 5.1.1.1 identifies the need for a stream crossing under Crum Creek. While Eddystone Borough does designate utility right-of-ways as a permitted use within a stream buffer in Section 306. Ordinance #640 (2012), it is suggested that BMP's are emphasized in this aspect of construction. Additionally, we suggest the review of Eddystone Borough Ordinance #640 (2012) also known as the Crum Creek Watershed Stormwater Management Ordinance to ensure that exemptions for Stormwater Management techniques during construction are not required.

Section 8.1, after corresponding with our transportation planners, we are in agreement with your preference for Alternate Route 2 in the construction of the Bypass Force Main. It is recognized that routes diverting away from Chester Pike are preferred, as Chester Pike serves as a major thoroughfare for local residents and commuters; however, if Route 2 is not feasible due to right-of-way difficulties, it is our suggestion that Route 1 A be the preferred alternative. While it may be less than ideal for residents, we believe that it would be a larger hindrance on the neighborhood by disrupting access to locations such as the Elementary School, Recreation Center, and Shopping Center that are more frequented by larger traffic flows during the middle of the day, rather than residential homes. We suggest consultation with local officials before decided on a primary route.

Thank you for allowing DCPD the opportunity to comment on this plan. Upon consideration of the above-mentioned issues, DCPD has no objection to the proposed plan.

If you have any questions or require additional information, please do not hesitate to contact me at (610)-891-5218.

Very truly yours,

Rebecca DeMuth
Associate Environmental Planner

Cc: Elizabeth Mahoney, PA Department of Environmental Protection

APPENDIX 6

PROOF OF PUBLICATION

21ST CENTURY media

digitalfirst MEDIA

PHILADELPHIA GROUP - PUBLISHERS OF:

The Delaware County Daily Times, a newspaper of general circulation, established September 7, 1876

AFFIDAVIT OF PUBLICATION

639 S. Chester Rd. • Swarthmore, PA 19081

DELCORA ELECTRIC
100 E 5TH STREET
CHESTER, PA 19013
Attention:

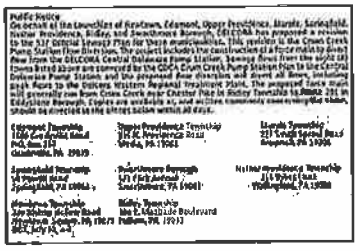
STATE OF PENNSYLVANIA,
COUNTY OF DELAWARE

The undersigned Dennis J. Brie, being duly sworn the he/she is the principal clerk of Daily Times and Sunday Times, Daily & Sunday Times Digital, published in the English language for the dissemination of local or transmitted news and intelligence of a general character, which are duly qualified newspapers, and the annexed hereto is a copy of certain order, notice, publication or advertisement of:

DELCORA ELECTRIC

Published in the following edition(s):

Daily Times and Sunday Times	07/30/18
Daily & Sunday Times Digital	07/30/18



Affiant further deposes that she/he is not interested in the subject matter of the aforesaid notice of advertisement, and that all allegations in the foregoing statements as to time, place and character of publication are true:

Sworn to the subscribed before me this July 30, 2018.

Dianne McCormick

Notary Public, State of Pennsylvania
Acting in County of Delaware

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
Dianne McCormick, Notary Public
Ridley Twp., Delaware County
My Commission Expires April 20, 2020
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

Advertisement Information

Client Id: 882225 **Ad Id:** 1626479 **PO:** **Sales Person:** 066305

Ad ID: 1626479
Cost: $275.23
Start: 07/30/18
Stop: 07/30/18
Class: 1201, Legal Notices

Public Notice
On behalf of the townships of Newtown, Edgmont, Upper Providence, Marple, Springfield, Nether Providence, Ridley, and Swarthmore Borough, DELCORA has proposed a revision to the 537 Official Sewage Plan for these municipalities. This revision is the Crum Creek Pump Station Flow Diversion. The project includes the construction of a force main to divert flow from the DELCORA Central Delaware Pump Station. Sewage flows from the eight (8) towns listed above are conveyed by the CDCA Crum Creek Pump Station Plan to the Central Delaware Pump Station and the proposed flow diversion will divert all flows, including peak flows to the Delcora Western Regional Treatment Plant. The proposed force main will generally run from Crum Creek near Chester Pike in Ridley Township to Route 291 in Eddystone Borough. Copies are available at, and written comments concerning the same, should be directed to the offices below within 30 days.

Edgmont Township
1000 Gradyville Road
P.O. Box 267
Gradyville, PA 19039

Upper Providence Township
935 N. Providence Road
Media, PA 19063

Marple Township
227 South Sproul Road
Broomall, PA 19008

Springfield Township
50 Powell Road
Springfield, PA 19064

Swarthmore Borough
121 Park Avenue
Swarthmore, PA 19081

Nether Providence Township
214 Sykes Lane
Wallingford, PA 19086

Newtown Township
209 Bishop Hollow Road
Newtown Square, PA 19079

Ridley Township
100 E. MacDade Boulevard
Folsom, PA 19033

DCT, July 30, a-2

APPENDIX 7

COMMENTS& RESPONSES

1. Edgmont Township letter August 23, 2018
2. Edgmont Township Response September 19, 2018
3. DCPD Response November 13, 2018

TOWNSHIP OF EDGMONT

1000 Gradyville Road
PO Box 267
Gradyville, Pennsylvania 19039
610-459-1662 phone 610-459-3760 fax

August 23, 2018

Catania Engineering
Attn: Michael Ciocco, P.E.
520 W. MacDade Boulevard
Milmont Park, PA 19033

RE: Proposed DELCORA Act 537 Plan Amendment
Feasibility Study for Central Delaware Pump Station

Dear Mr. Ciocco,

Edgmont Township is in receipt of the proposed Act 537 Plan Amendment prepared by Catania Engineering, dated June 28, 2018, which explores several alternatives to address wet weather flow issues at DELCORA's Central Delaware Pump Station located on Sellers Avenue in Ridley Park. Specifically, the proposal indicates that the Pump Station is rated to pump 40 million gallons per day (MGD) with average flows of approximately 9 MGD on dry weather days and well over 40 MGD on wet weather days. Overflows are also noted to have occurred on wet weather days per the Feasibility Study.

The Board of Supervisors has considered the recommendation of Catania Engineering to explore Alternative #2, i.e. to construct a new force main to bypass the CDCA Crum Creek Pump Station and divert 24 MGD from the DELCORA Central Delaware Pump Station to the DELCORA Central Diversion Force Main in Route 291 for an anticipated cost of $7.73 million. The Feasibility Study also recommends that this Alternative not be considered by itself, but in conjunction with Alternative #3 which is a Comprehensive Infiltration and Inflow (I & I) Reduction Plan.

As DELCORA is aware, Edgmont's public sanitary sewer system has only recently been completed, being placed in service on or about February 1, 2016. As a result, there is currently little to no I & I emanating from this system, as is demonstrated by the monthly flow meter data from Edgmont's pump stations since the system went on line. In addition, Edgmont Township continues to actively pursue I & I reduction via its Duty to Connect Ordinance (Edgmont Township Ordinance #227), requiring time of sale lateral inspection and repair requirements.

At this time, the Township is requesting additional information regarding how the costs amongst DELCORA's users will be shared, as it is the Township's position that the most equitable distribution of costs for construction of the new force main should be paid in proportion to the I & I contributions to the Pump Station. Additionally, the Township would like a timeline for implementation of a system-wide I & I reduction plan, consistent with the recommendation of the Feasibility Study.

Finally, the Township would like copies of DELCORA's Chapter 94 report for 2016 and 2017 and the I & I Reduction Study prepared by Arcadis referenced in the Feasibility Study to allow it to further evaluate the necessity and feasibility of the alternatives set forth in the Feasibility Study.

Please contact Catherine Ricardo, Township Manager, to provide the requested information or with any questions.

Very Truly Yours,

Ronald Gravina

Ronald Gravina
Chairman, Board of Supervisors

cc: DELCORA
CDCA
Ken Kynett, Esq., Township Solicitor

Turning Ideas Into Reality

CATANIA ENGINEERING ASSOCIATES, INC.
Consulting Engineers & Land Surveyors

September 19, 2018
File No. 81600-CDPS-2018

Ronald Gravino, Chairman
Edgmont Township
1000 Gradyville Road
PO Box 267
Edgmont, Pennsylvania 19039

Re: Act 537 Special Study Plan
DELCORA Central Delaware Pump Station

Dear Mr. Gravino:

Please accept this letter as a response to your comments dated August 23, 2018 on the proposed Act 537 Special Study Plan for DELCORA Central Delaware Pump Station. Our comments are as follows:

1. The costs for the project will be distributed in accordance with the current agreements between DELCORA and Central Delaware County Authority and between Central Delaware County Authority and its member municipalities. While open to any suggestion on cost sharing, any deviation will require amendments to those agreements.

2. The system-wide I&I reduction plan is a supplementary recommendation of the Feasibility Study and not the Act 537 Special Study Plan. DELCORA has long been a proponent of inflow and infiltration reduction and is committed to continuing that effort. Consistent with PA DEP and EPA requirements, DELCORA will continue a program to identify and address such peak excess flows in the sanitary sewer systems. In your letter, you state that Edgmont has little to no I&I emanating from its system. Please review the attached flow chart from Edgmont's Runnymeade Farms Pump Station and note the increase in flow during the August 13 rain event. This is not meant to dispute the statement. It is meant to demonstrate the difficulty and elusiveness of quantifiable I&I reduction.

3. Copies of DELCORA's Chapter 94 reports for 2016 and 2017 are voluminous and are available for inspection at the DELCORA office. Please contact the DELCORA administration office to set up a time to review. Copies of sections can be made upon request.

4. The Arcadis cost data was generated as a component of a flow alternatives study performed on DELCORA's system. It was not an I&I Reduction Study. The I&I effectiveness table is an excerpt of that work-product and is used to demonstrate the magnitude of the cost of I&I reduction. The source citation for the cost table will be updated in the final version of the Feasibility Study. The larger scale flow alternatives study is not completed at this time.

520 W. MacDade Boulevard, Milmont Park, Pennsylvania 19033-3311
Phone (610) 532-2884 • Fax (610) 532-2923 • E-Mail office10@cataniaengineering.com

In addition to your letter, the Edgmont Township Planning Commission expressed similar concerns and had similar questions. As part of this process, it is important to understand the severity of the current issue at Central Delaware Pump Station and the need to address in the short term. There have been ten (10) capacity exceedances since 2013. It would be irresponsible and frankly negligent to continue operating the pump station without a plan to address the issue in a short term manner and the Crum Creek Pump Station Diversion provides that solution. While we appreciate the need to address peak wet weather flows, history has taught us that I&I reduction does not provide a definitive short term solution to the problem. Unfortunately, the capacity issues at Central Delaware Pump Station will affect DELCORA's ability to accept new flows into the system.

Should you have any further comments or questions, please feel free to contact me.

Very truly yours,

Michael J. Ciocco, P.E.
for Catania Engineering Assoc., Inc.

Enclosure(s)

Cc: Catherine Ricardo, Edgmont Township Manager
Charles Hurst, P.E., DELCORA
Fernando Mascioli, CDCA

Turning Ideas Into Reality

CATANIA ENGINEERING ASSOCIATES, INC.

Consulting Engineers & Land Surveyors

November 13, 2018
File No. 81600-CDPS-2018

Rebecca DeMuth
Delaware County Planning Department
1055 E. Baltimore Pike
Media, PA 19063

Re: Act 537 Special Study Plan
DELCORA Central Delaware Pump Station

Dear Ms. DeMuth:

Thank you for your review of the proposed Act 537 Special Study Plan for DELCORA Central Delaware Pump Station. Our repsonse are as follows:

1. Section 2.2 has been revised.

   The Planning Area is within the Crum Creek Watershed. Crum Creek is designated as a warm water fishery, migratory fishery under Pa Code Chapter 93. It should be noted that Crum Creek from its headwaters to the boundary of Newtown, Edgmont and Willistown Township is designated as High Quality Cold Water Fishery. However, the study area and proposed work is within the segment of Crum Creek designated as Warm Water Fishery. The proposed force main route will require a crossing of Crum Creek. The majority of the proposed force main route will be within existing paved roads and driveways. The Crum Creek Watershed and potential stream crossing are shown in Figure 2.2.1.

2. Section 5.1.1.1 has not been edited to address this comment. However, additional language has been added to Section 8.1 to discuss the stormwater requirements of the Eddystone Stormwater Ordinance. Section 8.1 seemed to be a better location for this comment since stream crossings are required along all alternate routes and Section 8.1 included discussion of consistency with various local, state and federal plans.

   During design, consistency with Ridley Township and Eddystone Borough Stormwater Management Ordinances and Floodplain Ordinances should be reviewed for compliance. Particular attention to the requirements of stormwater best management practices (BMPs) should be given to the stream crossings.

3. Section 8.1 is agreed as mentioned.

Once again, thank you for your comments and please contact me if you have any further comments or questions.

Very truly yours,

Charles J Catania, Jr., P.E.
for Catania Engineering Assoc., Inc.

Cc: Charles Hurst, P.E., DELCORA

520 W. MacDade Boulevard, Milmont Park, Pennsylvania 19033-3311
Phone (610) 532-2884 • Fax (610) 532-2923 • E-Mail office10@cataniaengineering.com

APPENDIX 8

COST ANALYSIS

Delcora										
CCPS Bypass Forcemain										
Alt 1 A- Chester Pike/Saville Ave										
	1	Mobilization/Demobilization	Lump	Sum					=	$ 75,000
	2	Erosion & Sediment Control	Lump	Sum					=	$ 2,000
	3	36" Forcemain Pipe	5100	LF	@	$ 650	/LF		=	$ 3,315,000
	4	Stream Crossing - Boring	200	LF	@	$ 2,000	/LF		=	$ 400,000
	5	Railroad Crossing - Boring	200	LF	@	$ 2,000	/LF		=	$ 400,000
	6	Paving Restoration	19500	SY	@	$ 20	/SY		=	$ 390,000
	7	Fittings	14	EA	@	$12,000	/EA			$ 168,000
							Construction Subtotal			$ 4,750,000
							15% Contingency			$ 712,500
								Design		$ 783,300
							Construction Inspection/Coordination			$ 545,800
							Utility Conflict Allowance			$ 120,000
							CCPS BYPASS FORCEMAIN TOTAL			$ 6,911,600
		*Alt 1- Chester Pike/Saville Ave - costs $90,000 less for paving restoration								
CCPS UPGRADE										
							Construction Subtotal			$ 1,141,000
							Administrative and Bonds			$ 22,000
							Engineering, Permitting and SUrvey Services			$ 97,000
							Construction Management			$ 91,000
							Reduction in Contingency 25% to 20%			$ (57,000)
							CCPS UPGRADE TOTAL (ROUNDED)			$ 1,294,000
CENTRAL DIVERSION FORCEMAIN UPGRADE										
	1	Air Release Valves	10	EA	@	29000	/EA		=	$290,000.00
							Construction Subtotal			$ 290,000
							15% Contingency			$ 43,500
								Design		$ 47,500
							Construction Inspection/Coordination			$ 33,000
							CENTRAL DIVERSION FORCEMAIN UPGRATE TOTAL			$ 414,000
							PROJECT TOTAL			$ 8,619,600
		*Alt 1- Chester Pike/Saville Ave - Project Total costs $128,000 less								

Crum Creek Pump Station Force Main Diversion

Alternative 2 – Baldwin Towers/FPL Site

Delcora										
CCPS Bypass Forcemain										
Alt 2 - Baldwin Towers/FPL Site										
CCPS BYPASS FORCEMAIN										
1	Mobilization/Demobilization	Lump	Sum					=	$	75,000
2	Erosion & Sediment Control	Lump	Sum					=	$	25,000
3	36" Forcemain Pipe	4000	LF	@	$ 650	/LF		=	$	2,600,000
4	Stream Crossing - Boring	150	LF	@	$ 2,000	/LF		=	$	300,000
5	Railroad Crossing - Boring	200	LF	@	$ 2,000	/LF		=	$	400,000
6	Paving Restoration	6500	SY	@	$ 20	/SY		=	$	130,000
7	Fittings	15	EA	@	$ 12,000	/EA			$	180,000
							Construction Subtotal		$	3,710,000
							15% Contingency		$	556,500
							Design		$	611,850
							Construction Inspection/Coordination		$	426,425
							Right of Way Allowance		$	473,000
							Utility Conflict Allowance		$	120,000
							CCPS BYPASS FORCEMAIN TOTAL		$	5,897,775
CCPS UPGRADE										
							Construction Subtotal		$	1,141,000
							Administrative and Bonds		$	22,000
							Engineering, Permitting and Survey Services		$	97,000
							Construction Management		$	91,000
							Reduction in Contingency 25% to 20%		$	(57,000)
							CCPS UPGRADE TOTAL (ROUNDED)		$	1,294,000
CENTRAL DIVERSION FORCEMAIN UPGRADE										
1	Air Release Valves	10	each	@	29000	/ea		=	$	290,000.00
							Construction Subtotal		$	290,000
							15% Contingency		$	43,500
							Design		$	47,500
							Construction Inspection/Coordination		$	33,000
							CENTRAL DIVERSION FORCEMAIN UPGRATE TOTAL		$	414,000
							PROJECT TOTAL		$	7,605,775

APPENDIX 9

PNDI RECEIPT

1. PROJECT INFORMATION

Project Name: **DELCORA Crum Creek Pump Station Bypass FM Alternate 1**
Date of Review: **1/24/2019 09:03:57 AM**
Project Category: **Waste Transfer, Treatment, and Disposal, Liquid waste/Effluent, Sewer line (new - construction in new location)**
Project Area: **8.86 acres**
County(s): **Delaware**
Township/Municipality(s): **EDDYSTONE; RIDLEY**
ZIP Code: **19013; 19022; 19094**
Quadrangle Name(s): **BRIDGEPORT**
Watersheds HUC 8: **Lower Delaware**
Watersheds HUC 12: **Crum Creek; Ridley Creek**
Decimal Degrees: **39.859984, -75.341216**
Degrees Minutes Seconds: **39° 51' 35.9431" N, 75° 20' 28.3767" W**

2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	No Known Impact	No Further Review Required
PA Department of Conservation and Natural Resources	Potential Impact	FURTHER REVIEW IS REQUIRED, See Agency Response
PA Fish and Boat Commission	Potential Impact	FURTHER REVIEW IS REQUIRED, See Agency Response
U.S. Fish and Wildlife Service	Potential Impact	MORE INFORMATION REQUIRED, See Agency Response

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate there may be potential impacts to threatened and endangered and/or special concern species and resources within the project area. If the response above indicates "No Further Review Required" no additional communication with the respective agency is required. If the response is "Further Review Required" or "See Agency Response," refer to the appropriate agency comments below. Please see the DEP Information Section of this receipt if a PA Department of Environmental Protection Permit is required.

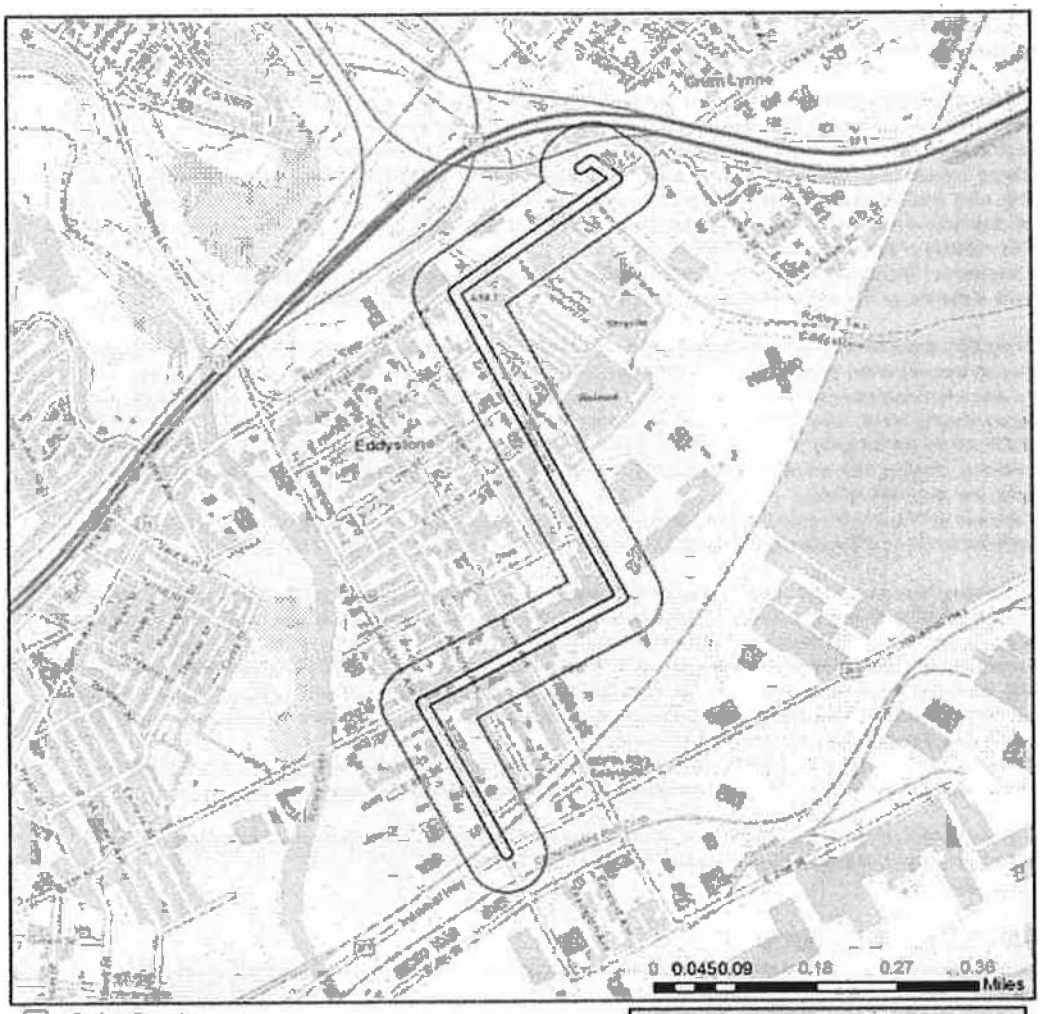
DELCORA Crum Creek Pump Station Bypass FM Alternate 1

☐ Project Boundary

☐ Buffered Project Boundary

Service Layer Credits: Sources: Esri, HERE, DeLorme, MapmyIndia, 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
Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community

DELCORA Crum Creek Pump Station Bypass FM Alternate 1



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
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS,

RESPONSE TO QUESTION(S) ASKED

Q1: Will this project or any project-related activities require any in-stream work, or a permanent or temporary crossing of a waterway (stream, river, creek, tributary)?
Your answer is: Yes

Q2: Accurately describe what is known about wetland presence in the project area or on the land parcel by selecting ONE of the following. "Project" includes all features of the project (including buildings, roads, utility lines, outfall and intake structures, wells, stormwater retention/detention basins, parking lots, driveways, lawns, etc.), as well as all associated impacts (e.g., temporary staging areas, work areas, temporary road crossings, areas subject to grading or clearing, etc.). Include all areas that will be permanently or temporarily affected -- either directly or indirectly -- by any type of disturbance (e.g., land clearing, grading, tree removal, flooding, etc.). Land parcel = the lot(s) on which some type of project(s) or activity(s) are proposed to occur.
Your answer is: The project area (or land parcel) has not been investigated by someone qualified to identify and delineate wetlands, or it is currently unknown if the project or project activities will affect wetlands.

Q3: Accurately describe what is known about wetland presence in the project area or on the land parcel. "Project" includes all features of the project (including buildings, roads, utility lines, outfall and intake structures, wells, stormwater retention/detention basins, parking lots, driveways, lawns, etc.), as well as all associated impacts (e.g., temporary staging areas, work areas, temporary road crossings, areas subject to grading or clearing, etc.). Include all areas that will be permanently or temporarily affected -- either directly or indirectly -- by any type of disturbance (e.g., land clearing, grading, tree removal, flooding, etc.). Land parcel = the lot(s) on which some type of project(s) or activity(s) are proposed to occur.
Your answer is: The project area (or land parcel) has not been investigated by someone qualified to identify and delineate wetlands, or it is currently unknown if the project or project activities will affect wetlands.

Q4: Accurately describe what is known about wetland presence in the project area or on the land parcel by selecting ONE of the following. "Project" includes all features of the project (including buildings, roads, utility lines, outfall and intake structures, wells, stormwater retention/detention basins, parking lots, driveways, lawns, etc.), as well as all associated impacts (e.g., temporary staging areas, work areas, temporary road crossings, areas subject to grading or clearing, etc.). Include all areas that will be permanently or temporarily affected -- either directly or indirectly -- by any type of disturbance (e.g., land clearing, grading, tree removal, flooding, etc.). Land parcel = the lot(s) on which some type of project(s) or activity(s) are proposed to occur.
Your answer is: The project area (or land parcel) has not been investigated by someone qualified to identify and delineate wetlands, or it is currently unknown if the project or project activities will affect wetlands.

Q5: Aquatic habitat (stream, river, lake, pond, etc.) is located on or adjacent to the subject property and project activities (including discharge) may occur within 300 feet of these habitats?
Your answer is: Yes

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:
Further review of this project is necessary to resolve the potential impact(s). Please send project information to this agency for review (see WHAT TO SEND).

DCNR Species: (Note: The Pennsylvania Conservation Explorer tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below. After desktop review, if a botanical survey is required by DCNR, we recommend the DCNR Botanical Survey Protocols, available here: https://conservationexplorer.dcnr.pa.gov/content/survey-protocols)

Scientific Name	Common Name	Current Status	Proposed Status	Survey Window
Zizania aquatica	Indian Wild Rice	Special Concern Species*	Special Concern Species*	Flowers late May - early September

PA Fish and Boat Commission
RESPONSE:
Further review of this project is necessary to resolve the potential impact(s). Please send project information to this agency for review (see WHAT TO SEND).*

PFBC Species: (Note: The Pennsylvania Conservation Explorer tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below.)

Scientific Name	Common Name	Current Status
Alosa mediocris*	Hickory Shad	Endangered
Sensitive Species**		Endangered
Sensitive Species**		Threatened

U.S. Fish and Wildlife Service
RESPONSE:
Information Request: Conduct a Bog Turtle Habitat (Phase 1) Survey in accordance with USFWS Guidelines for Bog Turtle Surveys (April 2006). Evaluate all wetlands within 300 feet of the project area, which includes all areas that will be impacted by earth disturbance or project features (e.g., roads, structures, utility lines, lawns, detention basins, staging areas, etc.). IF THE PHASE 1 SURVEY IS DONE BY A QUALIFIED BOG TURTLE SURVEYOR (see https://www.fws.gov/northeast/pafo/endangered/surveys.html): 1) Send positive results to USFWS for concurrence, along with a project description documenting how impacts will be avoided. OR, conduct a Phase 2 survey and send Phase 1 and 2 results to USFWS for concurrence. 2) Send a courtesy copy of negative results to USFWS (label as "Negative Phase 1 Survey Results by Qualified Bog Turtle Surveyor: USFWS Courtesy Copy"). USFWS approval of negative results is not necessary when a qualified surveyor does the survey in full accordance with USFWS guidelines. IF THE PHASE 1 SURVEY IS NOT DONE BY A QUALIFIED SURVEYOR: Send ALL Phase 1 results to USFWS for concurrence, and if potential habitat is found, also send a project description documenting how impacts will be avoided. As a qualified bog turtle surveyor, I _____ (name) certify that I conducted a Phase 1 survey of all wetlands in and within 300 feet of the project area on _____ (date) and determined that bog turtle habitat is absent.

_____ (Signature)

* Special Concern Species or Resource - Plant or animal species classified as rare, tentatively undetermined or candidate as well as other taxa of conservation concern, significant natural communities, special concern populations (plants or animals) and unique geologic features.
** Sensitive Species - Species identified by the jurisdictional agency as collectible, having economic value, or being susceptible to decline as a result of visitation.

WHAT TO SEND TO JURISDICTIONAL AGENCIES

If project information was requested by one or more of the agencies above, upload* or email** the following information to the agency(s). Instructions for uploading project materials can be found here. This option provides the applicant with the convenience of sending project materials to a single location accessible to all three state agencies. Alternatively, applicants may email or mail their project materials (see AGENCY CONTACT INFORMATION).
*Note: U.S.Fish and Wildlife Service requires applicants to mail project materials to the USFWS PA field office (see AGENCY CONTACT INFORMATION). USFWS will not accept project materials submitted electronically (by upload or email).

Check-list of Minimum Materials to be submitted:
_____Project narrative with a description of the overall project, the work to be performed, current physical characteristics of the site and acreage to be impacted.
_____A map with the project boundary and/or a basic site plan(particularly showing the relationship of the project to the physical features such as wetlands, streams, ponds, rock outcrops, etc.)
In addition to the materials listed above, USFWS REQUIRES the following
_____SIGNED copy of a Final Project Environmental Review Receipt

The inclusion of the following information may expedite the review process.
_____Color photos keyed to the basic site plan (i.e. showing on the site plan where and in what direction each photo was taken and the date of the photos)
_____Information about the presence and location of wetlands in the project area, and how this was determined (e.g., by a qualified wetlands biologist). If wetlands are present in the project area, provide project plans showing the location of all project features, as well as wetlands and streams.

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

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
595 E. Rolling Ridge Dr., 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: CHARLES CATANIA
Company/Business Name: CATANIA ENGINEERING ASSOCIATES
Address: 520 MacDADE BOULEVARD
City, State, Zip: MILMONT PARK, PENNSYLVANIA, 19033
Phone: (610) 532-2864 Fax: (610) 532-2933
Email: CJCJr@CATANIAENGINEERING.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

1/04/18
date

pennsylvania
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

BUREAU OF FORESTRY

January 30, 2019

PNDI Number: 658334
Version: Final_1; 1/24/19

Charles Catania
Catania Engineering Associates, Inc.
520 W. MacDade Blvd
City, PA 17325
Email: cjcjr@cataniaengineering.com (hard copy will not follow)

Re: DELCORA Crum Creek Pump Station Bypass FM Alternate 1
Eddystone, Ridley; Delware, PA

Dear Mr. Catania,

Thank you for the submission of the Pennsylvania Natural Diversity Inventory (PNDI) Environmental Review Receipt Number 658334 (Final_1) for review. PA Department of Conservation and Natural Resources screened this project for potential impacts to species and resources under DCNR's responsibility, which includes plants, terrestrial invertebrates, natural communities, and geologic features only.

No Impact Anticipated with Conservation Measure

PNDI records indicate species or resources under DCNR's jurisdiction are located in the vicinity of the project. Numerous records of Zizania aquatica (Indian Wild Rice; PA Special Concern) exist within and around the project footprint. Please take precautions to ensure that the aquatic resources which this species inhabits are not disturbed by project activities. This includes minimizing earth disturbance of Crum Creek shore habitat to the greatest extent practicable and preventing the introduction and dispersal of invasive species to the project area. Invasive species guidelines can be found below. With compliance to these conservation measures, DCNR has determined that no impact is likely. No further coordination with our agency is needed for this project.

Recommended Actions:

- Design the project to minimize the area of disturbance to the fullest extent that would allow for construction. This will help to lessen the area of soil and vegetation disturbance associated with this project.
- Clean boot treads, construction equipment, and vehicles thoroughly (especially the undercarriage and wheels) before they are brought on site. This will remove invasive plant seeds and invasive earthworms/cocoons that may have been picked up at other sites.
- Do not transport unsterilized leaves, mulch, compost, or soil to the site from another location.
- Do not use seed mixes that include invasive species. Please also use weed-free straw or hay mixes. More information about invasive species in Pennsylvania can be found at the following link: http://www.dcnr.pa.gov/Conservation/WildPlants/InvasivePlants/Pages/default.aspx
- Use habitat appropriate seed mixes. For example, when reseeding along a waterway, utilize a riparian seed mix. The Bureau of Forestry Planning & Seeding Guidelines can be found here for recommendations: http://www.docs.dcnr.pa.gov/cs/groups/public/documents/document/dcnr_20031083.pdf
- Report occurrences of invasive species to iMapInvasives at https://www.imapinvasives.org/. Focus on large infestations and species that are not yet well established in the region or in Pennsylvania (https://www.paimapinvasives.org/be-on-the-lookout).

PNDI Number: 658334
Version: Final_1; 1/24/19

This response represents the most up-to-date review of the PNDI data files and is valid for two (2) years only. If project plans change or more information on listed or proposed species becomes available, our determination may be reconsidered. Should the proposed work continue beyond the period covered by this letter and a permit has not been acquired, please resubmit the project to this agency as an "Update" (including an updated PNDI receipt, project narrative, description of project changes and accurate map). As a reminder, this finding applies to potential impacts under DCNR's jurisdiction only. Visit the PNHP website for directions on contacting the Commonwealth's other resource agencies for environmental review.

Should you have any questions or concerns, please contact Alexander Dogonniuck, Ecological Information Specialist, by phone (717-783-3913) or via email (c-adogonni@pa.gov).

Sincerely

Greg Podniesinski

Greg Podniesinski, Section Chief
Natural Heritage Section

Pennsylvania Fish & Boat Commission

established 1866

Division of Environmental Services
Natural Diversity Section
595 E Rolling Ridge Dr.
Bellefonte, PA 16823
814-359-5237

February 4, 2019

IN REPLY REFER TO
SIR# 50668

Catania Engineering Associates, Inc.
Charles Catania
520 W. MacDade Blvd.
Milmont Park, Pennsylvania 19033

RE: Species Impact Review (SIR) – Rare, Candidate, Threatened and Endangered Species
PNDI Search No. 658334_1
DELCORA Crum Creek Pump Station Bypass FM Alternate 1
DELAWARE County: Eddystone Borough, Ridley Township

Dear Charles Catania:

This responds to your inquiry about a Pennsylvania Natural Diversity Inventory (PNDI) Internet Database search "potential conflict" or a threatened and endangered species impact review. These projects are screened for potential conflicts with rare, candidate, threatened or endangered species under Pennsylvania Fish & Boat Commission jurisdiction (fish, reptiles, amphibians, aquatic invertebrates only) using the Pennsylvania Natural Diversity Inventory (PNDI) database and our own files. These species of special concern are listed under the Endangered Species Act of 1973, the Wild Resource Conservation Act, and the Pennsylvania Fish & Boat Code (Chapter 75), or the Wildlife Code.

An element occurrence of a rare, candidate, threatened, or endangered species under our jurisdiction is known from the vicinity of the proposed project. However, given the nature of the proposed project, the immediate location, or the current status of the nearby element occurrence(s), no adverse impacts are expected to the species of special concern.

This response represents the most up-to-date summary of the PNDI data and our files and is valid for two (2) years from the date of this letter. An absence of recorded species information does not necessarily imply species absence. Our data files and the PNDI system are continuously being updated with species occurrence information. Should project plans change or additional information on listed or proposed species become available, this determination may be reconsidered, and consultation shall be re-initiated.

If you have any questions regarding this review, please contact Kathy Gipe at 814-359-5186 and refer to the SIR # 50668. Thank you for your cooperation and attention to this important matter of species conservation and habitat protection.

Sincerely,

Christopher A. Urban, Chief
Natural Diversity Section

CAU/KDG/dn

PNDI # 658334, 658335, 658338 USFWS Project # 2019-0471

U.S. FISH AND WILDLIFE SERVICE

110 Radnor Road, Suite 101, State College, PA 16801

This responds to your inquiry about a PNDI Internet Database search that resulted in a potential conflict with a federally listed, proposed or candidate species.

PROJECT LOCATION INFORMATION

County: Delaware

Township: Eddystone; Ridley

MISC INFORMATION

Date received by FWS: January 28, 2019

☐ ACTIVE ☐ ARCHIVE

USFWS COMMENTS ☑ EMAILED ☐ MAILED

To: Charles Catania

Email: CJCJr@Cataniaengoneering.com

Affiliation: Catania Engineering Associates

SPECIFIC PROJECT: DELCORA Crum Creek Pump Station Bypass Force Main Alternates 1, 1A & 2

FISH AND WILDLIFE SERVICE COMMENT(s):

X ***NOT LIKELY TO ADVERSELY AFFECT***

The federally listed bog turtle occurs or may occur in or near the project area. However, based on our review of the information provided, including the project description and location (No wetlands are present. Projects are located in a highly developed urban location. The force main will be directionaly drilled under Chester Creek. Construction will occur in existing paved surfaces), no adverse effects to this species are likely to occur. If there is any change in the location, scale, scope, layout or design of the project, further consultation or coordination with the Service will be necessary.

The above determination is valid for two years from the date of this letter. In addition, this response relates only to federally listed, proposed, and candidate species under our jurisdiction, based on an office review of the proposed project's location and anticipated impacts. No field inspection of the project area has been conducted by this office. Consequently, comments on this form are not to be construed as addressing other Service concerns under the Fish and Wildlife Coordination Act or other authorities. *Please reference the above PNDI # and USFWS Project # in any future correspondence regarding this project.*

This review was conducted by the biologist listed below. He/she can be contacted at 814-234-4090.

☐ Bonnie Dershem (x7453)	☐ Brian Scofield (x7471)	☑ Jennifer Kagel (x7451)
☐ Melinda Turner (x7449)	☐ Nicole Ranalli (x7455)	☐ Pamela Shellenberger (x7459)

SIGNATURE: ROBERT ANDERSON Digitally signed by ROBERT ANDERSON Date: 2019.04.12 11:02:31 -04'00'

Supervisor, Pennsylvania Field Office

1. PROJECT INFORMATION

Project Name: DELCORA Crum Creek Pump Station Bypass FM Alternate 1A
Date of Review: 1/24/2019 09:30:54 AM
Project Category: Waste Transfer, Treatment, and Disposal, Liquid waste/Effluent, Sewer line (new - construction in new location)
Project Area: 7.37 acres
County(s): Delaware
Township/Municipality(s): EDDYSTONE; RIDLEY
ZIP Code: 19022
Quadrangle Name(s): BRIDGEPORT
Watersheds HUC 8: Lower Delaware
Watersheds HUC 12: Crum Creek; Repaupo Creek-Delaware River; Ridley Creek
Decimal Degrees: 39.862786, -75.344708
Degrees Minutes Seconds: 39° 51' 46.299" N, 75° 20' 40.9477" W

2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	No Known Impact	No Further Review Required
PA Department of Conservation and Natural Resources	Potential Impact	FURTHER REVIEW IS REQUIRED, See Agency Response
PA Fish and Boat Commission	Potential Impact	FURTHER REVIEW IS REQUIRED, See Agency Response
U.S. Fish and Wildlife Service	Potential Impact	MORE INFORMATION REQUIRED, See Agency Response

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate there may be potential impacts to threatened and endangered and/or special concern species and resources within the project area. If the response above indicates "No Further Review Required" no additional communication with the respective agency is required. If the response is "Further Review Required" or "See Agency Response," refer to the appropriate agency comments below. Please see the DEP Information Section of this receipt if a PA Department of Environmental Protection Permit is required.

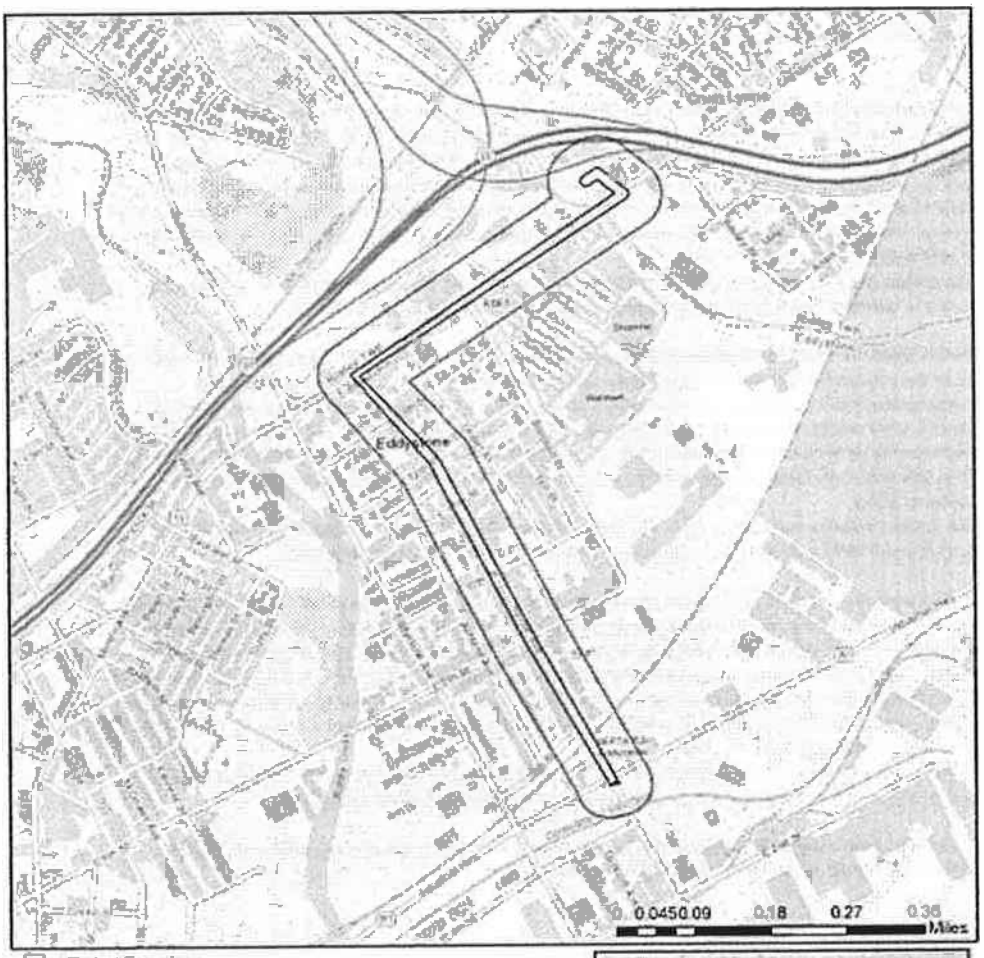
DELCORA Crum Creek Pump Station Bypass FM Alternate 1A

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
Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community

DELCORA Crum Creek Pump Station Bypass FM Alternate 1A



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
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS,

RESPONSE TO QUESTION(S) ASKED

Q1: Will this project or any project-related activities require any in-stream work, or a permanent or temporary crossing of a waterway (stream, river, creek, tributary)?
Your answer is: Yes

Q2: Accurately describe what is known about wetland presence in the project area or on the land parcel by selecting ONE of the following. "Project" includes all features of the project (including buildings, roads, utility lines, outfall and intake structures, wells, stormwater retention/detention basins, parking lots, driveways, lawns, etc.), as well as all associated impacts (e.g., temporary staging areas, work areas, temporary road crossings, areas subject to grading or clearing, etc.). Include all areas that will be permanently or temporarily affected – either directly or indirectly – by any type of disturbance (e.g., land clearing, grading, tree removal, flooding, etc.). Land parcel = the lot(s) on which some type of project(s) or activity(s) are proposed to occur.
Your answer is: The project area (or land parcel) has not been investigated by someone qualified to identify and delineate wetlands, or it is currently unknown if the project or project activities will affect wetlands.

Q3: Accurately describe what is known about wetland presence in the project area or on the land parcel. "Project" includes all features of the project (including buildings, roads, utility lines, outfall and intake structures, wells, stormwater retention/detention basins, parking lots, driveways, lawns, etc.), as well as all associated impacts (e.g., temporary staging areas, work areas, temporary road crossings, areas subject to grading or clearing, etc.). Include all areas that will be permanently or temporarily affected – either directly or indirectly – by any type of disturbance (e.g., land clearing, grading, tree removal, flooding, etc.). Land parcel = the lot(s) on which some type of project(s) or activity(s) are proposed to occur.
Your answer is: The project area (or land parcel) has not been investigated by someone qualified to identify and delineate wetlands, or it is currently unknown if the project or project activities will affect wetlands.

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Your answer is: The project area (or land parcel) has not been investigated by someone qualified to identify and delineate wetlands, or it is currently unknown if the project or project activities will affect wetlands.

Q5: Aquatic habitat (stream, river, lake, pond, etc.) is located on or adjacent to the subject property and project activities (including discharge) may occur within 300 feet of these habitats?
Your answer is: Yes

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:
Further review of this project is necessary to resolve the potential impact(s). Please send project information to this agency for review (see WHAT TO SEND).

DCNR Species: (Note: The Pennsylvania Conservation Explorer tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below. After desktop review, if a botanical survey is required by DCNR, we recommend the DCNR Botanical Survey Protocols, available here: https://conservationexplorer.dcnr.pa.gov/content/survey-protocols)

Scientific Name	Common Name	Current Status	Proposed Status	Survey Window
Zizania aquatica	Indian Wild Rice	Special Concern Species*	Special Concern Species*	Flowers late May - early September

PA Fish and Boat Commission
RESPONSE:
Further review of this project is necessary to resolve the potential impact(s). Please send project information to this agency for review (see WHAT TO SEND).

PFBC Species: (Note: The Pennsylvania Conservation Explorer tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below.)

Scientific Name	Common Name	Current Status
Sensitive Species**		Endangered
Sensitive Species**		Threatened

U.S. Fish and Wildlife Service
RESPONSE:
Information Request: Conduct a Bog Turtle Habitat (Phase 1) Survey in accordance with USFWS Guidelines for Bog Turtle Surveys (April 2006). Evaluate all wetlands within 300 feet of the project area, which includes all areas that will be impacted by earth disturbance or project features (e.g., roads, structures, utility lines, lawns, detention basins, staging areas, etc.). IF THE PHASE 1 SURVEY IS DONE BY A QUALIFIED BOG TURTLE SURVEYOR (see https://www.fws.gov/northeast/pafo/endangered/surveys.html): 1) Send positive results to USFWS for concurrence, along with a project description documenting how impacts will be avoided. OR, conduct a Phase 2 survey and send Phase 1 and 2 results to USFWS for concurrence. 2) Send a courtesy copy of negative results to USFWS (label as "Negative Phase 1 Survey Results by Qualified Bog Turtle Surveyor; USFWS Courtesy Copy"). USFWS approval of negative results is not necessary when a qualified surveyor does the survey in full accordance with USFWS guidelines. IF THE PHASE 1 SURVEY IS NOT DONE BY A QUALIFIED SURVEYOR: Send ALL Phase 1 results to USFWS for concurrence, and if potential habitat is found, also send a project description documenting how impacts will be avoided. As a qualified bog turtle surveyor, I _____ (name) certify that I conducted a Phase 1 survey of all wetlands in and within 300 feet of the project area on _____ (date) and determined that bog turtle habitat is absent.

_____ (Signature)

* Special Concern Species or Resource - Plant or animal species classified as rare, tentatively undetermined or candidate as well as other taxa of conservation concern, significant natural communities, special concern populations (plants or animals) and unique geologic features.
** Sensitive Species - Species identified by the jurisdictional agency as collectible, having economic value, or being susceptible to decline as a result of visitation.

WHAT TO SEND TO JURISDICTIONAL AGENCIES

If project information was requested by one or more of the agencies above, upload* or email** the following information to the agency(s). Instructions for uploading project materials can be found here. This option provides the applicant with the convenience of sending project materials to a single location accessible to all three state agencies. Alternatively, applicants may email or mail their project materials (see AGENCY CONTACT INFORMATION).
*Note: U.S.Fish and Wildlife Service requires applicants to mail project materials to the USFWS PA field office (see AGENCY CONTACT INFORMATION). USFWS will not accept project materials submitted electronically (by upload or email).

Check-list of Minimum Materials to be submitted:
____Project narrative with a description of the overall project, the work to be performed, current physical characteristics of the site and acreage to be impacted.
____A map with the project boundary and/or a basic site plan(particularly showing the relationship of the project to the physical features such as wetlands, streams, ponds, rock outcrops, etc.)
In addition to the materials listed above, USFWS REQUIRES the following
____SIGNED copy of a Final Project Environmental Review Receipt

The inclusion of the following information may expedite the review process.
____Color photos keyed to the basic site plan (i.e. showing on the site plan where and in what direction each photo was taken and the date of the photos)
____Information about the presence and location of wetlands in the project area, and how this was determined (e.g., by a qualified wetlands biologist), if wetlands are present in the project area, provide project plans showing the location of all project features, as well as wetlands and streams.

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

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
595 E. Rolling Ridge Dr., 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: Charles Catania
Company/Business Name: Catania Engineering Associates
Address: 520 MacDade Boulevard
City, State, Zip: Folsom, Pennsylvania, 19033
Phone: (610) 532-3804 Fax: (610) 532-3903
Email: CJCJr@CataniaEngineering.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

1/04/18
date

pennsylvania
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

BUREAU OF FORESTRY

January 30, 2019

PNDI Number: 658335
Version: Final_1; 1/24/19

Charles Catania
Catania Engineering Associates, Inc.
520 W. MacDade Blvd
Milmont Park, PA 19033
Email: cjcjr@cataniaengineering.com (hard copy will not follow)

Re: DELCORA Crum Creek Pump Station Bypass FM Alternate 1A
Eddystone, Ridley; Delaware, PA

Dear Mr. Catania,

Thank you for the submission of the Pennsylvania Natural Diversity Inventory (PNDI) Environmental Review Receipt Number 658335 (Final_1) for review. PA Department of Conservation and Natural Resources screened this project for potential impacts to species and resources under DCNR's responsibility, which includes plants, terrestrial invertebrates, natural communities, and geologic features only.

No Impact Anticipated with Conservation Measure

PNDI records indicate species or resources under DCNR's jurisdiction are located in the vicinity of the project. Numerous records of Zizania aquatica (Indian Wild Rice; PA Special Concern) exist within and around the project footprint. Please take precautions to ensure that the aquatic resources which this species inhabits are not disturbed by project activities. This includes minimizing earth disturbance of Crum Creek shore habitat to the greatest extent practicable and preventing the introduction and dispersal of invasive species to the project area. Invasive species guidelines can be found below. With compliance to these conservation measures, DCNR has determined that no impact is likely. No further coordination with our agency is needed for this project.

Recommended Actions:

- Design the project to minimize the area of disturbance to the fullest extent that would allow for construction. This will help to lessen the area of soil and vegetation disturbance associated with this project.
- Clean boot treads, construction equipment, and vehicles thoroughly (especially the undercarriage and wheels) before they are brought on site. This will remove invasive plant seeds and invasive earthworms/cocoons that may have been picked up at other sites.
- Do not transport unsterilized leaves, mulch, compost, or soil to the site from another location.
- Do not use seed mixes that include invasive species. Please also use weed-free straw or hay mixes. More information about invasive species in Pennsylvania can be found at the following link: http://www.dcnr.pa.gov/Conservation/WildPlants/InvasivePlants/Pages/default.aspx
- Use habitat appropriate seed mixes. For example, when reseeding along a waterway, utilize a riparian seed mix. The Bureau of Forestry Planting & Seeding Guidelines can be found here for recommendations: http://www.docs.dcnr.pa.gov/cs/groups/public/documents/document/dcnr_20031083.pdf
- Report occurrences of invasive species to iMapInvasives at https://www.imapinvasives.org/. Focus on large infestations and species that are not yet well established in the region or in Pennsylvania (https://www.paimapinvasives.org/be-on-the-lookout).

PNDI Number: 658335
Version: Final_1; 1/24/19

This response represents the most up-to-date review of the PNDI data files and is valid for two (2) years only. If project plans change or more information on listed or proposed species becomes available, our determination may be reconsidered. Should the proposed work continue beyond the period covered by this letter and a permit has not been acquired, please resubmit the project to this agency as an "Update" (including an updated PNDI receipt, project narrative, description of project changes and accurate map). As a reminder, this finding applies to potential impacts under DCNR's jurisdiction only. Visit the PNHP website for directions on contacting the Commonwealth's other resource agencies for environmental review.

Should you have any questions or concerns, please contact Alexander Dogonniuck, Ecological Information Specialist, by phone (717-783-3913) or via email (c-adogonni@pa.gov).

Sincerely

Greg Podmiesinski

Greg Podmiesinski, Section Chief
Natural Heritage Section

Pennsylvania Fish & Boat Commission

established 1866

Division of Environmental Services
Natural Diversity Section
595 E Rolling Ridge Dr.
Bellefonte, PA 16823
814-359-5237

February 4, 2019

IN REPLY REFER TO
SIR# 50670

Catania Engineering Associates, Inc.
Charles Catania
520 W. MacDade Blvd
Milmont Park, PA 19033

RE: Species Impact Review (SIR) – Rare, Candidate, Threatened and Endangered Species
PNDI Search No. 658335_1
DELCORA Crum Creek Pump Station Bypass FM Alternate 1A
DELAWARE County: Eddystone Borough

Dear Charles Catania:

This responds to your inquiry about a Pennsylvania Natural Diversity Inventory (PNDI) Internet Database search "potential conflict" or a threatened and endangered species impact review. These projects are screened for potential conflicts with rare, candidate, threatened or endangered species under Pennsylvania Fish & Boat Commission jurisdiction (fish, reptiles, amphibians, aquatic invertebrates only) using the Pennsylvania Natural Diversity Inventory (PNDI) database and our own files. These species of special concern are listed under the Endangered Species Act of 1973, the Wild Resource Conservation Act, and the Pennsylvania Fish & Boat Code (Chapter 75), or the Wildlife Code.

An element occurrence of a rare, candidate, threatened, or endangered species under our jurisdiction is known from the vicinity of the proposed project. However, given the nature of the proposed project, the immediate location, or the current status of the nearby element occurrence(s), no adverse impacts are expected to the species of special concern.

This response represents the most up-to-date summary of the PNDI data and our files and is valid for two (2) years from the date of this letter. An absence of recorded species information does not necessarily imply species absence. Our data files and the PNDI system are continuously being updated with species occurrence information. Should project plans change or additional information on listed or proposed species become available, this determination may be reconsidered, and consultation shall be re-initiated.

If you have any questions regarding this review, please contact Kathy Gipe at 814-359-5186 and refer to the SIR # 50670. Thank you for your cooperation and attention to this important matter of species conservation and habitat protection.

Sincerely,

Christopher A. Urban, Chief
Natural Diversity Section

CAU/KDG/dn

PNDI # 658334, 658335, 658338 USFWS Project # 2019-0471

U.S. FISH AND WILDLIFE SERVICE

110 Radnor Road, Suite 101, State College, PA 16801

This responds to your inquiry about a PNDI Internet Database search that resulted in a potential conflict with a federally listed, proposed or candidate species.

PROJECT LOCATION INFORMATION

County: Delaware

Township: Eddystone; Ridley

MISC INFORMATION

Date received by FWS: January 28, 2019

☐ ACTIVE ☐ ARCHIVE

USFWS COMMENTS ☑ EMAILED ☐ MAILED Email: CJCJr@Cataniaengoneering.com

To: Charles Catania Affiliation: Catania Engineering Associates

SPECIFIC PROJECT: DELCORA Crum Creek Pump Station Bypass Force Main Alternates 1, 1A & 2

FISH AND WILDLIFE SERVICE COMMENT(s):

X ***NOT LIKELY TO ADVERSELY AFFECT***

The federally listed bog turtle occurs or may occur in or near the project area. However, based on our review of the information provided, including the project description and location (No wetlands are present. Projects are located in a highly developed urban location. The force main will be directionaly drilled under Chester Creek. Consturction will occur in existing, paved surfaces), no adverse effects to this species are likely to occur. If there is any change in the location, scale, scope, layout or design of the project, further consultation or coordination with the Service will be necessary.

The above determination is valid for two years from the date of this letter. In addition, this response relates only to federally listed, proposed, and candidate species under our jurisdiction, based on an office review of the proposed project's location and anticipated impacts. No field inspection of the project area has been conducted by this office. Consequently, comments on this form are not to be construed as addressing other Service concerns under the Fish and Wildlife Coordination Act or other authorities. *Please reference the above PNDI # and USFWS Project # in any future correspondence regarding this project.*

This review was conducted by the biologist listed below. He/she can be contacted at 814-234-4090.

☐ Bonnie Dershem (x7453) ☐ Brian Scofield (x7471) ☑ Jennifer Kagel (x7451)

☐ Melinda Turner (x7449) ☐ Nicole Ranalli (x7455) ☐ Pamela Shellenberger (x7459)

SIGNATURE: ROBERT ANDERSON Digitally signed by ROBERT ANDERSON Date: 2019.04.12 11:02:31 -04'00'

Supervisor, Pennsylvania Field Office

1. PROJECT INFORMATION

Project Name: DELCORA Crum Creek Pump Station Bypass FM Alternate 2
Date of Review: 1/24/2019 09:26:52 AM
Project Category: Waste Transfer, Treatment, and Disposal, Liquid waste/Effluent, Sewer line (new - construction in new location)
Project Area: 6.09 acres
County(s): Delaware
Township/Municipality(s): EDDYSTONE; RIDLEY
ZIP Code: 19022
Quadrangle Name(s): BRIDGEPORT
Watersheds HUC 8: Lower Delaware
Watersheds HUC 12: Crum Creek
Decimal Degrees: 39.864041, -75.336184
Degrees Minutes Seconds: 39° 51' 50.5491" N, 75° 20' 10.2985" W

2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	No Known Impact	No Further Review Required
PA Department of Conservation and Natural Resources	Potential Impact	FURTHER REVIEW IS REQUIRED, See Agency Response
PA Fish and Boat Commission	Potential Impact	FURTHER REVIEW IS REQUIRED, See Agency Response
U.S. Fish and Wildlife Service	Potential Impact	MORE INFORMATION REQUIRED, See Agency Response

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate there may be potential impacts to threatened and endangered and/or special concern species and resources within the project area. If the response above indicates "No Further Review Required" no additional communication with the respective agency is required. If the response is "Further Review Required" or "See Agency Response," refer to the appropriate agency comments below. Please see the DEP Information Section of this receipt if a PA Department of Environmental Protection Permit is required.

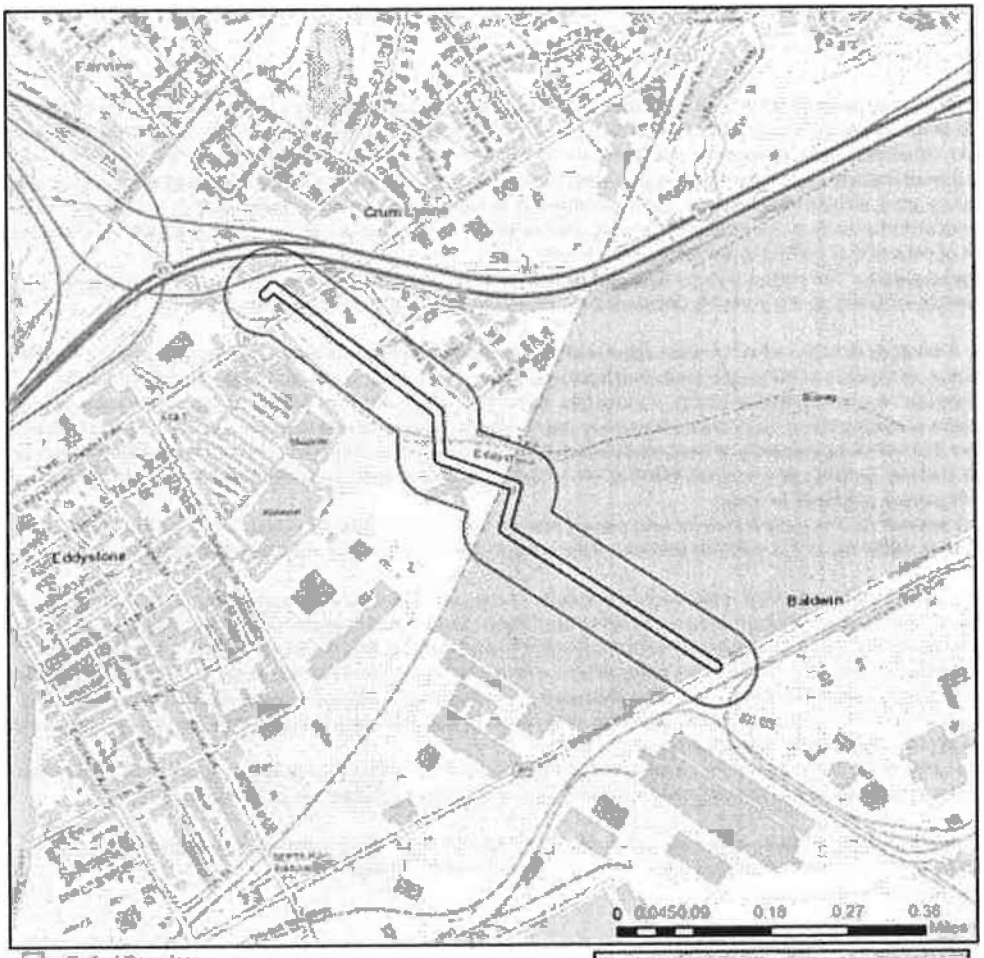
DELCORA Crum Creek Pump Station Bypass FM Alternate 2

☐ 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
Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community

DELCORA Crum Creek Pump Station Bypass FM Alternate 2



RESPONSE TO QUESTION(S) ASKED

Q1: Will this project or any project-related activities require any in-stream work, or a permanent or temporary crossing of a waterway (stream, river, creek, tributary)?
Your answer is: Yes

Q2: Accurately describe what is known about wetland presence in the project area or on the land parcel by selecting ONE of the following. "Project" includes all features of the project (including buildings, roads, utility lines, outfall and intake structures, wells, stormwater retention/detention basins, parking lots, driveways, lawns, etc.), as well as all associated impacts (e.g., temporary staging areas, work areas, temporary road crossings, areas subject to grading or clearing, etc.). Include all areas that will be permanently or temporarily affected – either directly or indirectly – by any type of disturbance (e.g., land clearing, grading, tree removal, flooding, etc.). Land parcel = the lot(s) on which some type of project(s) or activity(s) are proposed to occur.
Your answer is: The project area (or land parcel) has not been investigated by someone qualified to identify and delineate wetlands, or it is currently unknown if the project or project activities will affect wetlands.

Q3: Accurately describe what is known about wetland presence in the project area or on the land parcel. "Project" includes all features of the project (including buildings, roads, utility lines, outfall and intake structures, wells, stormwater retention/detention basins, parking lots, driveways, lawns, etc.), as well as all associated impacts (e.g., temporary staging areas, work areas, temporary road crossings, areas subject to grading or clearing, etc.). Include all areas that will be permanently or temporarily affected – either directly or indirectly – by any type of disturbance (e.g., land clearing, grading, tree removal, flooding, etc.). Land parcel = the lot(s) on which some type of project(s) or activity(s) are proposed to occur.
Your answer is: The project area (or land parcel) has not been investigated by someone qualified to identify and delineate wetlands, or it is currently unknown if the project or project activities will affect wetlands.

Q4: Accurately describe what is known about wetland presence in the project area or on the land parcel by selecting ONE of the following. "Project" includes all features of the project (including buildings, roads, utility lines, outfall and intake structures, wells, stormwater retention/detention basins, parking lots, driveways, lawns, etc.), as well as all associated impacts (e.g., temporary staging areas, work areas, temporary road crossings, areas subject to grading or clearing, etc.). Include all areas that will be permanently or temporarily affected – either directly or indirectly – by any type of disturbance (e.g., land clearing, grading, tree removal, flooding, etc.). Land parcel = the lot(s) on which some type of project(s) or activity(s) are proposed to occur.
Your answer is: The project area (or land parcel) has not been investigated by someone qualified to identify and delineate wetlands, or it is currently unknown if the project or project activities will affect wetlands.

Q5: Aquatic habitat (stream, river, lake, pond, etc.) is located on or adjacent to the subject property and project activities (including discharge) may occur within 300 feet of these habitats?
Your answer is: Yes

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:
Further review of this project is necessary to resolve the potential impact(s). Please send project information to this agency for review (see WHAT TO SEND).

DCNR Species: (Note: The Pennsylvania Conservation Explorer tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below. After desktop review, if a botanical survey is required by DCNR, we recommend the DCNR Botanical Survey Protocols, available here: https://conservationexplorer.dcnr.pa.gov/content/survey-protocols)

Scientific Name	Common Name	Current Status	Proposed Status	Survey Window
Zizania aquatica	Indian Wild Rice	Special Concern Species*	Special Concern Species*	Flowers late May - early September

PA Fish and Boat Commission
RESPONSE:
Further review of this project is necessary to resolve the potential impact(s). Please send project information to this agency for review (see WHAT TO SEND).

PFBC Species: (Note: The Pennsylvania Conservation Explorer tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below.)

Scientific Name	Common Name	Current Status
Alosa mediocris	Hickory Shad	Endangered
Enneacanthus obesus	Banded Sunfish*	Endangered
Sensitive Species**		Endangered
Sensitive Species**		Threatened

U.S. Fish and Wildlife Service
RESPONSE:
Information Request: Conduct a Bog Turtle Habitat (Phase 1) Survey in accordance with USFWS Guidelines for Bog Turtle Surveys (April 2006). Evaluate all wetlands within 300 feet of the project area, which includes all areas that will be impacted by earth disturbance or project features (e.g., roads, structures, utility lines, lawns, detention basins, staging areas, etc.). IF THE PHASE 1 SURVEY IS DONE BY A QUALIFIED BOG TURTLE SURVEYOR (see https://www.fws.gov/northeast/pafo/endangered/surveys.html): 1) Send positive results to USFWS for concurrence, along with a project description documenting how impacts will be avoided. OR, conduct a Phase 2 survey and send Phase 1 and 2 results to USFWS for concurrence. 2) Send a courtesy copy of negative results to USFWS (label as "Negative Phase 1 Survey Results by Qualified Bog Turtle Surveyor; USFWS Courtesy Copy"). USFWS approval of negative results is not necessary when a qualified surveyor does the survey in full accordance with USFWS guidelines. IF THE PHASE 1 SURVEY IS NOT DONE BY A QUALIFIED SURVEYOR: Send ALL Phase 1 results to USFWS for concurrence, and if potential habitat is found, also send a project description documenting how impacts will be avoided. As a qualified bog turtle surveyor, I _____ (name) certify that I conducted a Phase 1 survey of all wetlands in and within 300 feet of the project area on _____ (date) and determined that bog turtle habitat is absent.

_____ (Signature)

* Special Concern Species or Resource - Plant or animal species classified as rare, tentatively undetermined or candidate as well as other taxa of conservation concern, significant natural communities, special concern populations (plants or animals) and unique geologic features.
** Sensitive Species - Species identified by the jurisdictional agency as collectible, having economic value, or being susceptible to decline as a result of visitation.

WHAT TO SEND TO JURISDICTIONAL AGENCIES

If project information was requested by one or more of the agencies above, upload* or email* the following information to the agency(s). Instructions for uploading project materials can be found here. This option provides the applicant with the convenience of sending project materials to a single location accessible to all three state agencies. Alternatively, applicants may email or mail their project materials (see AGENCY CONTACT INFORMATION).
*Note: U.S.Fish and Wildlife Service requires applicants to mail project materials to the USFWS PA field office (see AGENCY CONTACT INFORMATION). USFWS will not accept project materials submitted electronically (by upload or email).

Check-list of Minimum Materials to be submitted:
____Project narrative with a description of the overall project, the work to be performed, current physical characteristics of the site and acreage to be impacted.
____A map with the project boundary and/or a basic site plan(particularly showing the relationship of the project to the physical features such as wetlands, streams, ponds, rock outcrops, etc.)
In addition to the materials listed above, USFWS REQUIRES the following
____SIGNED copy of a Final Project Environmental Review Receipt.

The inclusion of the following information may expedite the review process.
____Color photos keyed to the basic site plan (i.e. showing on the site plan where and in what direction each photo was taken and the date of the photos)
____Information about the presence and location of wetlands in the project area, and how this was determined (e.g., by a qualified wetlands biologist). If wetlands are present in the project area, provide project plans showing the location of all project features, as well as wetlands and streams.

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.

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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

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
595 E. Rolling Ridge Dr., 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: Charles Catanzaro
Company/Business Name: Catanzaro Engineering Associates
Address: 520 Macdade Boulevard
City, State, Zip: Moylan Park, Pennsylvania
Phone: (610) 532-2884 Fax: (610) 532-2923
Email: CJC3rd@catanzaroengineering.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

1/24/19
date

pennsylvania
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

BUREAU OF FORESTRY

January 30, 2019

PNDI Number: 658338
Version: Final_1; 1/24/19

Charles Catania
Catania Engineering Associates, Inc.
520 W. MacDade Blvd
Milmont Park, PA 19033
Email: cjcjr@cataniaengineering.com (hard copy will not follow)

Re: DELCORA Crum Creek Pump Station Bypass FM Alternate 2
Eddystone, Ridley; Delaware, PA

Dear Mr. Catania,

Thank you for the submission of the Pennsylvania Natural Diversity Inventory (PNDI) Environmental Review Receipt Number 658338 (Final_1) for review. PA Department of Conservation and Natural Resources screened this project for potential impacts to species and resources under DCNR's responsibility, which includes plants, terrestrial invertebrates, natural communities, and geologic features only.

No Impact Anticipated with Conservation Measure

PNDI records indicate species or resources under DCNR's jurisdiction are located in the vicinity of the project. Numerous records of *Zizania aquatica* (Indian Wild Rice; PA Special Concern) exist within and around the project footprint. Please take precautions to ensure that the aquatic resources which this species inhabits are not disturbed by project activities. This includes minimizing earth disturbance of Crum Creek shore habitat to the greatest extent practicable and preventing the introduction and dispersal of invasive species to the project area. Invasive species guidelines can be found below. With compliance to these conservation measures, DCNR has determined that no impact is likely. No further coordination with our agency is needed for this project.

Recommended Actions:

- Design the project to minimize the area of disturbance to the fullest extent that would allow for construction. This will help to lessen the area of soil and vegetation disturbance associated with this project.
- Clean boot treads, construction equipment, and vehicles thoroughly (especially the undercarriage and wheels) before they are brought on site. This will remove invasive plant seeds and invasive earthworms/cocoons that may have been picked up at other sites.
- Do not transport unsterilized leaves, mulch, compost, or soil to the site from another location.
- Do not use seed mixes that include invasive species. Please also use weed-free straw or hay mixes. More information about invasive species in Pennsylvania can be found at the following link: http://www.dcnr.pa.gov/Conservation/WildPlants/InvasivePlants/Pages/default.aspx
- Use habitat appropriate seed mixes. For example, when reseeding along a waterway, utilize a riparian seed mix. The Bureau of Forestry Planting & Seeding Guidelines can be found here for recommendations: http://www.docs.dcnr.pa.gov/cs/groups/public/documents/document/dcnr_20031083.pdf
- Report occurrences of invasive species to iMapInvasives at https://www.imapinvasives.org/. Focus on large infestations and species that are not yet well established in the region or in Pennsylvania (https://www.paimapinvasives.org/be-on-the-lookout).

PNDI Number: 658338
Version: Final_1; 1/24/19

This response represents the most up-to-date review of the PNDI data files and is valid for two (2) years only. If project plans change or more information on listed or proposed species becomes available, our determination may be reconsidered. Should the proposed work continue beyond the period covered by this letter and a permit has not been acquired, please resubmit the project to this agency as an "Update" (including an updated PNDI receipt, project narrative, description of project changes and accurate map). As a reminder, this finding applies to potential impacts under DCNR's jurisdiction only. Visit the PNHP website for directions on contacting the Commonwealth's other resource agencies for environmental review.

Should you have any questions or concerns, please contact Alexander Dogonniuck, Ecological Information Specialist, by phone (717-783-3913) or via email (c-adogonni@pa.gov).

Sincerely

Greg Podniesinski

Greg Podniesinski, Section Chief
Natural Heritage Section

Pennsylvania Fish & Boat Commission

established 1866

Division of Environmental Services
Natural Diversity Section
595 E Rolling Ridge Dr.
Bellefonte, PA 16823
814-359-5237

February 4, 2019

IN REPLY REFER TO
SIR# 50669

Catania Engineering Associates, Inc.
Charles Catania
520 W. MacDade Blvd.
Milmont Park, Pennsylvania 19033

RE: Species Impact Review (SIR) – Rare, Candidate, Threatened and Endangered Species
PNDI Search No. 658338_1
DELCORA Crum Creek Pump Station Bypass FM Alternate 2
DELAWARE County: Eddystone Borough, Ridley Township

Dear Charles Catania:

This responds to your inquiry about a Pennsylvania Natural Diversity Inventory (PNDI) Internet Database search "potential conflict" or a threatened and endangered species impact review. These projects are screened for potential conflicts with rare, candidate, threatened or endangered species under Pennsylvania Fish & Boat Commission jurisdiction (fish, reptiles, amphibians, aquatic invertebrates only) using the Pennsylvania Natural Diversity Inventory (PNDI) database and our own files. These species of special concern are listed under the Endangered Species Act of 1973, the Wild Resource Conservation Act, and the Pennsylvania Fish & Boat Code (Chapter 75), or the Wildlife Code.

An element occurrence of a rare, candidate, threatened, or endangered species under our jurisdiction is known from the vicinity of the proposed project. However, given the nature of the proposed project, the immediate location, or the current status of the nearby element occurrence(s), no adverse impacts are expected to the species of special concern.

This response represents the most up-to-date summary of the PNDI data and our files and is valid for two (2) years from the date of this letter. An absence of recorded species information does not necessarily imply species absence. Our data files and the PNDI system are continuously being updated with species occurrence information. Should project plans change or additional information on listed or proposed species become available, this determination may be reconsidered, and consultation shall be re-initiated.

If you have any questions regarding this review, please contact Kathy Gipe at 814-359-5186 and refer to the SIR # 50669. Thank you for your cooperation and attention to this important matter of species conservation and habitat protection.

Sincerely,

Christopher A. Urban, Chief
Natural Diversity Section

CAU/KDG/dn

PNDI # 658334, 658335, 658338 USFWS Project # 2019-0471

U.S. FISH AND WILDLIFE SERVICE

110 Radnor Road, Suite 101, State College, PA 16801

This responds to your inquiry about a PNDI Internet Database search that resulted in a potential conflict with a federally listed, proposed or candidate species.

PROJECT LOCATION INFORMATION

County: Delaware

Township: Eddystone; Ridley

MISC INFORMATION

Date received by FWS: January 28, 2019

☐ ACTIVE ☐ ARCHIVE

USFWS COMMENTS ☑ EMAILED ☐ MAILED

To: Charles Catania

Email: CJCJr@Cataniaengoneering.com

Affiliation: Catania Engineering Associates

SPECIFIC PROJECT: DELCORA Crum Creek Pump Station Bypass Force Main Alternates 1, 1A & 2

FISH AND WILDLIFE SERVICE COMMENT(S):

X ***NOT LIKELY TO ADVERSELY AFFECT***

The federally listed bog turtle occurs or may occur in or near the project area. However, based on our review of the information provided, including the project description and location (No wetlands are present. Projects are located in a highly developed urban location. The force main will be directionaly drilled under Chester Creek. Construction will occur in existing, paved surfaces), no adverse effects to this species are likely to occur. If there is any change in the location, scale, scope, layout or design of the project, further consultation or coordination with the Service will be necessary.

The above determination is valid for two years from the date of this letter. In addition, this response relates only to federally listed, proposed, and candidate species under our jurisdiction, based on an office review of the proposed project's location and anticipated impacts. No field inspection of the project area has been conducted by this office. Consequently, comments on this form are not to be construed as addressing other Service concerns under the Fish and Wildlife Coordination Act or other authorities. *Please reference the above PNDI # and USFWS Project # in any future correspondence regarding this project.*

This review was conducted by the biologist listed below. He/she can be contacted at 814-234-4090.

☐ Bonnie Dershem (x7453)	☐ Brian Scofield (x7471)	☑ Jennifer Kagel (x7451)
☐ Melinda Turner (x7449)	☐ Nicole Ranalli (x7455)	☐ Pamela Shellenberger (x7459)

SIGNATURE: ROBERT ANDERSON Digitally signed by ROBERT ANDERSON Date: 2019.04.12 11:02:31 -04'00'

Supervisor, Pennsylvania Field Office

APPENDIX 10

SERVICE AREA MAPS

Figure 1.0.1
DELCORA Eastern Service Area Map

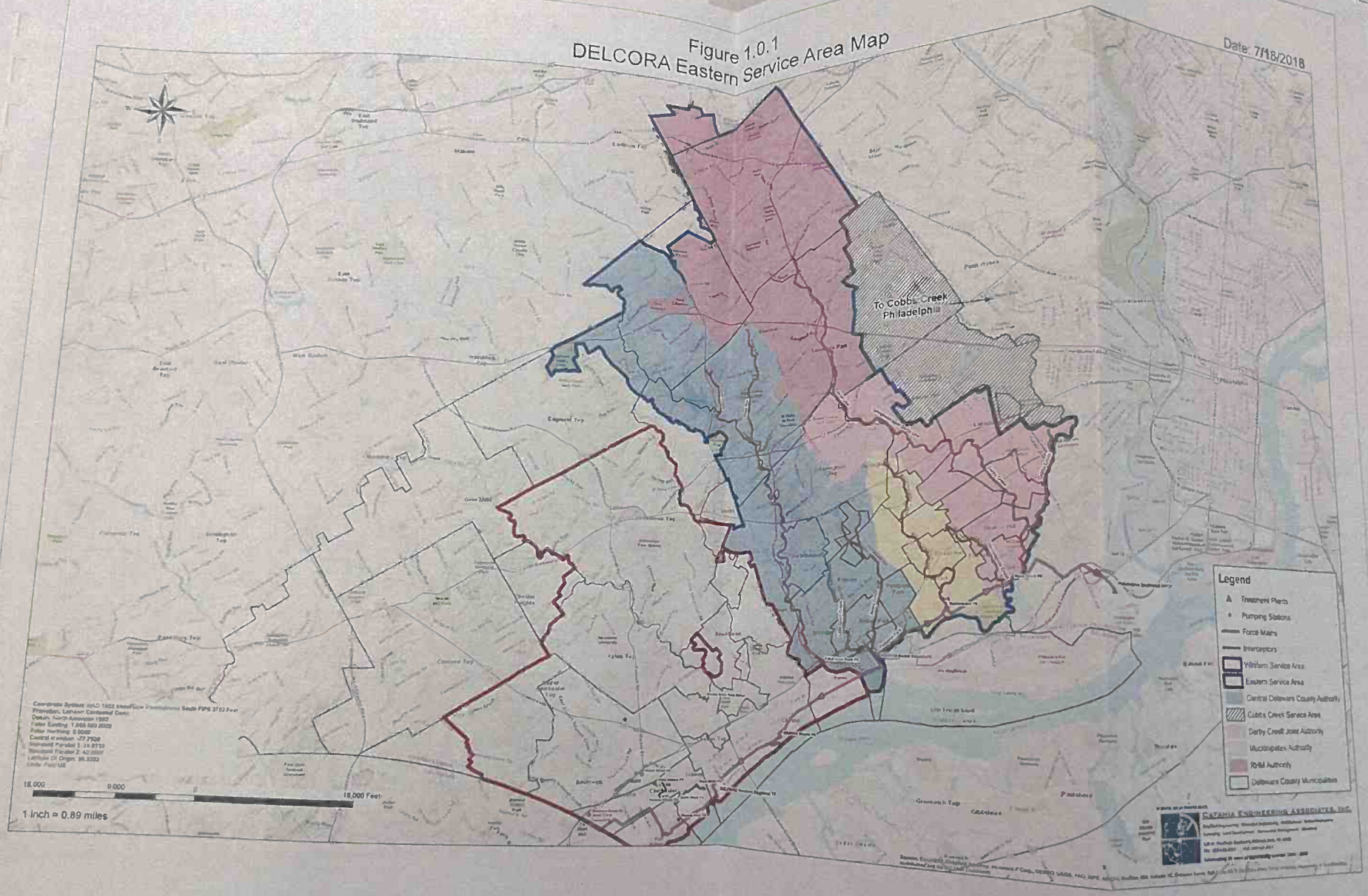
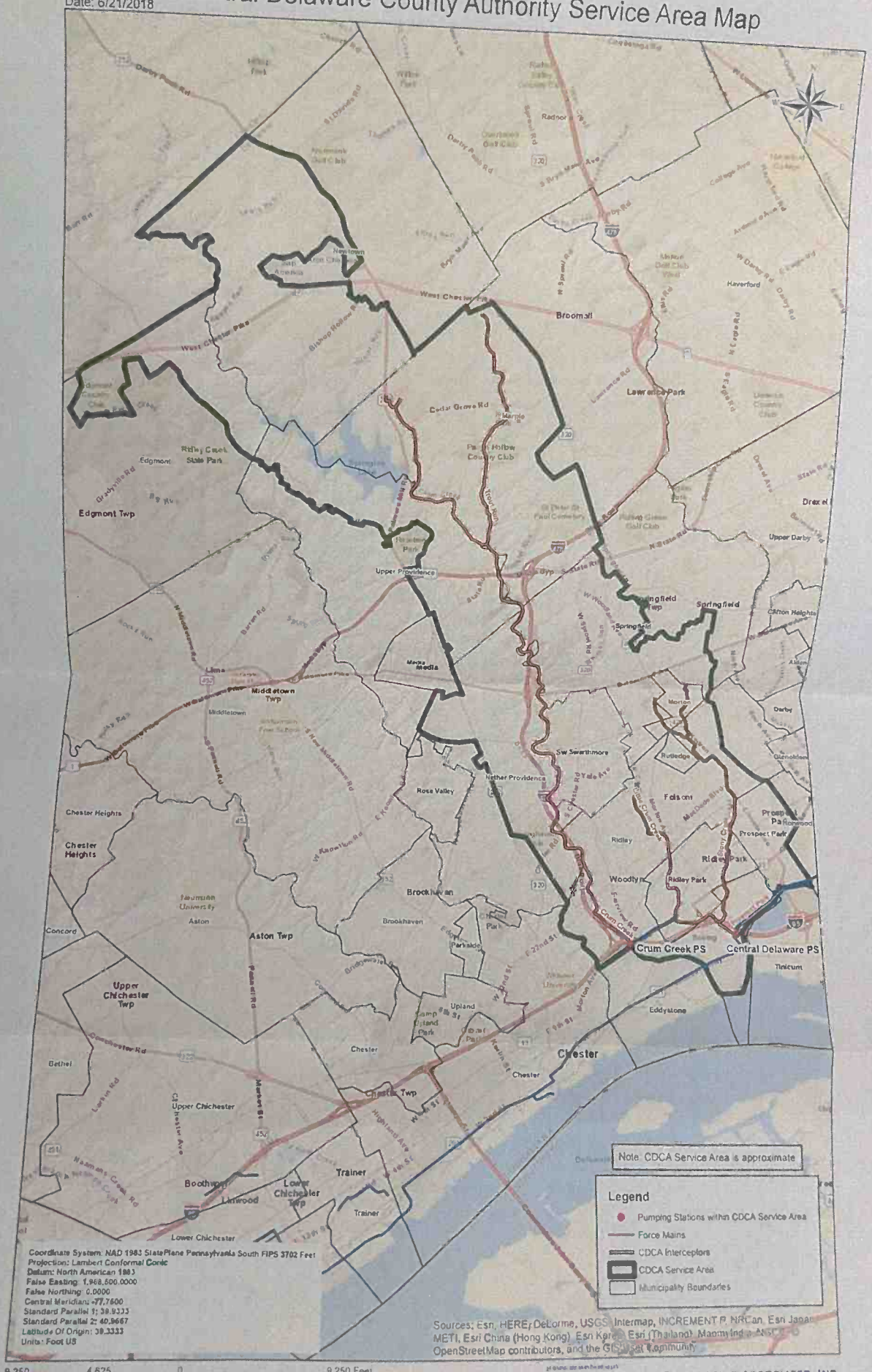


Figure 1.0.2
Central Delaware County Authority Service Area Map

Date: 6/21/2018



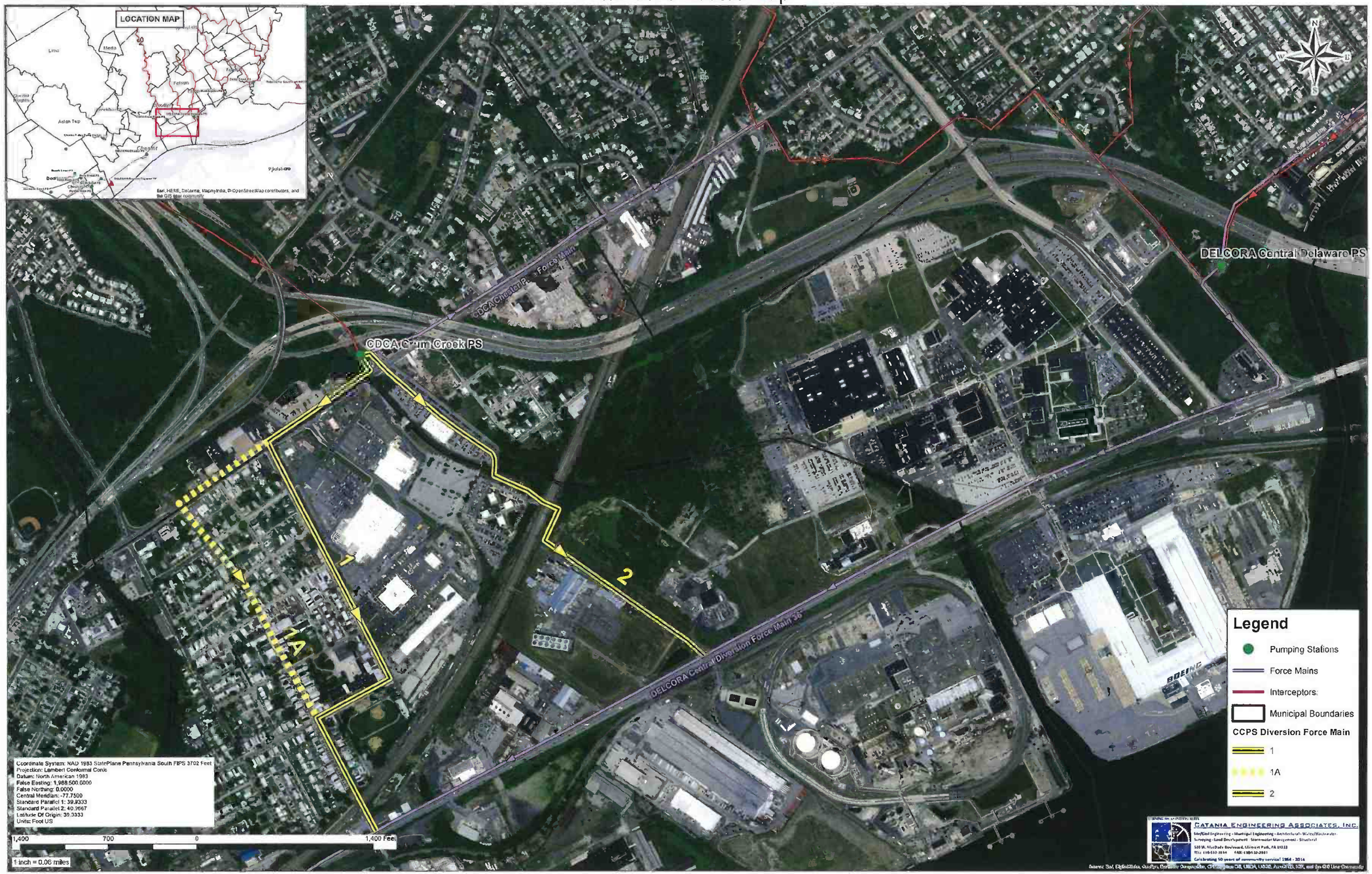
CATANIA ENGINEERING ASSOCIATES, INC.

APPENDIX 11

ALTERNATIVE MAPS

Date: 6/27/2018

Appendix 11
Alternative Routes Map

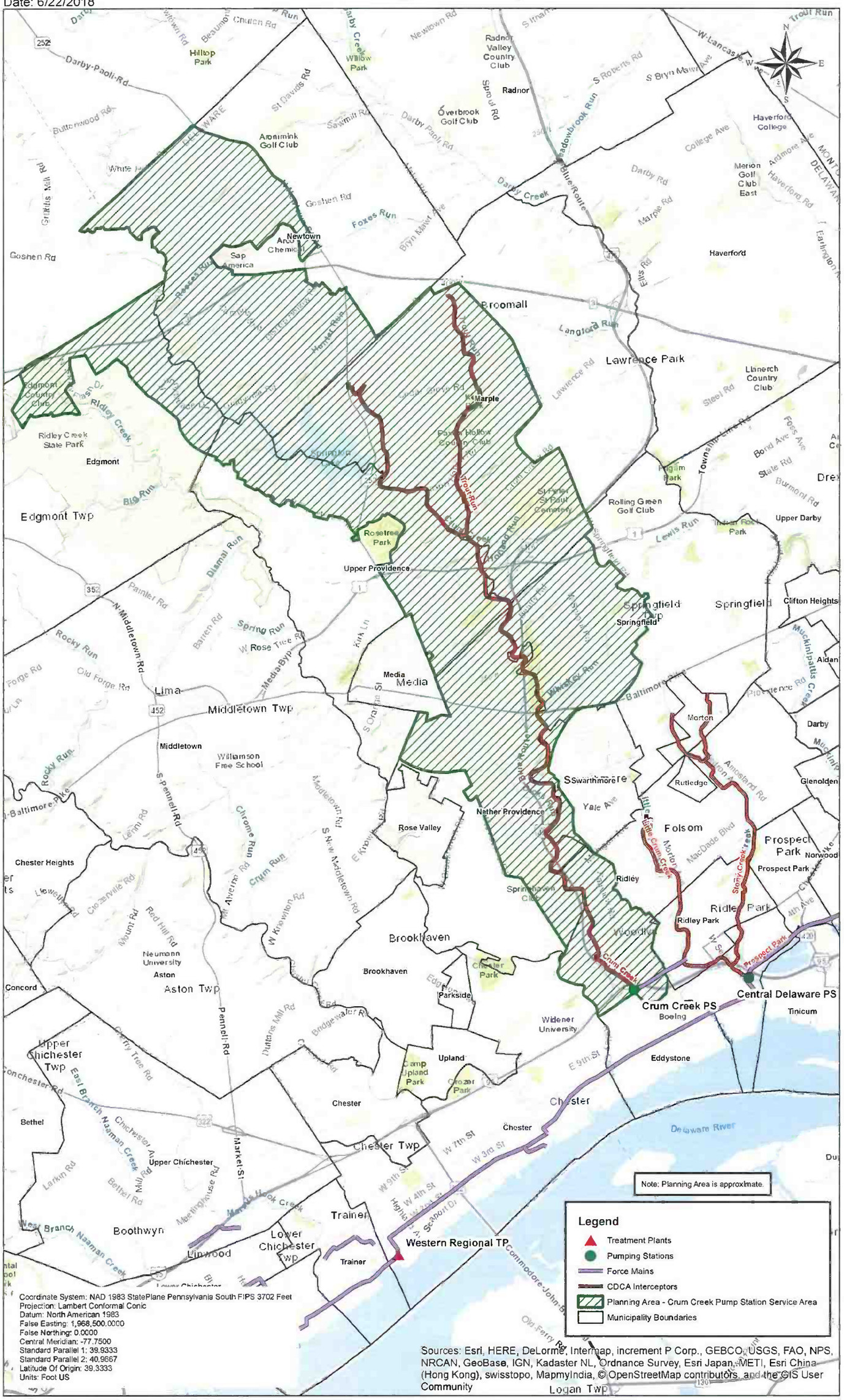


APPENDIX 12

FULL SIZE FIGURES

Figure 2.1.1
Planning Area Map

Date: 6/22/2018



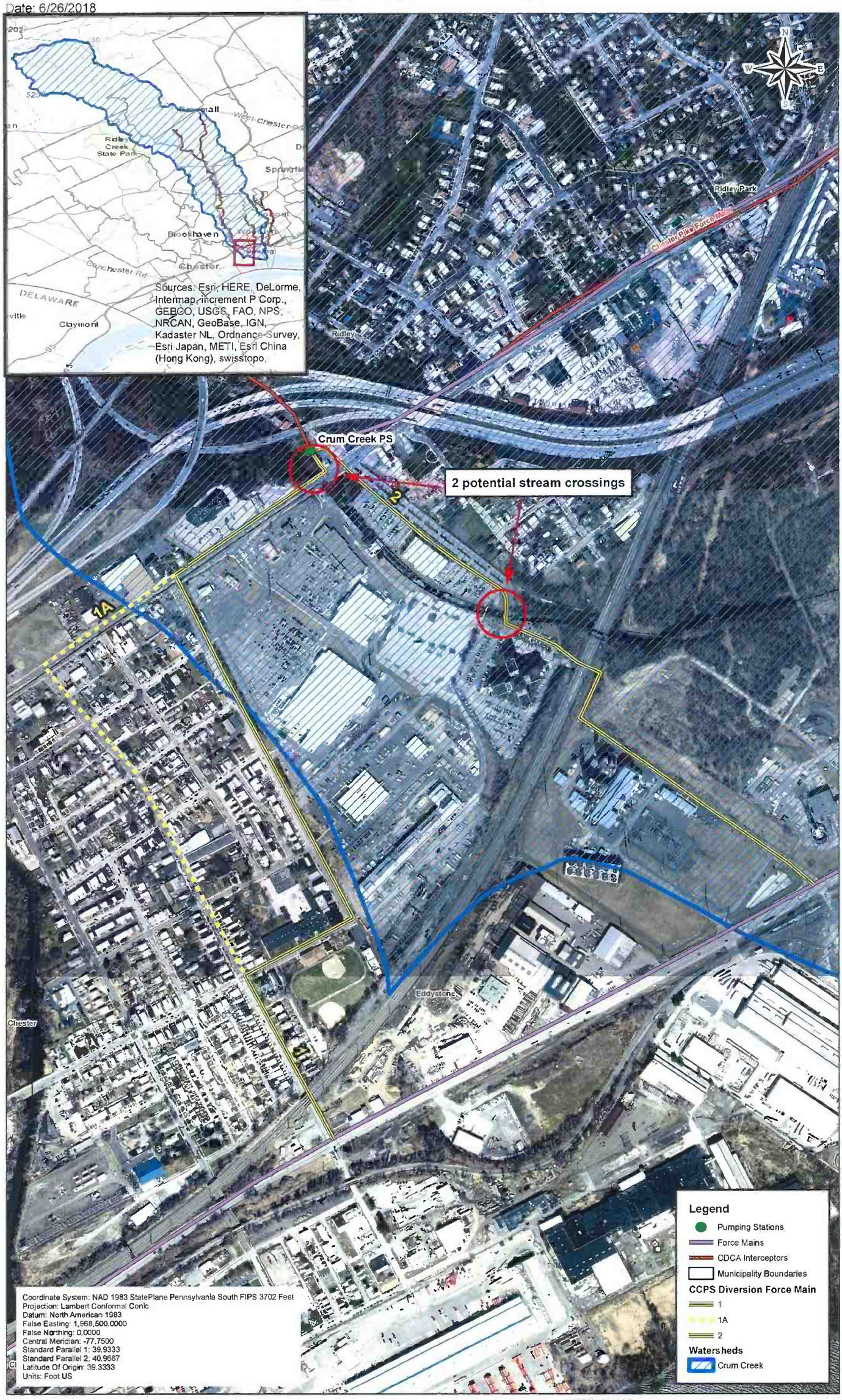
9,300 4,650 0 9,300 Feet

1 inch = 1.04 miles

CATANIA ENGINEERING ASSOCIATES, INC.
Site/Civil Engineering - Municipal Engineering - Architectural - Water/Wastewater
Surveying - Land Development - Stormwater Management - Structural
520 W. MacDade Boulevard, Belmont Park, PA 19033
TEL: 610-532-2884 FAX: 610-532-2921
Celebrating 50 years of community service! 1964 - 2014

Figure 2.2.1
Crum Creek Watershed

Date: 6/26/2018



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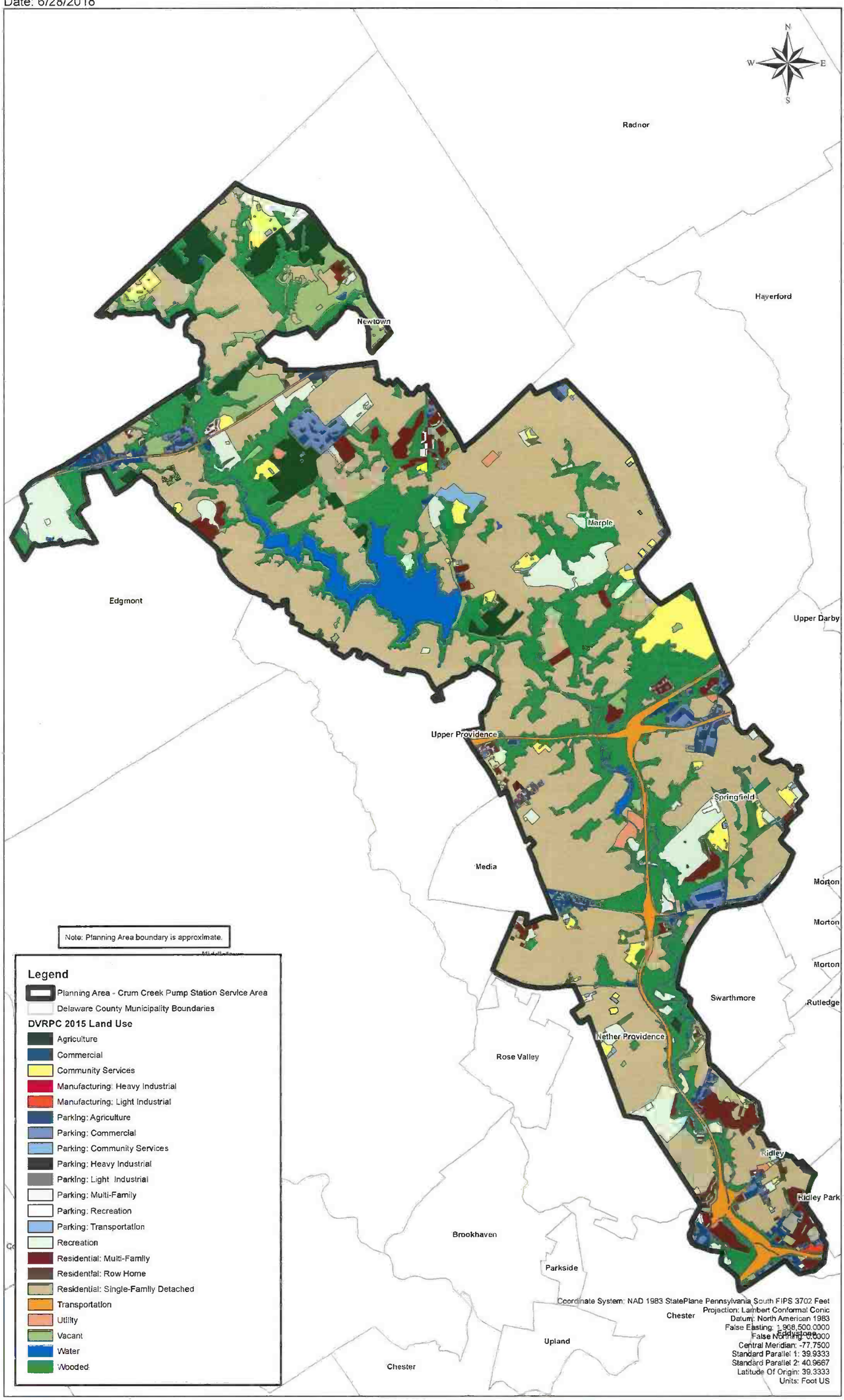
Site/Civil Engineering - Municipal Engineering - Architectural - Water/Wastewater
Surveying - Land Development - Stormwater Management - Structural
520 W. Macdade Boulevard, Milmont Park, PA 19033
TEL: 610-532-2864 FAX: 610-532-2973
Celebrating 50 years of community service! 1964 - 2014

Figure 2.3.1
Land Use Map

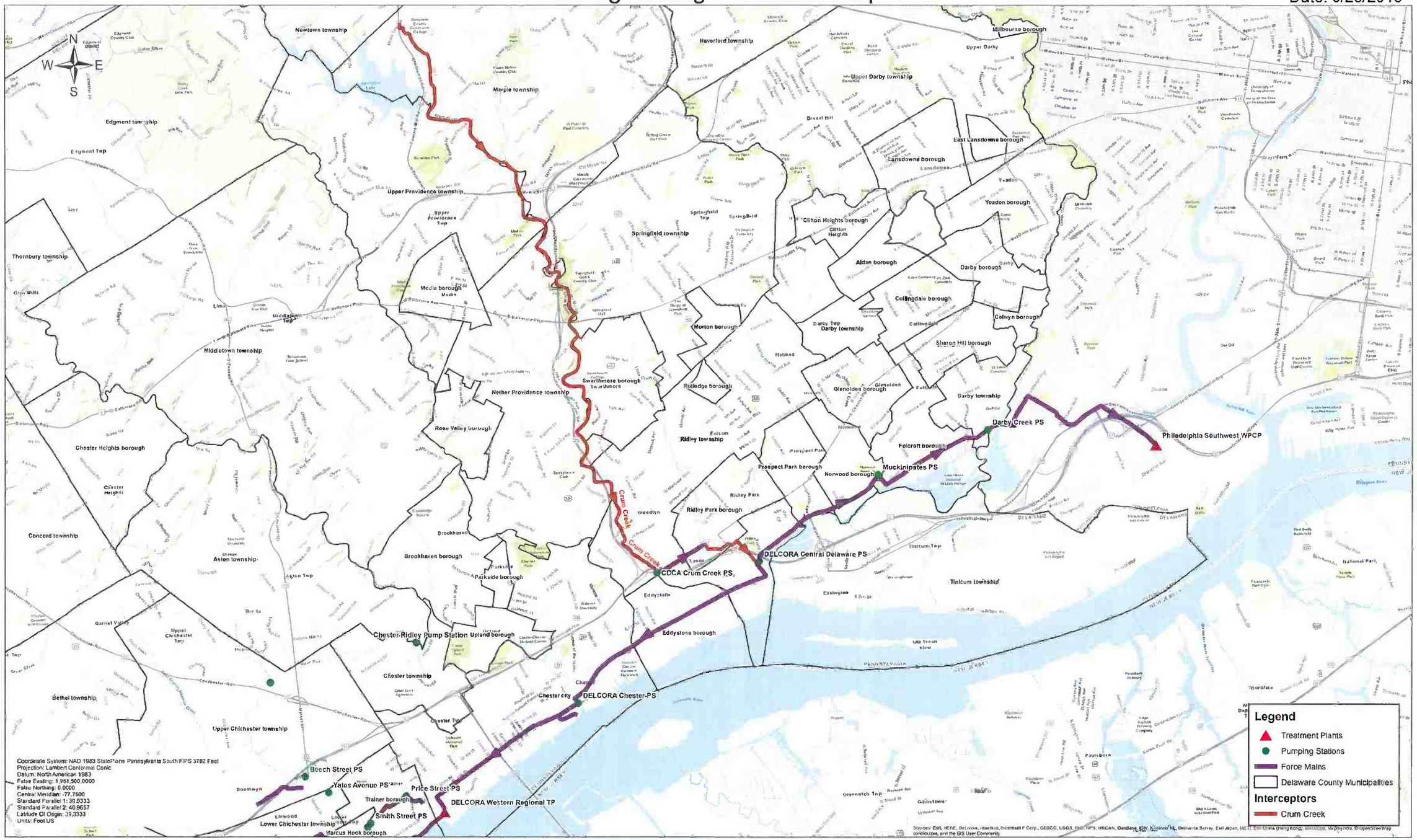
Date: 6/28/2018



CATANIA ENGINEERING ASSOCIATES, INC.
Site/Civil Engineering - Municipal Engineering - Architectural - Water/Wastewater
Surveying - Land Development - Stormwater Management - Structural
520 W. MacDade Boulevard, Millmont Park, PA 19033
TEL: 610-532-2063 FAX: 610-532-2923
Celebrating 50 years of community service! 1964 - 2014

Figure 3.0.1
Existing Sewage Facilities Map

Date: 6/28/2018



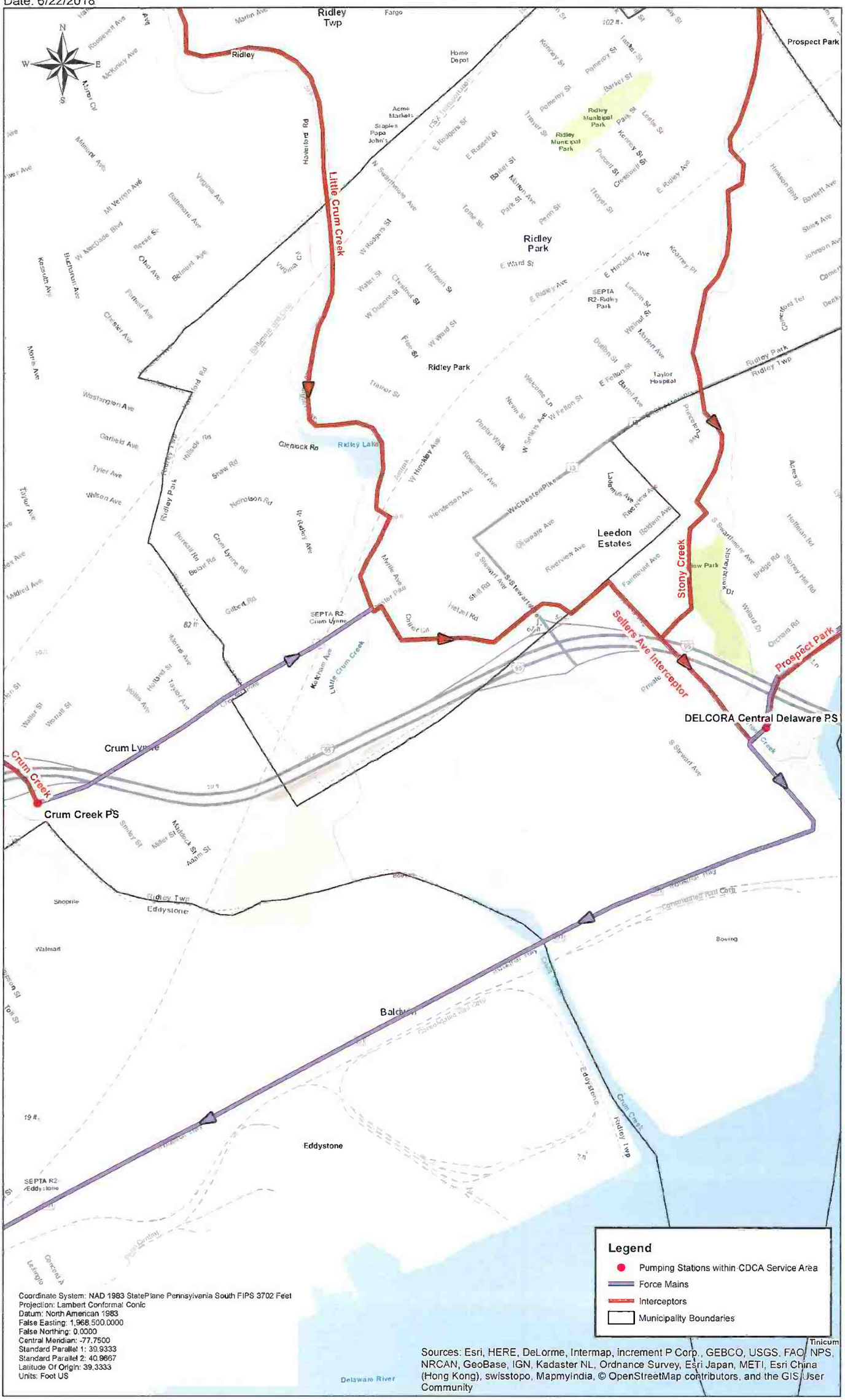
11,000 5,500 0 11,000 Feet

1 inch = 0.52 miles

CATANIA ENGINEERING ASSOCIATES, INC.
Civil/Civil Engineering - Municipal Engineering - Architectural - Water/Wastewater
Surveying - Land Development - Stormwater Management - Structural
5705W. State Road Boulevard, Belmont Park, PA 19010
TEL: 610-532-2884 FAX: 610-532-2923
Celebrating 50 years of community service! 1964 - 2014

Figure 3.2.1
Central Delaware County Authority Facilities

Date: 6/22/2018



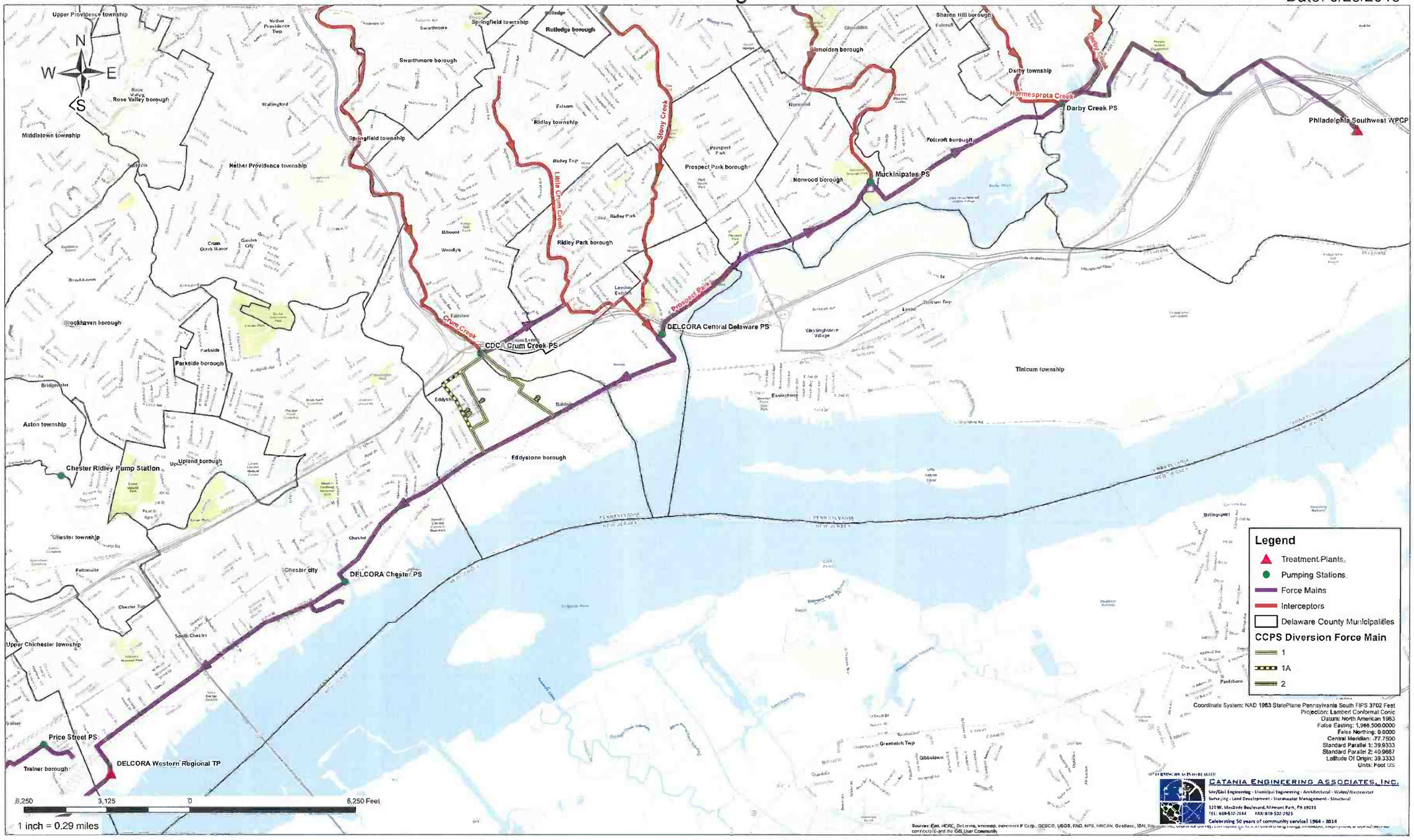
1,400 700 0 1,400 Feet

1 inch = 0.16 miles

CATANIA ENGINEERING ASSOCIATES, INC.
Site/Civil Engineering - Municipal Engineering - Architectural - Water/Wastewater
Surveying - Land Development - Stormwater Management - Structural
520 W. MacDade Boulevard, Milmont Park, PA 19033
TEL: 610-532-7884 FAX: 610-532-2973
Celebrating 50 years of community service! 1964 - 2014

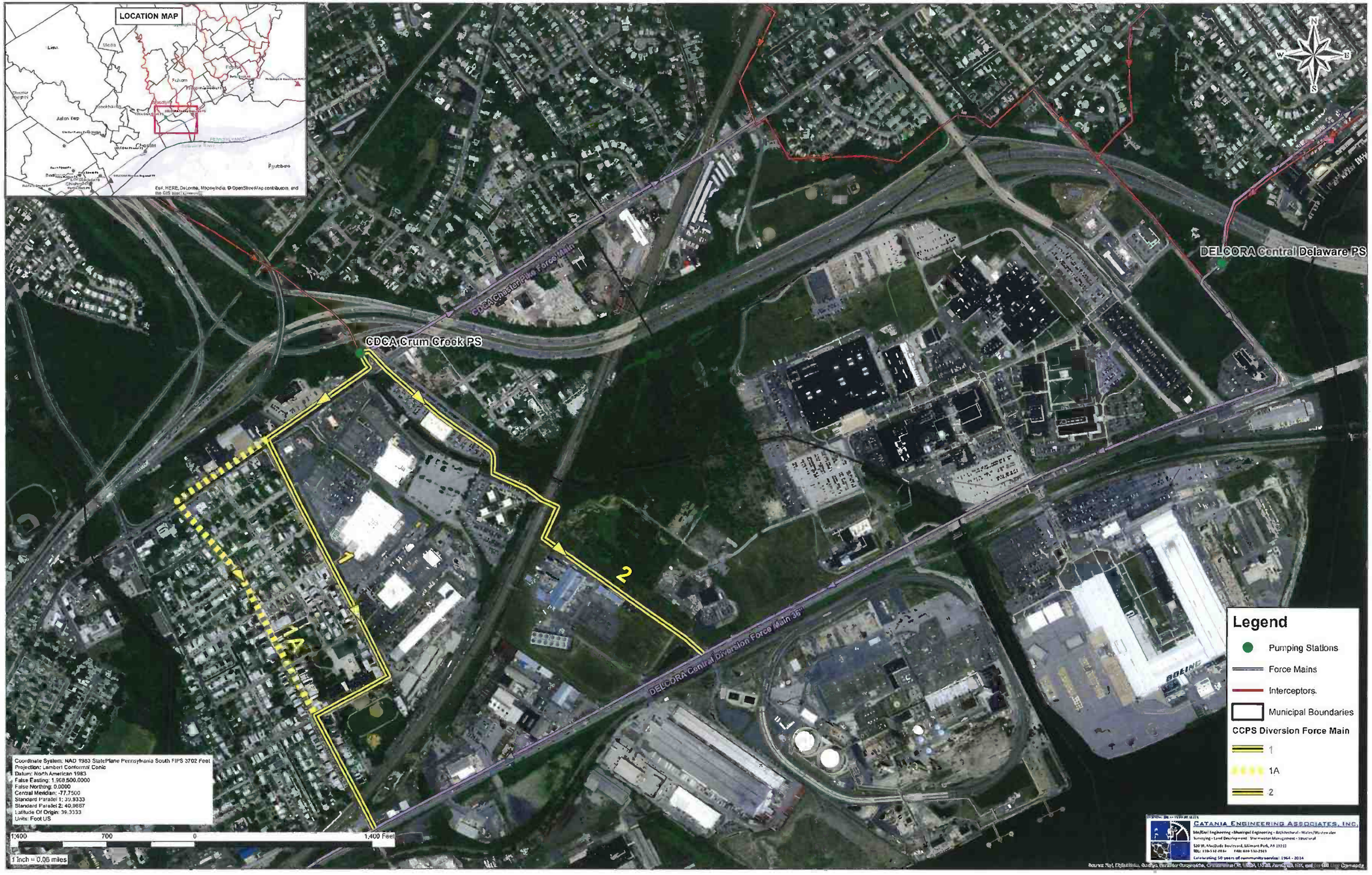
Figure 3.2.2
DELCORA Sewage Facilities

Date: 6/28/2018



Date: 6/27/2018

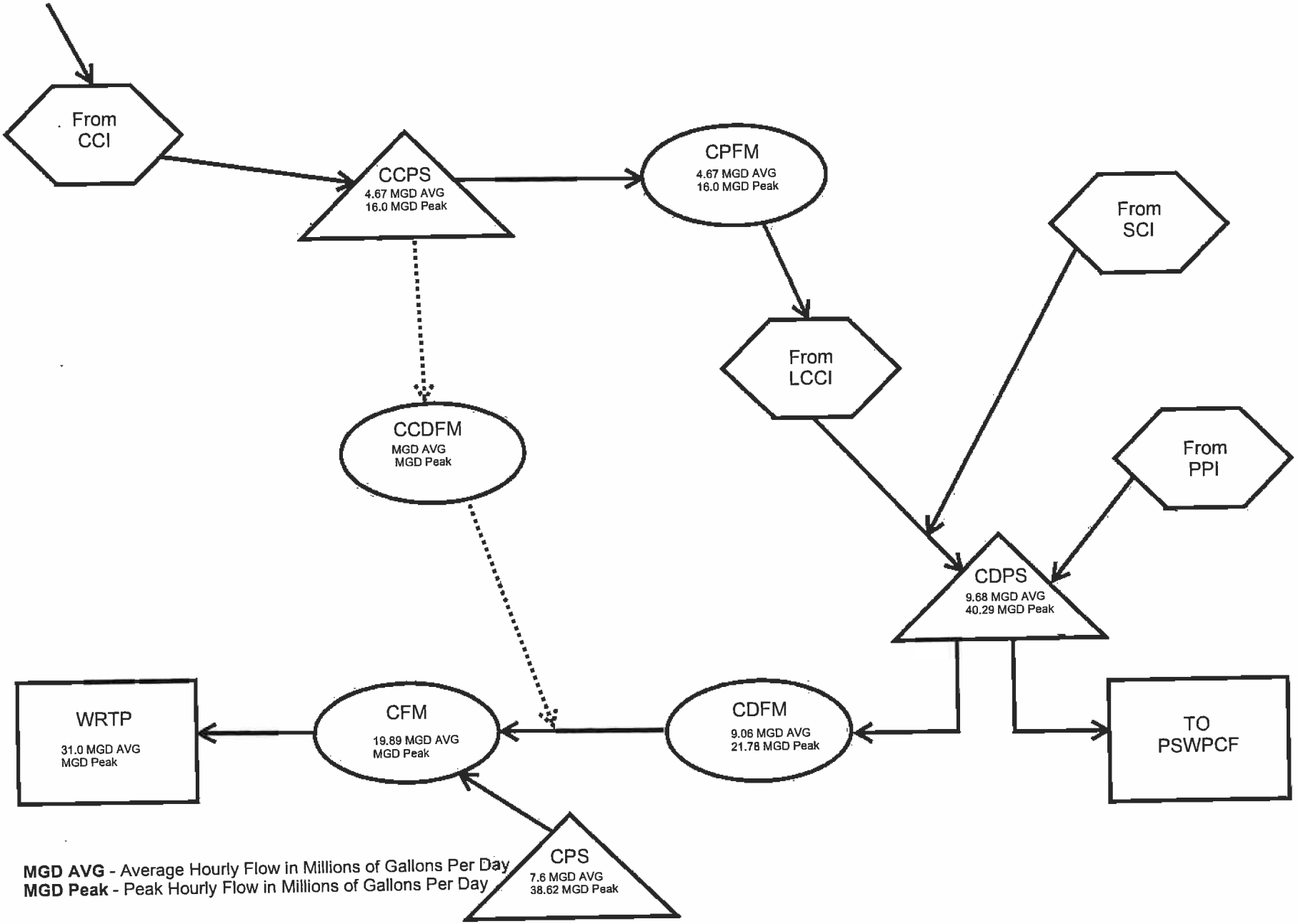
Figure 5.1.1
CCPS Diversion Force Main



APPENDIX 13

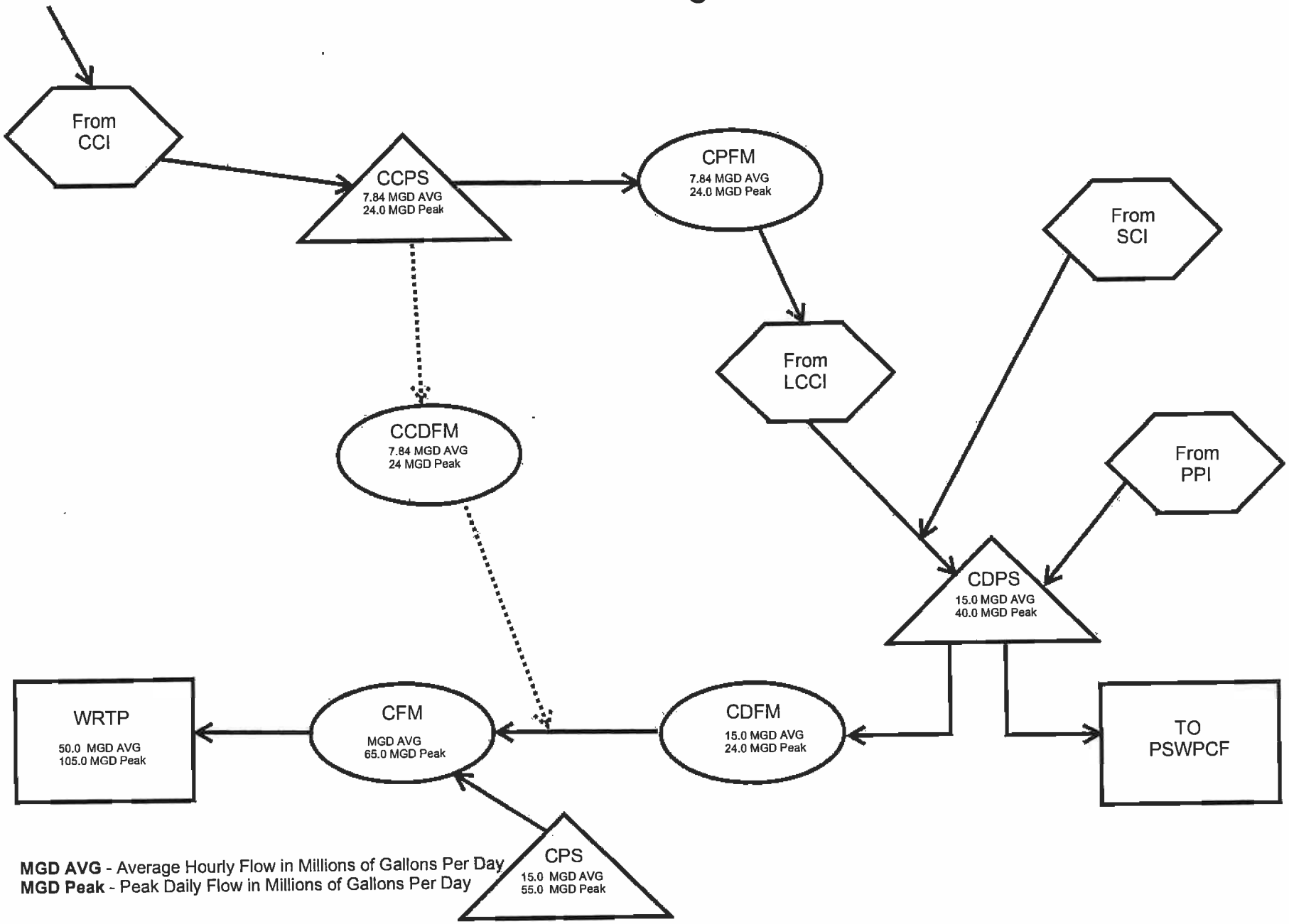
DELCORA/ CDCA FLOW CHART

Delcora/CDCA Present Flow Chart



MGD AVG - Average Hourly Flow in Millions of Gallons Per Day
MGD Peak - Peak Hourly Flow in Millions of Gallons Per Day

Delcora/CDCA Design Flow Chart



MGD AVG - Average Hourly Flow in Millions of Gallons Per Day
MGD Peak - Peak Daily Flow in Millions of Gallons Per Day

APPENDIX 14

DELCORA I&I REDUCTION ACTIVITIES

1. Select I/I Reduction Activities Undertaken by DELCORA
    a. Investigated inflow and infiltration (I&I) control options through PADEP's Act 537 plan process and recommended an aggressive elimination of I&I to the collection systems.
    b. Developed sample ordinance for private-side sewer lateral and illicit connection inspections.
    c. Above two items were included in the Draft 2013 Act 537 plan. The plan was not approved by some municipalities and PaDEP requested that it be withdrawn in 2018.
    d. Purchased and distributed manhole lid inserts which are effective at limiting inflow into manholes during wet weather events.
    e. Numerous municipalities adopted ordinances and/or have been implementing programs to disconnect roof drains and sump pumps for several years. Additional towns are adopting the ordinances.
    f. Implemented a public education program about sump pumps and roof leaders.
    g. Deployed an extensive metering program which supports a better understand where excessive inflow and infiltration is entering the system.
    h. Routinely share meter data with customer municipalities to facilitate their I&I control efforts.
    i. DELCORA's technical consultant performed data analysis to determine peak wet weather flows from within the service area.
    j. Meter data collection has continued at a cost of approximately $650,000/yr
    k. DELCORA, Municipalities, and Authorities have complete miles of sewer and manhole rehab/renewal including:
        i. Pipe grouting
        ii. Pipe lining
        iii. Pipe enlarging/replacing
        iv. Parallel pipe installation
        v. Manhole rehabilitation
    l. Performing data analysis pilot program by EmNet to further characterize the I&I (fractions of inflow vs. infiltration). DELCORA hired EmNet to analyze the flow meter data which has been collected over a several year period. EmNet is a national firm that specializes analysis of wet-weather data particularly as it relates to collection system real time controls. The project was approved by the DELCORA board on September 18, 2018. The pilot program is kicked off and results are expected in November 2018.

APPENDIX 15

CDCA I&I REDUCTION ACTIVITIES

CDCA I/I ABATEMENT ACTIVITIES

1. System Metering: Under an agreement with DELCORA, flow meters are permanently installed at municipal connection points into the CDCA interceptor. The meter data is used for billing purposes and municipalities are billed for operation and maintenance costs based upon the percentage of flow into the system. CDCA Board is considering amending the distribution of capital cost based upon the past 5-year metered flow data.
2. System Metering Review: CDCA Maintenance Committee conducts an annual review of the flow data of the metering program. The review consists of the analysis of flow/EDU for each meter in the system. Metering areas with higher than expected flow/EDU are flagged and towns are notified of the findings.
3. Meter Loaner Program: CDCA has portable flow meters available for loan to member municipalities. The intent is to assist towns in identifying areas of excess I/I. The towns need to install the meters, but CDCA provides the meters and technical assistance.
4. Flow Allocations: Under a resolution approved by the CDCA Board, approval of any new flow connections into the system are considered only if that town has demonstrated a good faith effort to address the I/I issue
5. Line Cleaning & Video Inspection: CDCA has an eight (8) phase cycle to clean and video-inspect the interceptor system. Areas upstream of the public water supply are on an accelerated schedule. In itself, the line cleaning and video inspection program is a maintenance activity, but data collected from the video inspection are used for I/I Abatement in the CDCA interceptors. Reports from each year's inspection include recommended repairs, categorized as high priority, low priority and I/I abatement.
6. Annual Interceptor Maintenance: CDCA Maintenance Committee has developed a Strategic Plan for the maintenance and rehabilitation of the interceptors. The Strategic Plan is categorized into 2-year Plan, 3-5 Year Plan, and 6-25 Year Plan. Capital projects are implemented based upon the Strategic Plan. In addition, CDCA budgets a certain amount for normal maintenance of the interceptors. This is the budget line item that high priority findings of the annual video inspection are included. In the 3rd quarter of each year, the CDCA Maintenance Committee reviews the actual normal maintenance expenses and authorizes additional low priority or I/I abatement work to be completed.
7. Interceptor Rehabilitation: A list of interceptor maintenance work completed specifically to address I/I issues is attached
8. Operation & Capital Charges: CDCA operation charges to member municipalities are based upon the previous year metered flow data as an incentive to reduce flow. CDCA recently adjusted capital charges based upon the previous 5-year metered flows as an additional incentive to reduce flow.
9. Municipal Collection System Rehabilitation: a partial list of activities undertaken by member municipalities is attached. The list is generated based upon information received by CDCA and may not be a comprehensive list of all work completed by member municipalities.

CDCA Interceptor Rehabilitation Work History

Pipe Relining

Crum Creek Interceptor

MH 9-11	42" – 600 ft
MH 15-17	42" – 650 ft
MH 19-23	42" – 1300 ft
MH 34-38	42" – 840 ft
MH 42-47	36" – 1080 ft
MH 51-53	36" – 685 ft
MH 56-59	36" – 1000 ft
MH 62-64	36" – 570 ft
MH 65-67	36" – 275 ft
MH 76-78	36" – 665 ft
MH 83-84	36" – 215 ft
MH 86-94	36" – 2100 ft
MH 99-100	36" – 40 ft
MH 110-114	33" – 820 ft
MH 118-119	33" – 110 ft
MH 123-124	33" – 250 ft
MH 159-160	33" – 230 ft
MH 163-164	33" – 250 ft
MH 229-230	12" – 360 ft
MH CCE2-CCE3	8" – 300 ft
MH CCE6-CCE7	8" – 180 ft

Little Crum Creek Interceptor

MH 24-27	30" – 905 ft
MH 29-30	30" - 105 ft
MH 31-33	30" – 400 ft
MH 35-37	30" – 550 ft
MH 63-64	24" – 200 ft
MH 70-71	24" – 170 ft

Stoney Creek Interceptor

MH 18-20	42" – 150 ft
MH 32-33	30" – 50 ft
MH 64-65	30" – 270 ft
MH 78-79	30" – 300 ft
MH 85-86	20" – 200 ft
MH 93-94	20 – 150 ft
MH 99-102	18" – 980 ft

Prospect Park Interceptor

MH 1-16 (entire interceptor)	18" – 95 ft
	27" – 3350 ft
	33" – 250 ft
	36" – 700 ft

Manhole Rehabilitation

Water-tight frame & covers – all manhole converted to water-tight frames and covers due to proximity to streams

Liners – ongoing program to install cementitious liners in manholes with infiltration

Member Municipality Rehabilitation Work History

Rutledge Borough

- Complete relining of collection system and rehabilitation of manholes
- Flow metering
- Video inspection is done as necessary

Morton Borough

- Flow metering
- Implemented a 4 year line cleaning program
- Completed comprehensive relining program

Ridley Township

- Flow metering
- Implemented a 4 year line cleaning program
- Implemented a 7-year video inspection program
- Relined 4,300 ft of system

Swarthmore Borough

- Revised use and occupancy requirements to include visual inspection of laterals, cleanouts etc.
- 14,000 ft of the system was inspected in 2017
- 3,500 ft of the system was treated in 2017
- Relined 2,000 ft of sewer
- $20,000 of root control was done in 2018

Nether Providence Twp

- Adopted time of sale private lateral inspection requirement
- Chemical grouted 1,500 ft of sewer
- Relined 2,000 ft of sewer
- Flow metering

Springfield Twp

- Flow meters
- 10-20 miles of the system are inspected annually

Prospect Park Borough

- Flow metering

- Relined 250 ft of sewer
- Replaced 150 ft of sewer

Ridley Park Borough

- Flow metering
- Relined 1,050 ft of sewer

Marple Twp

- 40,200 ft of system was televised in 2017
- 29,000 ft of root control was completed in 2017
- 128 manholes were repaired or rehabilitated in 2017

Edgmont Twp

- Adopted time of sale private lateral inspection requirement
- 34,500 of the system was televised in 2016
- 4,400 ft of the system was cleaned in 2017
- $200,000 worth of rehabilitation and inspection was completed in 2018
- Manhole inserts and odor control was used in 3 manholes

Upper Providence Twp

- Flow metering
- Implemented a 4 year television inspection and cleaning program
- All future and public sewers will be low pressure systems
- Low pressure systems in 2 existing roads and several private laterals

Newtown Twp

- Adopted grease trap ordinance

DELAWARE COUNTY

ACT 537 SEWAGE FACILITIES PLAN UPDATE

EASTERN PLAN OF STUDY

Delaware County Planning Department

2002

DELAWARE COUNTY

ACT 537 SEWAGE FACILITIES PLAN UPDATE

2002

EASTERN PLAN OF STUDY

Prepared by
Delaware County Planning Department

with assistance from the
Delaware County Regional Water Quality Control Authority
and
Roy F. Weston, Inc.

Mailing Address
Court House/Government Center
201 West Front Street
Media, PA 19063

Office Location
Toal Building
2nd & Orange Streets
Media, PA 19063

Telephone: (610) 891-5200 Fax: (610) 891-5203

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CHAPTER 1

DESCRIPTION OF THE STUDY AREA

GENERAL

Delaware County is located in the southeastern corner of Pennsylvania. The County is bounded on the east by the City of Philadelphia, on the southeast by the Delaware River and the State of New Jersey, and on the southwest by the State of Delaware. Map 1-1 shows Delaware County in its regional setting. Although the County is the third smallest in the state in terms of land area (184.43 square miles), it has the fifth largest population (550,864) according to the Census 2000. Of the 49 municipalities comprising the County, nineteen have areas of less than one square mile, and eleven others do not exceed two square miles (see Map 1-2).

Environment

Two major topographical areas run through the County. The eastern section of Delaware County is quite level and lies in the Atlantic Coastal Plain. This is an area of low, flat, poorly drained land which extends from the Marcus Hook area northeastward on a line almost paralleling Route 13 between MacDade Boulevard and Chester Pike into the Yeadon area and south to the Delaware River. Much of this land has been improved for industrial and commercial use because of its proximity to the Delaware River.

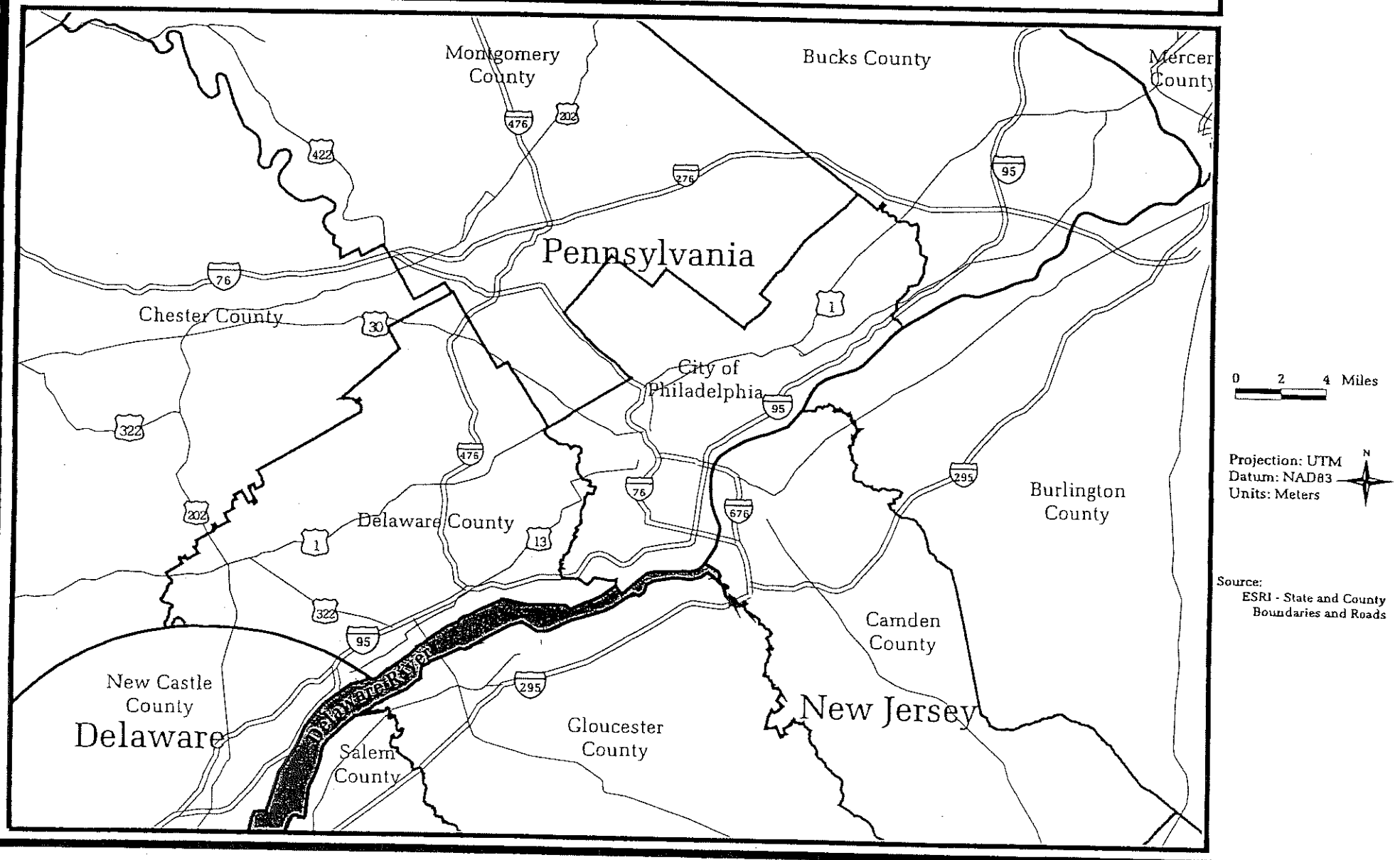
The western portion of the County is extremely hilly. This area lies north and west of the Coastal Plain and covers the remaining area of the County. It is the beginning of the Piedmont Province, which extends sixty to eighty miles inland from the Coastal Plain. This area includes rolling or undulating uplands, low hills, and well-drained soils. These features give the County its rolling surface, which ranges from a height of 480 feet (in Marple Township) to sea level (at the Delaware River).

Although all of the land in Delaware County is part of the Delaware River watershed, the County is also divided into eight major subwatersheds which correspond to the County's major streams (see Map 1-3). The County has many small lakes and farm ponds, as well as the much larger Springton Reservoir, which is located between Marple and Upper Providence Townships.

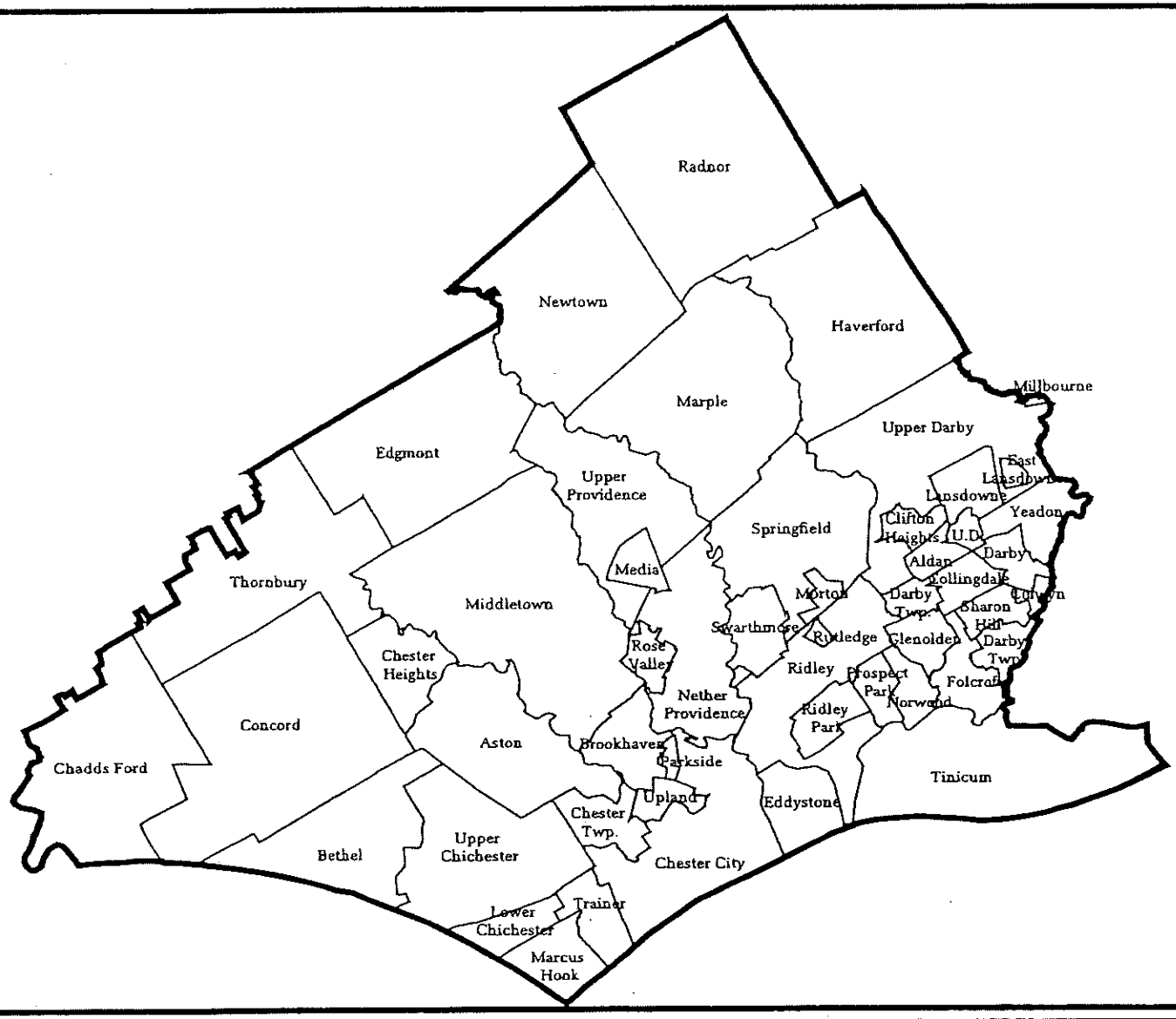
Governmental Structure

Delaware County is a Second Class A county with a home rule charter. It is governed by a Council of five members, each of whom is elected to a staggered four-year term.

Map 1-1
Regional Setting



Map 1-2
Delaware County Municipalities



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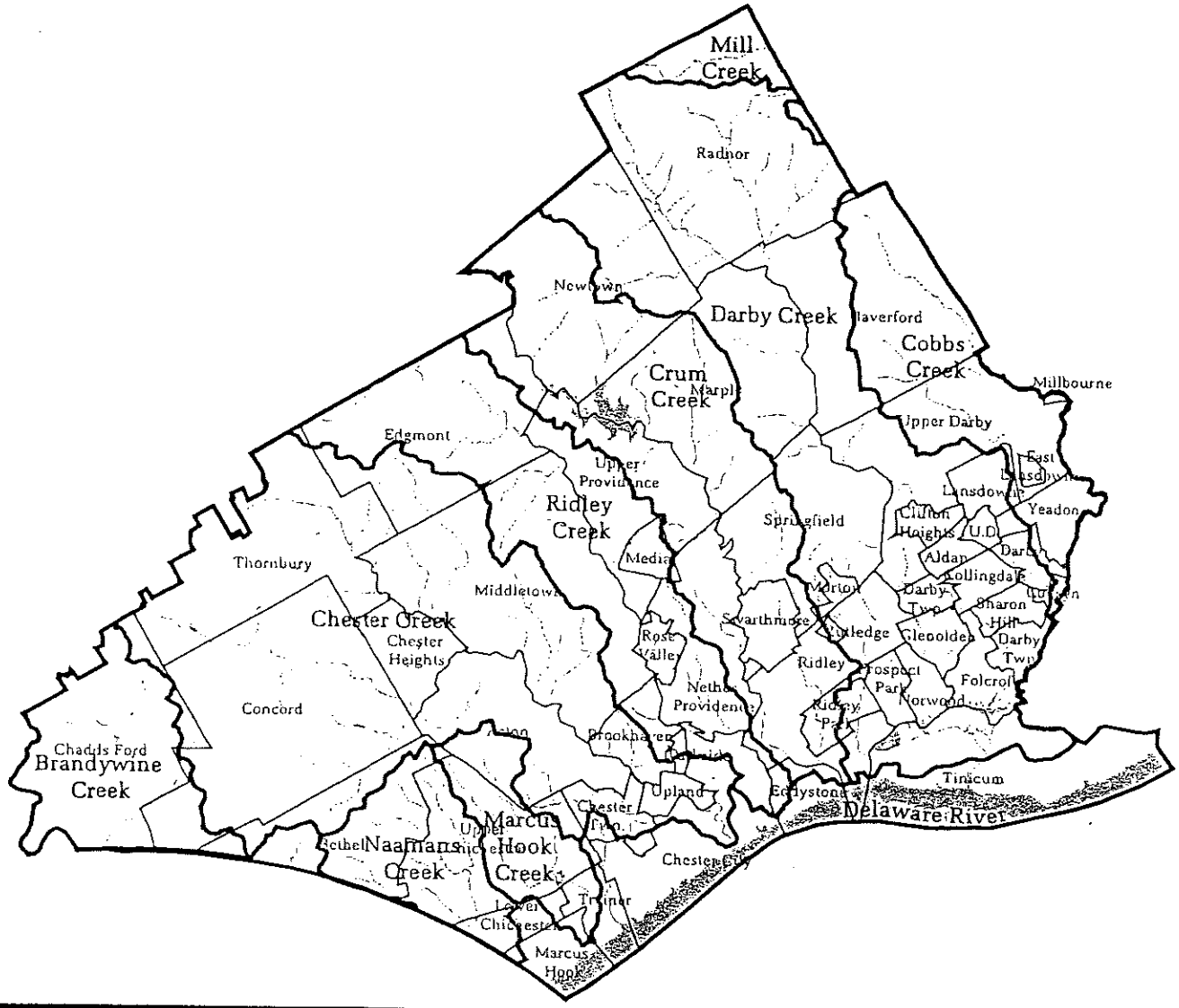
Projection: UTM
Datum: NAD83
Units: Meters

Source:
U.S. Department of Commerce, Bureau of the Census, Tiger Line Files, 2000: County and Municipal Boundaries

Map 1-3
Major Watersheds



Source:
Environmental Research Institute - Watersheds
U.S. Department of Commerce, Bureau of the Census, Tiger Line Files, 2000 - County and Municipal Boundaries

The County's 49 municipalities consist of one city of the third class, twelve first class townships, nine second class townships, and twenty-seven boroughs (see Table 1-1). Seven of the County's municipalities are governed by home rule charters.

Chester is a city of the third class. Under powers granted by the Home Rule Charter Amendment of 1957, Chester has adopted a Mayor-Council form of government with the number of councilmen set at four.

All first class townships not governed by home rule are regulated by the First Class Township Code, which requires government by an elected Board of Commissioners. The number of members on the board can vary from five to fifteen members, depending on the political subdivision of the township.

All second class townships not governed by home rule are regulated by the Second Class Township Code, which requires government by an elected Board of Supervisors. The board is composed of either three or five members, depending on the population of the township.

All boroughs not governed by home rule are regulated by the Borough Code, which requires government by a Mayor and Borough Council. The number of councilmen is dependent on the number of political subdivisions of the borough, but cannot exceed fifteen.

Those municipalities governed by a home rule charter (except for the City of Chester) were granted this option by the Home Rule Charter and Option Plans Law of 1972. This law gives every Pennsylvania municipality the opportunity to either draft a home rule charter or to select an optional plan of government. Delaware County home rule municipalities generally have a Council form of government. In these municipalities, this form of government is dependent upon and regulated by the charter and generally consists of one councilman from each political subdivision of the municipality but may also include councilmen at large.

Economic Characteristics

Historically, Delaware County's economic development has been based on its readily available supplies of water for power and process needs, for transportation, and for the removal of wastes. Heavy industry came to Delaware County to take advantage of the many swift streams that empty into the Delaware River. A belt of heavy industry developed along the river from the State of Delaware into Philadelphia. This belt includes the City of Chester, Tinicum and Ridley Townships, and the Boroughs of Eddystone, Marcus Hook, and Trainer.

TABLE 1-1

GOVERNMENTAL STRUCTURE OF
MUNICIPALITIES IN DELAWARE COUNTY

Third Class City	Number of Councilmen	Form of Government
Chester	4	Home Rule
First Class Townships	**Number of Commissioners**	
Aston	7	
Darby	5	
Haverford	9	Home Rule
Lower Chichester	5	
Marple	7	
Nether Providence	6	
Radnor	7	Home Rule
Ridley	9	
Springfield	7	
Tinicum	5	
Upper Chichester	5	
Upper Darby	11	Home Rule
Second Class Townships	**Number of Supervisors**	
Bethel	3	
Chadds Ford	3	
Chester	5	Home Rule
Concord	5	
Edgmont	3	
Middletown	7	Home Rule
Newtown	5	
Thornbury	3	
Upper Providence	5	Home Rule
Boroughs	**Number of Councilmen**	
Aldan	7	
Brookhaven	7	
Chester Heights	6	
Clifton Heights	8	
Collingdale	7	
Colwyn	7	
Darby	9	
East Lansdowne	7	
Eddystone	7	
Folcroft	7	
Glenolden	5	
Lansdowne	7	
Marcus Hook	7	
Media	7	
Millbourne	8	
Morton	7	
Norwood	7	
Parkside	7	
Prospect Park	7	
Ridley Park	7	
Rose Valley	7	
Rutledge	7	
Sharon Hill	7	
Swarthmore	7	
Trainer	7	
Upland	7	
Yeadon	7	

Source: DCPD, 1999

With the advent of good road systems and abundant power, industry began to decentralize. Delaware County has experienced a shift in employment character in the last two decades from one which was dominated by industrial/manufacturing employment to one which has become more service oriented.

Commerce in Delaware County has developed in a linear pattern along the radial highways feeding into Philadelphia, in the City of Chester, in the 69th Street Terminal area in Upper Darby Township, and in Media Borough, the County seat. The most recent area of commercial growth is in the vicinity of Routes 1 and 202 along the border between Chadds Ford and Concord Townships. An additional area experiencing a high rate of growth is in the vicinity of Route 322 in Upper Chichester Township. Although there are several large shopping centers in the County, most commercial development to date has been uncoordinated strip development along the radial highways. The prime influence for this development has been, and continues to be, the automobile.

Recent Trends in County Development

Although specific trends in County development will be discussed in a later chapter, recent development trends indicate that areas from Middletown Township west to the Chester County border are developing most quickly, with 7,334 residential building permits issued between 1988 and 1998 alone. Areas experiencing the greatest level of new development include Aston, Bethel, Concord, and Upper Chichester Townships.

Route 30 in Radnor Township, Route 3 in Marple Township, Route 1 in Nether Providence Township, and MacDade Boulevard in Ridley Township have also seen a major increase in development activity since the completion of the Mid-County Expressway, I-476 (Blue Route) in December 1992.

PLANNING AND COORDINATION

Regional Planning and Coordination

Delaware County is a member government of the Delaware Valley Regional Planning Commission (DVRPC). In 1965, DVRPC was established to coordinate planning and development for the Delaware Valley regional area. DVRPC is concerned with regional planning and coordination of land use, transportation, housing, and to a lesser degree, the environment. It is composed of Chester, Bucks, Delaware, Montgomery, and Philadelphia Counties and the City of Chester in Pennsylvania and Burlington, Camden, Gloucester, and Mercer Counties and the Cities of Trenton and Camden in New Jersey.

The Delaware River Basin Commission (DRBC) also exercises authority with regard to all projects having a substantial effect on the water resources of the Delaware River basin. The U.S. Army Corps of Engineers has jurisdiction over construction along and discharges into navigable waterways. The U.S. Environmental Protection Agency (EPA) and the Pennsylvania Department of Environmental Protection (DEP) are responsible for air and water quality regulation. DEP is specifically responsible for the enforcement of regulations adopted pursuant to Act 537.

Delaware County is also served by a County Conservation District staff, which has been delegated responsibility for overseeing the State's erosion control regulations under Chapter 102 and general permitting under Chapter 105 for stream and wetland permits. The Conservation District staff also works on problems of soil use and conservation, runoff, and the protection and proper use of Delaware County's water resources.

County Planning and Coordination

Planning within the County exists on two levels. The Delaware County Planning Commission (DCPC) and Department (DCPD) serve in an advisory capacity to the County's 49 municipalities. The Pennsylvania Municipalities Planning Code, Act 247, as amended, grants municipalities the power to prepare and enact a comprehensive plan, a zoning ordinance, and a subdivision and land development ordinance to guide their development. As of 1999, all 49 municipalities had prepared a comprehensive plan, and some had already updated their plan or were in the process of doing so. All 49 municipalities have zoning ordinances, and thirty have local subdivision and land development ordinances. The remaining nineteen municipalities utilize the Delaware County Subdivision and Land Development Ordinance, as amended, either by adoption or by virtue of the fact that they lack a local ordinance.

As of February 2002, Delaware County did not have an adopted comprehensive plan. In 1976, the Delaware County Land Use Plan 2000 was developed; however, it was never officially adopted by County Council. On July 18, 1978, the County adopted the Policies and Recommendations section and the Park and Recreation Facilities Improvements Plan map contained in the Delaware County Open Space, Parks, and Recreation Study, which developed pursuant to the Land Use Plan. A complete plan was never officially adopted.

The County is currently in the process of preparing a plan for adoption as the official County comprehensive plan, as provided for under the Municipalities Planning Code. Several specific elements, including this sewage facilities plan, are in the developmental stage. Until that plan is completed, the Delaware County Land Use Plan 2000 is still the basic source of information

on the future development of the County. This plan, which was published in January 1976, was based on economic and population trend data available at the time. This plan was an important element in the regional plan for the year 2000 adopted as part of the regional development guide by DVRPC in 1978.

It is expected that the new comprehensive plan, which will be officially adopted, will re-examine existing and potential future development cores, activity centers, and developing residential areas. It will also take a close look at balancing new development in less densely populated areas with opportunities for redevelopment of existing urbanized areas in light of recent trends and infrastructure changes.

Sewage Facilities Coordination

The Pennsylvania Sewage Facilities Act of 1966 (as amended), more commonly referred to as "Act 537," is the primary legislation governing sewage facilities planning and regulation. The Act requires municipalities to submit, either individually or jointly, Official Sewage Facilities Plans to DEP. These plans are to contain information concerning existing and future needs of each municipality, as well as wastewater facilities alternatives for providing adequate facilities to serve the needs of the municipality into the future. The Act also calls for municipalities to periodically revise their Act 537 plans as conditions change or as the need arises. As illustrated in Table 1-2, only eleven (22.4%) municipalities in Delaware County have prepared individual Act 537 plans. The remaining thirty-eight municipalities still recognize the County's Act 537 Sewage Facilities Plan prepared in 1971 as their official plan.

Typically, counties have only an advisory role in sewage facilities planning. DEP requires them to review and provide comments on municipal Act 537 base plans and their revisions. It also requires them to review sewage facilities planning modules for new subdivisions and land developments. However, several years ago it became apparent that the developed portions of the County (the thirty-eight sewered municipalities still utilizing the County's 1971 plan) were experiencing infrastructure problems. As a result, the Delaware County Regional Water Quality Control Authority (DELCORA) suggested to DCPD that a plan update to address these problems might be in order. At the same time it also became clear that the developing municipalities were each preparing separate Act 537 plans that did not take into account the potential for shared systems. Therefore, DCPD volunteered to undertake a Countywide sewage facilities plan on the municipalities' behalf.

In addition to providing legislation for sewage facilities planning, Act 537 requires permits to be issued for the construction, installation, or

TABLE 1-2

LOCAL AND COUNTY ACT 537 PLANS*

Use Municipal Act 537 Sewage Facilities Plan	
Aston Township	Middletown Township
Bethel Township	Newtown Township
Brookhaven Borough	Thornbury Township
Chadds Ford Township	Upper Chichester Township
Chester Heights Borough	Upper Providence Township
Concord Township	
Use County's 1971 Sewage Facilities Plan	
Aldan Borough	Millbourne Borough
Chester City	Morton Borough
Chester Township	Nether Providence Township
Clifton Heights Borough	Norwood Borough
Collingdale Borough	Parkside Borough
Colwyn Borough	Prospect Park Borough
Darby Borough	Radnor Township
Darby Township	Ridley Township
East Lansdowne Borough	Ridley Park Borough
Eddystone Borough	Rose Valley Borough
Edgmont Township	Rutledge Borough
Folcroft Borough	Sharon Hill Borough
Glenolden Borough	Springfield Township
Haverford Township	Swarthmore Borough
Lansdowne Borough	Tinicum Township
Lower Chichester Township	Trainer Borough
Marcus Hook Borough	Upland Borough
Marple Township	Upper Darby Township
Media Borough	Yeadon Borough

Source: DCPD, 1999

* not including Act 537 revisions, amendments, and special studies

alteration of individual and community wastewater systems. Rules and regulations regarding community and individual systems are developed by DEP and adopted by the State Environmental Quality Board. A State Board of Certification of Sewage Enforcement Officers administers the State's sewage enforcement officer (SEO) certification programs. The rules and regulations promulgated by DEP in accordance with the Pennsylvania Sewage Facilities Act are contained within Chapters 71, 72, and 73 of DEP's Title 25: Rules and Regulations. The following list briefly summarizes the provisions of these chapters.

Chapter 71: Administration of Sewage Facilities Program
This program provides a comprehensive sewage planning mechanism to identify and resolve existing sewage disposal problems, to avoid potential sewage problems resulting from new land development, and to provide for the future sewage disposal needs of a municipality.

Chapter 72: Administration of Sewage Facilities Permitting Program
This program establishes requirements for permitting associated with installation of individual and community on-lot wastewater disposal systems and regulates the administration of permitting functions by local agencies and SEOs.

Chapter 73: Standards for Sewage Disposal Facilities
This program establishes requirements for the design, location, and construction of sewage facilities. It is administered locally by the municipal SEO.

In Delaware County, Act 537 regulations are administered at a local level with advisory comments provided by DCPD. SEOs are responsible for local enforcement of Act 537 in thirteen of the County's municipalities. The remaining municipalities, located mostly in eastern Delaware County, are served by public sewers; therefore, sewage facilities planning and regulatory functions are performed by a municipal engineer or a code enforcement officer.

Sewer Authorities

There are twenty sewer authorities serving various areas in Delaware County. The service areas associated with these authorities generally correspond to designated public sewered areas within one municipality. However, in areas such as eastern Delaware County, the sewer authority boundaries tend to follow watershed boundaries and, therefore, most often include more than one municipality. A list of sewer authorities and associated municipalities are represented in Table 1-3. Map 1-4 provides a

TABLE 1-3

DELAWARE COUNTY
SEWER AUTHORITIES AND ASSOCIATED MUNICIPALITIES

DELAWARE COUNTY EASTERN PLANNING AREA	
DELCORA EAST - (C) Muckinipates Sewer Authority (C) Aldan Borough Clifton Heights Borough Darby Township Folcroft Borough Glenolden Borough Norwood Borough Ridley Township Sharon Hill Borough Springfield Township Upper Darby Township Central Delaware County Authority (C) Eddystone Borough Marple Township Morton Borough Nether Providence Township Norwood Borough Prospect Park Borough Ridley Park Borough Ridley Township Rutledge Borough Springfield Township Swarthmore Borough Darby Creek Joint Authority (C) Aldan Borough Clifton Heights Borough Collingdale Borough Colwyn Borough Darby Borough Darby Township Folcroft Borough Lansdowne Borough Sharon Hill Borough Springfield Township Upper Darby Township Yeadon Borough Radnor-Haverford-Marple Sewer Authority (C) Haverford Township Marple Township Newtown Township Radnor Township Tredyffrin Township (Chester County)	DELCORA WEST - (T, C) Brookhaven Borough Chester City Chester Township Lower Chichester Township Marcus Hook Borough Parkside Borough Rose Valley Borough Trainer Borough Upland Borough TINICUM TOWNSHIP SEWER AUTHORITY (T, C) Tinicum Township CITY OF PHILADELPHIA WATER DEPARTMENT (T, C) East Lansdowne Borough Haverford Township Millbourne Borough Upper Darby Township Yeadon Borough
DELAWARE COUNTY WESTERN PLANNING AREA	
SOUTHWEST DELAWARE COUNTY MUNICIPAL AUTHORITY (T, C) Aston Township Brookhaven Borough Chester Heights Borough Upper Chichester Township Middletown Township Sewer Authority (C) Middletown Township	THORNBURY TOWNSHIP BOARD OF SUPERVISORS (T, C) Thornbury Township
CITY OF WILMINGTON (T, C) Southern Delaware County Authority (C) Upper Chichester Township Bethel Township Sewer Authority (C) Bethel Township	CHADDS FORD TOWNSHIP SEWER AUTHORITY (T, C) Chadds Ford Township
LITTLE WASHINGTON WASTEWATER COMPANY(T, C) Media Borough Upper Providence Sewer Authority (C) Upper Providence Township	CONCORD SEWER AUTHORITY (T, C) Concord Township
ROSE VALLEY SEWER AUTHORITY (T, C) Nether Providence Township Rose Valley Borough	NEWTOWN SEWER AUTHORITY (C) Newtown Township
BROOKHAVEN SEWER AUTHORITY (T, C) Brookhaven Borough	BETHEL TOWNSHIP SEWER AUTHORITY (T,C) Bethel Township

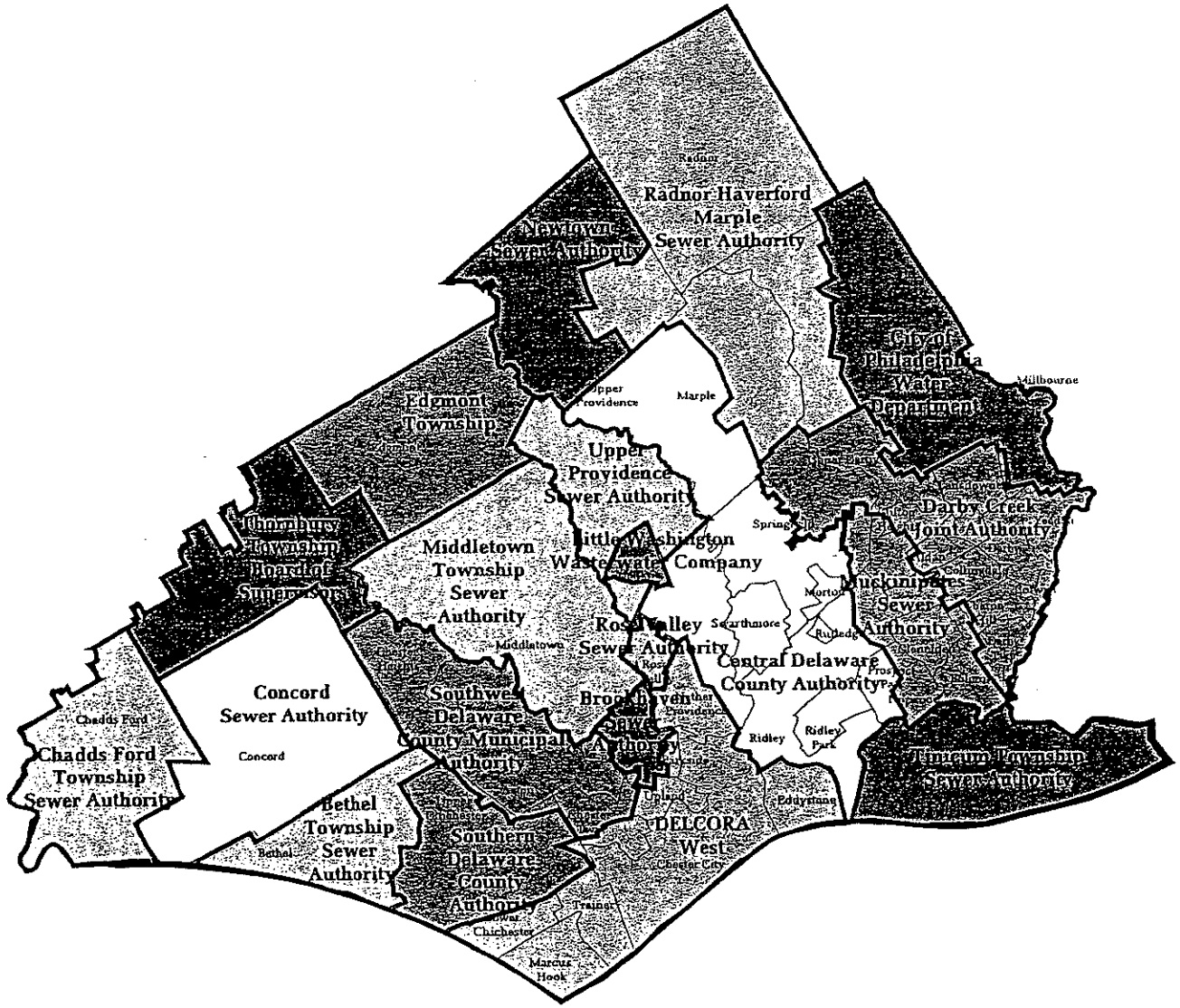
Source: DCPD, 2002

KEY:

C - Conveyance Authority
T - Treatment Authority

Notes: 1. Some municipalities lie within more than one authority's jurisdiction.
2. Edgmont Township does not currently lie within the jurisdiction of a sewer authority.

Map 1-4
Sewer Authority Boundaries



0 1 2 Miles

Projection: UTM
Datum: NAD83
Units: Meters

Source:
Johnson, Mirmiran and Thompson - Sewer Authority Boundaries
U.S. Department of Commerce, Bureau of the Census, Tiger Line Files, 2000 - County and Municipal Boundaries

visual representation of the sewer authority boundaries. Sewer authorities are responsible for carrying out planning and are authorized to finance, construct, and operate public sewer facilities within their designated service areas. Details on the organization of sewer authorities and their facilities will be discussed in subsequent sections of this document.

Delaware County Regional Water Quality Control Authority

DELCORA was created in 1971 by ordinance of the Delaware County Commissioners with the purpose of implementing the Official Sewage Facilities Plan. It was authorized to finance, construct, and operate all interceptor systems, pumping stations, and treatment plants in the County with the exception of the Upper Darby-Haverford system (the area currently served by the City of Philadelphia) and the Southern Delaware County Authority (SDCA) system.

In one way or another, DELCORA serves most of eastern Delaware County and the communities along the Delaware River except Tinicum Township. Generally speaking, most of the sewage from the Darby, Crum, and Muckinipates watersheds (DELCORA's Eastern Service Area) currently passes through DELCORA's pump station and force main to the City of Philadelphia Southwest Water Pollution Control Plant (PSWPCP). DELCORA's 44 million gallon/day (MGD) Western Regional Treatment Plant (WRTP) in the City of Chester serves most of the Delaware River waterfront (DELCORA's Western Service Area). Long-range plans developed in the early 1970s to tie the western portion of the County into the same regional system have not been implemented.

DELCORA provides wastewater conveyance services for the following sewer authorities in its Eastern Service Area: Radnor-Haverford-Marple (RHM), Darby Creek Joint Authority (DCJA), Central Delaware County Authority (CDCA), and the Muckinipates Authority (MA). Wastewater from these sewer authorities is conveyed by DELCORA to the PSWPCP. The Central Delaware County Pump Station Diversion Project will allow for the redirection of flow from the CDCA sewershed to DELCORA's WRTP. Details on this diversion project will be discussed in subsequent chapters.

DELCORA's Western Service Area includes Lower Chichester and Chester Townships, Marcus Hook, Trainer, Upland, Parkside, Rose Valley, and Eddystone Boroughs, the City of Chester, and the southern portion of Brookhaven Borough. Flows from this service area are conveyed to DELCORA's WRTP in the City of Chester.

REPORT FORMAT: EASTERN AND WESTERN DELAWARE COUNTY

As will be noted in this report, the eastern and western portions of the County are significantly different in terms of sewer planning needs. The primary criterion used in dividing the County into the eastern and western areas was the percentage of the municipality not served by public sewers, as determined by a preliminary survey of SEOs in 1989. The ten municipalities identified with substantial unsewered areas at that time included Newtown, Edgmont, Upper Providence, Middletown, Thornbury, Aston, Chadds Ford (previously Birmingham), Concord, and Bethel Townships and Chester Heights Borough. Upper Chichester Township and Media, Rose Valley, and Brookhaven Boroughs, which are almost entirely sewered, were added to this group because they adjoin unsewered municipalities and either operate sewage treatment plants or serve as a direct link to a sewage treatment system (i.e., New Castle County/City of Wilmington). While we recognize that sewer service has expanded or been extended to several areas within the designated western portion of the County in recent years, for planning purposes we still feel that the original delineation (growth areas vs. developed areas) is appropriate today. Refer to Table 1-4 and Map 1-5 for the east/west delineation used for planning purposes.

The eastern half of the County, with the exception of several northern municipalities such as Haverford and Radnor Townships, can be considered developed and serviced with public sewers. Therefore, evaluation and recommendations for corrective action to existing sewer infrastructure (such as repair or replacement of existing sewer lines and repair, expansion, or phase-out of poorly operating sewer treatment plants) were considered likely issues to be addressed at the on-set of this study.

In contrast, portions of central and most of western Delaware County (with the exception of older municipalities bordering the Delaware River) remained semirural until about twenty-five years ago. In recent years, as the County population began to shift northward and westward, many of these areas have been experiencing tremendous growth pressure. Table 1-5 indicates the dramatic difference between eastern and western County growth patterns. Accordingly, the number of residential building permits issued between 1988 and 1998 in the western municipalities was more than twice the number issued in the eastern municipalities (7,334 vs. 3,508).

As a result of the significant differences between the sewer needs of "developed" vs. "developing" municipalities, planning for each of the respective portions of the County will be performed separately. While the same items will be addressed for both portions of the County, emphasis is placed on different elements of the plan in each area. Alternatives and recommendations for each

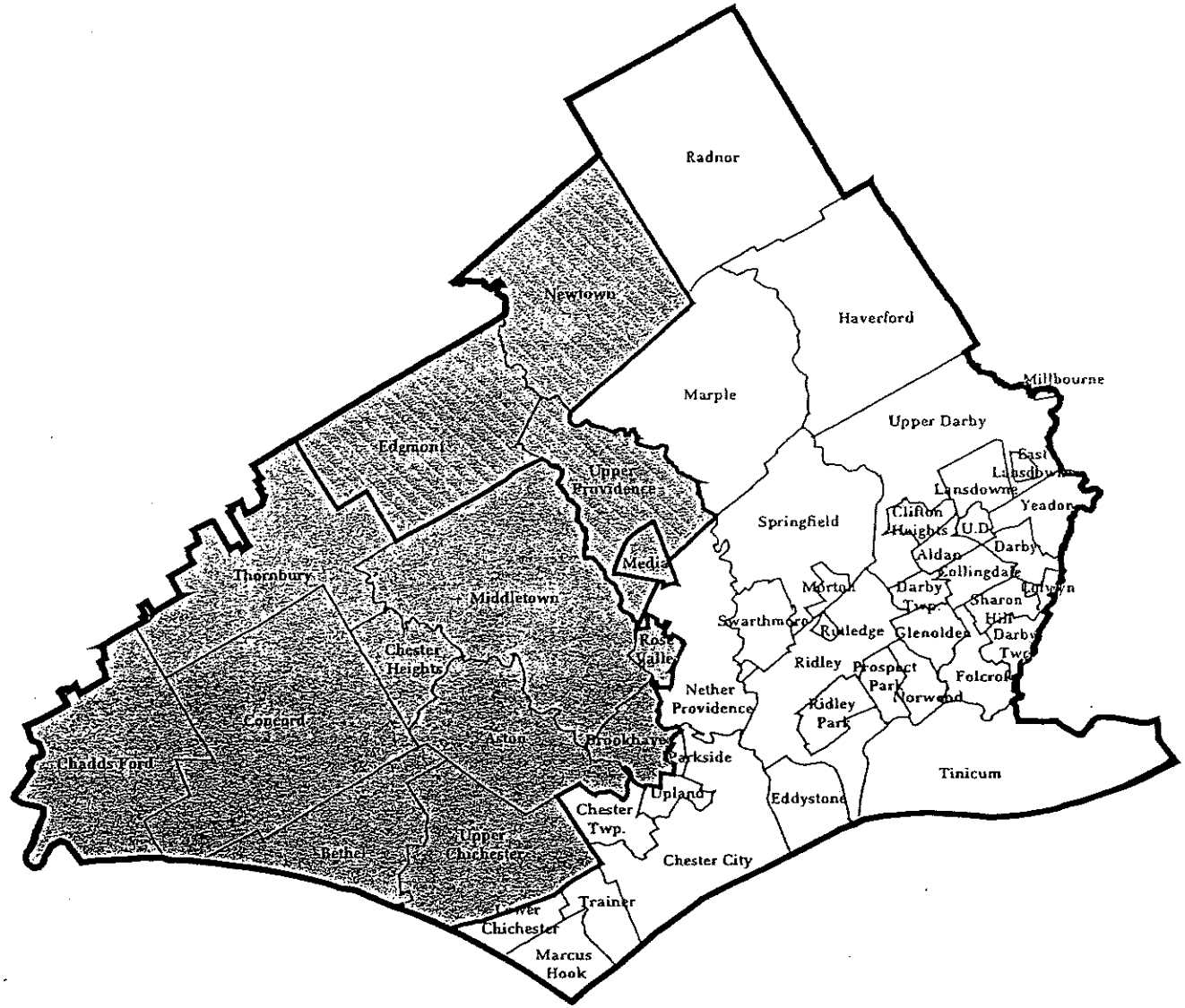
TABLE 1-4

EASTERN/WESTERN DESIGNATION

EASTERN MUNICIPALITIES	
DELCORA's Eastern Service Area	**DELCORA's Western Service Area**
Aldan Borough	Chester City
Clifton Heights Borough	Chester Township
Collingdale Borough	Eddystone Borough
Colwyn Borough	Lower Chichester Township
Darby Borough	Marcus Hook Borough
Darby Township	Parkside Borough
East Lansdowne Borough	Trainer Borough
Folcroft Borough	Upland Borough
Glenolden Borough	
Haverford Township	**City of Philadelphia**
Lansdowne Borough	East Lansdowne Borough
Marple Township	Haverford Township
Millbourne Borough	Millbourne Borough
Morton Borough	Upper Darby Township
Nether Providence Township	Yeadon Borough
Norwood Borough	
Prospect Park Borough	
Radnor Township	
Ridley Township	
Ridley Park Borough	
Rutledge Borough	
Sharon Hill Borough	
Springfield Township	
Swarthmore Borough	
Tinicum Township	
Upper Darby Township	
Yeadon Borough	
WESTERN MUNICIPALITIES	
Aston Township	Media Borough
Bethel Township	Middletown Township
Brookhaven Borough	Newtown Township
Chadds Ford Township	Rose Valley Borough
Chester Heights Borough	Thornbury Township
Concord Township	Upper Chichester Township
Edgmont Township	Upper Providence Township

Source: DCPD, 1999

Map 1-5
Eastern and Western Project Boundary



Legend

- Eastern Project Area
- Western Project Area
- Fringe Project Area

0 1 2 Miles

Projection: UTM
Datum: NAD83
Units: Meters

N

Source:
U.S. Department of Commerce, Bureau of the Census, Tiger Line Files, 2000 - County and Municipal Boundaries

TABLE 1-5

DELAWARE COUNTY MUNICIPAL BUILDING PERMITS

EASTERN DELAWARE COUNTY PLANNING AREA		WESTERN DELAWARE COUNTY PLANNING AREA	
Municipality	Number of Building Permits 1988-1998	Municipality	Number of Building Permits 1988-1998
Aldan Borough	101	Aston Township	1,114
Chester City	346	Bethel Township	1,144
Chester Township	0	Brookhaven Borough	100
Clifton Heights Borough	10	Chadds Ford Township	163
Collingdale Borough	0	Chester Heights Borough	342
Colwyn Borough	0	Concord Township	1,190
Darby Borough	12	Edgmont Township	498
Darby Township	26	Media Borough	17
East Lansdowne Borough	0	Middletown Township	494
Eddystone Borough	13	Newtown Township	260
Folcroft Borough	30	Rose Valley Borough	4
Glenolden Borough	62	Thornbury Township	431
Haverford Township	569	Upper Chichester Township	1,103
Lansdowne Borough	15	Upper Providence Township	474
Lower Chichester Township	2		
Marcus Hook Borough	6		
Marple Township	337		
Millbourne Borough	0		
Morton Borough	141		
Nether Providence Township	349		
Norwood Borough	115		
Parkside Borough	0		
Prospect Park Borough	39		
Radnor Township	625		
Ridley Township	54		
Ridley Park Borough	302		
Rutledge Borough	5		
Sharon Hill Borough	22		
Springfield Township	92		
Swarthmore Borough	9		
Tinicum Township	60		
Trainer Borough	8		
Upland Borough	11		
Upper Darby Township	145		
Yeadon Borough	2		
Total	**3,508**	**Total**	**7,334**
% of Total Building Permits	**32%**	**% of Total Building Permits**	**68%**

Source: DCPD, 1999

half of the County will also be assessed separately and will appear in two separate reports.

Evaluation of sewage facilities in the western area targets communities experiencing a high degree of growth pressure or communities that continue to have a significant number of on-lot systems. Generally speaking, these are also communities that operate or are served by sewage treatment plants that are not part of the DELCORA regional system. Detailed population projections, soils analysis, and independent evaluation of existing community systems will be addressed to identify problem areas, determine the need for corrective action, and recommend wastewater disposal alternatives.

The evaluation of the eastern area places emphasis on the condition and capacity of the existing sewer systems. Between 1996 and 1997, a series of infiltration and inflow (I&I) studies were conducted in the twenty-four municipalities and three municipal authorities in the eastern portion of the County. These studies were performed to determine the extent of I&I in each municipality. The studies were ultimately used to provide technical data for recommendations supporting the need for corrective action and related costs. The following is an evaluation of the eastern area and some of the "fringe" western areas that could be logically served via the eastern network of sewers.

CHAPTER 2

DEMOGRAPHIC CHARACTERISTICS OF THE STUDY AREA

INTRODUCTION

When assessing an area's sewerage needs, there are several factors that should be considered. One of the most important of these is the area's population. This is because the number of people living and working in an area determines how much wastewater will be generated. Population along with other relevant factors such as soil conditions, geology, and land use activities can be collectively analyzed in order to provide a basis for sound decision-making and the development of specific sewage treatment alternatives for specific areas.

This chapter presents the current and projected population data for Delaware County. The information in this chapter was instrumental during the evaluation process and was weighed heavily in formulating recommendations for future sewage facilities in the plan for the western portion of the County.

EXISTING POPULATION

Current Population in Perspective

The U. S. Department of Commerce, Bureau of the Census (Census Bureau) reports indicate that as of 2000, Delaware County had a population of 550,864 residents within the boundaries of its 49 municipalities. The majority (33) of the municipalities had populations under 10,000, and slightly more than half of those populations were under 5,000. There were only seven municipalities with a substantial number of residents. Upper Darby Township had the largest population with 81,821. Upper Darby Township was followed by Haverford Township (48,498) and Chester City (36,854), with Marple, Radnor, Ridley, and Springfield Townships having populations over 20,000. The remaining municipalities had populations ranging from 860 in Rutledge Borough to 16,842 in Upper Chichester Township.

Significant growth and development has taken place in the County since the last census in 1990, particularly in the rapidly developing western municipalities. While the County's overall population rose from 547,651 in 1990 to 550,864 in 2000, the most significant population change was in population distribution from east to west. The eastern portion of the County lost 16.8% of its population while the western portion of the County had a 37.9% population increase. Refer to Table 2-1 for most recent census information.

Table 2-1
Delaware County Population 1970 - 2000

Eastern Municipalities

Municipality	1970	1980	1990	2000	% Change 1970 - 2000
Aldan Borough	5,001	4,671	4,549	4,313	-13.8%
Chester City	56,331	45,794	41,856	36,854	-34.6%
Chester Township	5,708	5,687	5,399	4,604	-19.3%
Clifton Heights Borough	8,348	7,320	7,111	6,779	-18.8%
Collingdale Borough	10,605	9,539	9,175	8,664	-18.3%
Colwyn Borough	3,169	2,851	2,613	2,453	-22.6%
Darby Borough	13,729	11,513	11,140	10,299	-25.0%
Darby Township	13,603	12,264	10,955	9,622	-29.3%
East Lansdowne Borough	3,186	2,806	2,691	2,586	-18.8%
Eddystone Borough	2,706	2,555	2,446	2,442	-9.8%
Folcroft Borough	9,610	8,231	7,506	6,978	-27.4%
Glenolden Borough	8,697	7,633	7,260	7,476	-14.0%
Haverford Township	56,873	52,349	49,848	48,498	-14.7%
Lansdowne Borough	14,090	11,891	11,712	11,044	-21.6%
Lower Chichester Township	4,009	3,784	3,660	3,591	-10.4%
Marcus Hook Borough	3,041	2,638	2,546	2,314	-23.9%
Marple Township	25,040	23,642	23,123	23,737	-5.2%
Millbourne Borough	637	652	831	943	48.0%
Morton Borough	2,602	2,412	2,851	2,715	4.3%
Nether Providence Township	13,589	12,730	13,229	13,456	-1.0%
Norwood Borough	7,229	6,647	6,162	5,985	-17.2%
Parkside Borough	2,343	2,464	2,369	2,267	-3.2%
Prospect Park Borough	7,250	6,593	6,764	6,594	-9.0%
Radnor Township	28,782	27,676	28,703	30,878	7.3%
Ridley Township	39,085	33,771	31,169	30,791	-21.2%
Ridley Park Borough	9,025	7,889	7,592	7,196	-20.3%
Rutledge Borough	1,167	934	843	860	-26.3%
Sharon Hill Borough	7,464	6,221	5,771	5,468	-26.7%
Springfield Township	29,006	25,326	24,160	23,677	-18.4%
Swarthmore Borough	6,156	5,950	6,157	6,170	0.2%
Tinicum Township	4,906	4,291	4,440	4,353	-11.3%
Trainer Borough	2,336	2,056	2,271	1,901	-18.6%
Upland Borough	3,930	3,458	3,334	2,977	-24.2%
Upper Darby Township	95,910	84,054	81,177	81,821	-14.7%
Yeadon Borough	12,136	11,727	11,980	11,762	-3.1%
Eastern Municipalities	519,269	461,999	443,393	432,068	-16.8%

Western Municipalities

Municipality	1970	1980	1990	2000	% Change 1970 - 2000
Aston Township	13,704	14,530	15,080	16,203	18.2%
Bethel Township	2,034	2,438	3,330	6,421	215.7%
Brookhaven Borough	7,370	7,912	8,567	7,985	8.3%
Chadds Ford Township	1,281	2,057	3,118	3,170	147.5%
Chester Heights Borough	597	1,302	2,273	2,481	315.6%
Concord Township	4,592	6,437	6,933	9,933	116.3%
Edgmont Township	1,368	1,410	2,735	3,918	186.4%
Media Borough	6,444	6,119	5,957	5,533	-14.1%
Middletown Township	12,878	12,463	14,130	16,064	24.7%
Newtown Township	11,081	11,775	11,366	11,700	5.6%
Rose Valley Borough	876	1,038	982	944	7.8%
Thornbury Township[1]	3,284	3,653	4,728	7,093	116.0%
Upper Chichester Township	11,414	14,377	15,004	16,842	47.6%
Upper Providence Township	9,234	9,477	9,727	10,509	13.8%
Western Municipalities	86,157	94,988	103,930	118,796	37.9%
Delaware County	603,456	555,007	547,651	550,864	-8.7%

Source: U.S. Department of Commerce, Bureau of the Census

Prepared by Delaware County Planning Department, 2001

[1] Thornbury's 1990 population, as revised by the Census Bureau in 1994, was 4,728, not 5,056 which DVRPC used in its 2025 forecast.

Growth Rate History

Through the post-Korean War era (1950s), the eastern portion of the County experienced significant growth as a result of industrial expansion. During this time period, the area prospered, jobs were abundant, and the population grew. During this same period, the western portions of the County remained largely rural/agricultural.

Over the last few decades, the total population of Delaware County has exhibited a decline in numbers similar to that of many other manufacturing-dependent urban areas in the United States. Table 2-1, showing the census figures from 1970, 1980, 1990, and 2000, illustrates that although there had been a gradual yet steady decline in total population for three consecutive decades, the Census 2000 actually showed an increase in population.

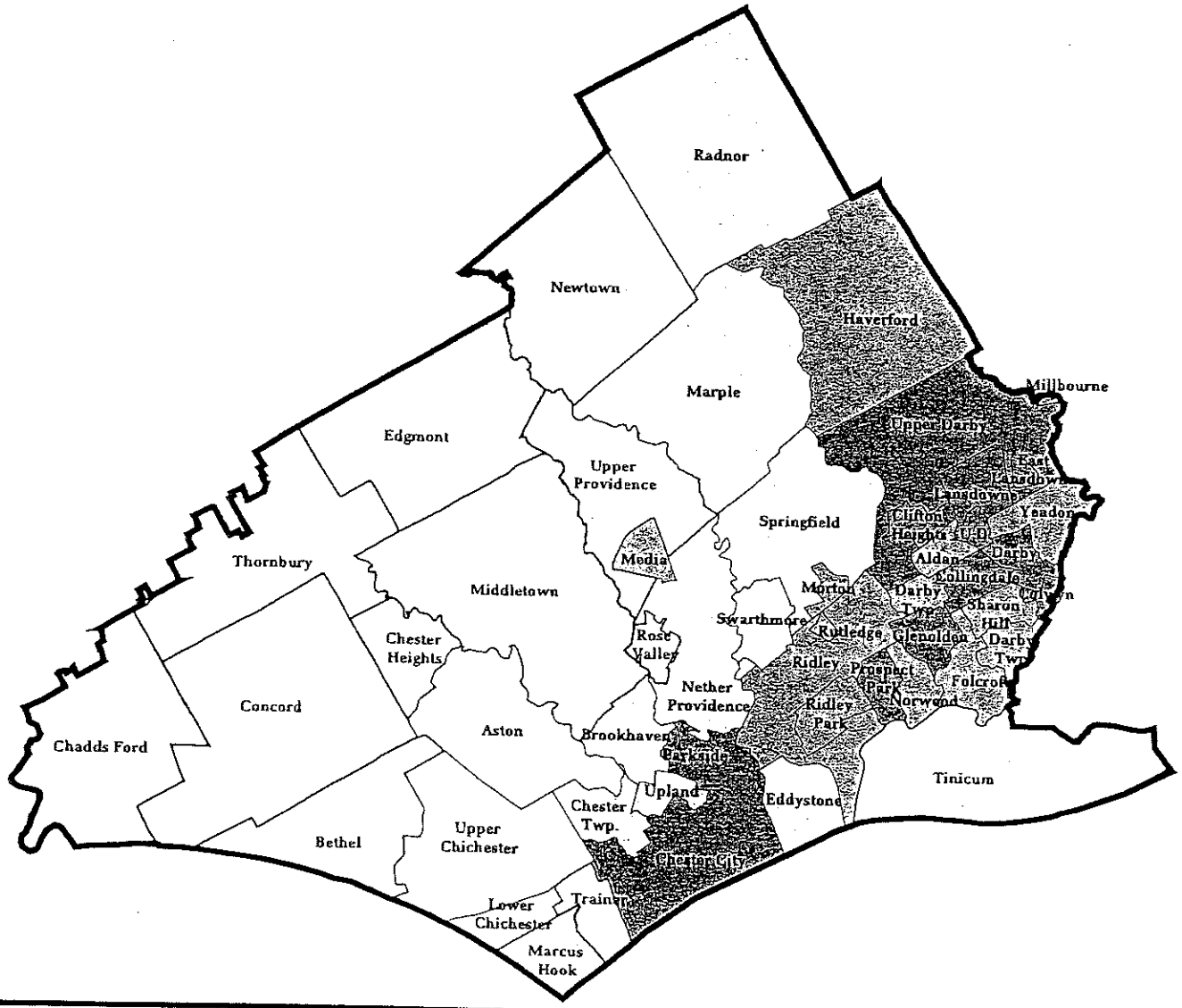
The eastern municipalities have consistently exhibited a decrease in population, while the western municipalities have experienced significant growth. This shift can be attributed to a number of factors, some of which include the change from a manufacturing to a service economy (1970s) and the migration of people from urban areas like Chester City and Upper Darby Township to more suburban settings such as Chester Heights Borough and Bethel, Concord, Edgmont, and Thornbury Townships in the western part of the County. Coinciding with this shift is an emphasis on suburbanization.

Population Distribution

As depicted on Map 2-1, the "developed" eastern portion of the County is much more densely populated than the "developing" western portion. Table 2-2 provides the accompanying numerical data. The eastern municipalities encompass 89.95 square miles, which is 49% of the total land mass, whereas the western municipalities encompass 94.48 square miles, accounting for 51% of the County's land area. However, 78.4% of the County's population is in the eastern half.

County density patterns mirror the County's population distribution. For instance, municipal densities are generally much lower in the developing western/northern portions of the County than in the developed eastern/southern portions of the County. Western municipalities are typically larger and contain smaller populations. Chadds Ford Township, the least dense municipality in the County, has a density of 359 persons/square mile. Chadds Ford Township has the ninth largest land area (8.84 square miles) with a 2000 population of 3,170.

Map 2-1
Population Density by Municipality 2000



Legend

Density 2000

- 359 - 2,030
- 2,233 - 4,725
- 4,874 - 7,542
- 7,726 - 13,471

0 1 2 Miles

Projection: UTM
Datum: NAD83
Units: Meters

N

Source:
U.S. Department of Commerce, Bureau of the Census, Tiger Line Files, 2000 - County and Municipal Boundaries and Density

Table 2-2
Delaware County Population Density 2000

Eastern Municipalities

Municipality	2000 Population	Square Miles	Persons Per Square Mile
Aldan Borough	4,313	0.59	7,310
Chester City	36,854	4.77	7,726
Chester Township	4,604	1.38	3,336
Clifton Heights Borough	6,779	0.62	10,934
Collingdale Borough	8,664	0.87	9,959
Colwyn Borough	2,453	0.25	9,812
Darby Borough	10,299	0.81	12,715
Darby Township	9,622	1.64	5,867
East Lansdowne Borough	2,586	0.21	12,314
Eddystone Borough	2,442	0.96	2,544
Folcroft Borough	6,978	1.38	5,057
Glenolden Borough	7,476	0.86	8,693
Haverford Township	48,498	9.95	4,874
Lansdowne Borough	11,044	1.20	9,203
Lower Chichester Township	3,591	1.06	3,388
Marcus Hook Borough	2,314	1.14	2,030
Marple Township	23,737	10.43	2,276
Millbourne Borough	943	0.07	13,471
Morton Borough	2,715	0.36	7,542
Nether Providence Township	13,456	4.64	2,900
Norwood Borough	5,985	0.81	7,389
Parkside Borough	2,267	0.19	11,932
Prospect Park Borough	6,594	0.73	9,033
Radnor Township	30,878	13.83	2,233
Ridley Township	30,791	5.18	5,944
Ridley Park Borough	7,196	1.04	6,919
Rutledge Borough	860	0.15	5,733
Sharon Hill Borough	5,468	0.77	7,101
Springfield Township	23,677	6.29	3,764
Swarthmore Borough	6,170	1.38	4,471
Tinicum Township	4,353	5.53	787
Trainer Borough	1,901	0.98	1,940
Upland Borough	2,977	0.66	4,511
Upper Darby Township	81,821	7.62	10,738
Yeadon Borough	11,762	1.60	7,351
Eastern Municipalities	432,068	89.95	4,803

Western Municipalities

Municipality	2000 Population	Square Miles	Persons Per Square Mile
Aston Township	16,203	5.90	2,746
Bethel Township	6,421	5.44	1,180
Brookhaven Borough	7,985	1.69	4,725
Chadds Ford Township	3,170	8.84	359
Chester Heights Borough	2,481	2.17	1,143
Concord Township	9,933	13.78	721
Edgmont Township	3,918	9.74	402
Media Borough	5,533	0.75	7,377
Middletown Township	16,064	13.43	1,196
Newtown Township	11,700	10.11	1,157
Rose Valley Borough	944	0.74	1,276
Thornbury Township	7,093	9.16	774
Upper Chichester Township	16,842	6.80	2,477
Upper Providence Township	10,509	5.93	1,772
Western Municipalities	118,796	94.48	1,257
Delaware County	**550,864**	**184.43**	**2,987**

Source: U.S. Department of Commerce, Bureau of the Census.
Prepared by Delaware County Planning Department, 2001

The majority of the County's population is concentrated in the eastern part of the County. Despite the fact that the eastern portion of the County contains several large municipalities, most of this area is characterized by small, heavily populated boroughs that border West Philadelphia. Millbourne Borough, the densest municipality in the County, has a density of 13,471 persons per square mile. Millbourne Borough has the smallest land area (0.07 square miles) with a population of 943.

FUTURE POPULATION

The population shift that Delaware County is currently experiencing is expected to continue. Table 2-3 presents the forecasted population for the next twenty-five years as formulated by DVRPC based on 1997 population estimates.

With the exception of a very few municipalities, the population for most of the eastern municipalities is forecasted to decrease or to stay relatively stable through 2025. In contrast, most of the western municipalities are expected to increase. For example, the population of western municipalities such as Chester Heights Borough and Bethel, Chadds Ford, Concord, and Edgmont Townships is expected to increase substantially, with a range of 66.8% to 105.6%. In the meantime, eastern municipalities such as Collingdale, Colwyn, Darby, East Lansdowne, and Sharon Hill Boroughs as well as Darby Township are all expected to decrease in population by a margin of more than 16%.

Table 2-4 presents the projected density figures for both the eastern and western municipalities. In the suburban West, the municipalities are generally projected to experience population (and associated density) increases which may influence the need for sewage treatment alternatives other than individual on-lot systems. The reverse is true in the urbanized East where, with the exception of three municipalities, municipal populations and associated densities are expected to decrease, in some cases significantly.

Impact on the East

In the fully sewered East, the population shift is not expected to have a tremendous effect on sewerage alternatives. Issues relating to adequacy of the existing sewer network to accommodate additional flows, as well as many other issues affecting sewerage alternatives for the East, will be addressed in subsequent chapters and specifically as an aspect of the I&I study component.

Table 2-3
Delaware County Population Forecasts

Eastern Municipalities

Municipality	Census 1990	DVRPC 1997 Estimate	2000 - 2025 DVRPC Forecasts 2000	2005	2010	2015	2020	2025	% Change 90-25
Aldan Borough	4,549	4,560	4,570	4,510	4,490	4,370	4,330	4,240	-6.8%
Chester City	41,856	40,289	39,700	38,220	37,020	36,700	36,660	36,570	-12.6%
Chester Township	5,399	5,305	5,290	5,200	5,150	5,020	4,940	4,820	-10.7%
Clifton Heights Borough	7,111	6,969	6,930	6,760	6,660	6,460	6,330	6,160	-13.4%
Collingdale Borough	9,175	8,892	8,820	8,580	8,410	8,130	7,940	7,690	-16.2%
Colwyn Borough	2,613	2,525	2,500	2,420	2,360	2,270	2,200	2,110	-19.2%
Darby Borough	11,140	10,839	10,740	10,430	10,220	9,850	9,620	9,300	-16.5%
Darby Township	10,955	10,678	10,580	10,280	10,030	9,640	9,340	8,960	-18.2%
East Lansdowne Borough	2,691	2,599	2,570	2,500	2,440	2,350	2,290	2,220	-17.5%
Eddystone Borough	2,446	2,391	2,380	2,330	2,290	2,230	2,190	2,130	-12.9%
Folcroft Borough	7,506	7,397	7,340	7,150	7,010	6,760	6,570	6,330	-15.7%
Glenolden Borough	7,260	7,175	7,140	6,990	6,890	6,690	6,560	6,370	-12.3%
Haverford Township	49,848	49,567	49,480	48,670	48,200	48,130	48,090	48,040	-3.6%
Lansdowne Borough	11,712	11,392	11,290	10,980	10,780	10,420	10,200	9,890	-15.6%
Lower Chichester Township	3,660	3,582	3,570	3,490	3,450	3,350	3,300	3,210	-12.3%
Marcus Hook Borough	2,546	2,482	2,460	2,400	2,350	2,270	2,220	2,160	-15.2%
Marple Township	23,123	23,282	23,350	23,600	23,560	23,470	23,470	23,110	-0.1%
Millbourne Borough	831	804	810	800	810	810	810	830	-0.1%
Morton Borough	2,851	2,803	2,810	2,890	2,910	2,890	2,930	2,950	3.5%
Nether Providence Township	13,229	13,148	13,160	13,520	13,520	13,790	13,770	13,730	3.8%
Norwood Borough	6,162	6,167	6,160	6,300	6,240	6,080	5,980	5,820	-5.6%
Parkside Borough	2,369	2,311	2,310	2,270	2,250	2,190	2,160	2,120	-10.5%
Prospect Park Borough	6,764	6,661	6,650	6,530	6,490	6,350	6,300	6,200	-8.3%
Radnor Township	28,703	29,543	29,850	29,970	30,320	30,300	30,610	30,640	6.7%
Ridley Park Borough	7,592	7,469	7,430	7,540	7,430	7,210	7,070	6,870	-9.5%
Ridley Township	31,169	30,703	30,490	30,500	30,300	29,270	28,520	27,530	-11.7%
Rutledge Borough	843	843	840	850	830	800	780	750	-11.0%
Sharon Hill Borough	5,771	5,628	5,570	5,400	5,270	5,070	4,920	4,830	-16.3%
Springfield Township	24,160	23,669	23,500	23,520	22,530	22,550	22,150	22,320	-7.6%
Swarthmore Borough	6,157	6,077	6,060	6,090	6,150	6,020	5,970	5,860	-4.8%
Tinicum Township	4,440	4,394	4,370	4,450	4,400	4,290	4,230	4,140	-6.8%
Trainer Borough	2,271	2,275	2,280	2,250	2,250	2,220	2,220	2,200	-3.1%
Upland Borough	3,334	3,270	3,240	3,150	3,090	2,980	2,900	2,900	-13.0%
Upper Darby Township	81,177	79,180	78,820	77,420	75,110	72,580	70,760	69,300	-14.6%
Yeadon Borough	11,980	11,670	11,600	11,330	11,190	10,880	10,720	10,470	-12.6%
Eastern Municipalities	443,393	436,539	434,660	429,290	422,400	414,390	409,050	402,770	-9.2%

Western Municipalities

Municipality	Census 1990	DVRPC 1997 Estimate	2000 - 2025 DVRPC Forecasts 2000	2005	2010	2015	2020	2025	% Change 90-25
Aston Township	15,080	16,580	17,070	18,180	18,670	19,230	19,850	20,430	35.5%
Bethel Township	3,330	4,710	4,780	5,390	5,800	6,170	6,300	6,250	87.7%
Brookhaven Borough	8,567	8,446	8,480	8,440	8,450	8,440	8,510	8,510	-0.7%
Chadds Ford Township	3,118	3,296	3,440	3,660	3,990	4,280	4,740	5,200	66.8%
Chester Heights Borough	2,273	2,559	2,450	2,660	2,870	3,090	3,470	3,970	74.7%
Concord Township	6,933	7,964	9,400	10,230	11,170	11,990	13,240	14,250	105.6%
Edgmont Township	2,735	3,245	3,310	3,600	4,070	4,540	5,130	5,430	98.6%
Media Borough	5,957	5,825	5,800	5,680	5,610	5,460	5,380	5,340	-10.4%
Middletown Township	14,130	14,399	14,560	14,630	14,910	14,960	15,370	16,140	14.2%
Newtown Township	11,366	11,332	11,370	11,290	11,720	11,960	11,900	11,880	4.6%
Rose Valley Borough	982	982	990	990	990	980	980	1,070	9.0%
Thornbury Township	5,056	5,335	5,480	5,880	6,200	6,440	6,850	7,230	43.0%
Upper Chichester Township	15,004	16,565	17,110	17,860	18,790	19,430	20,140	20,810	38.7%
Upper Providence Township	9,727	10,066	10,170	10,620	10,750	11,110	11,200	11,180	14.9%
Western Municipalities	104,258	111,304	114,410	119,110	123,990	128,080	133,060	137,690	32.1%
Delaware County	547,651	547,843	549,070	548,400	546,390	542,470	542,110	540,460	-1.3%

Source: Delaware Valley Regional Planning Commission (DVRPC), 1999
Prepared by Delaware County Planning Department, 2001

Table 2-4
Delaware County Density Forecasts

Eastern Municipalities

Municipality	Square Miles	2000 Population	2000 Persons Per Square Mile	2025 Population	2025 Persons Per Square Mile	Change in Persons Per Square Mile 2000 to 2025
Aldan Borough	0.59	4,313	7,310	4,240	7,186	-124
Chester City	4.77	36,854	7,726	36,570	7,667	-59
Chester Township	1.38	4,604	3,336	4,820	3,493	157
Clifton Heights Borough	0.62	6,779	10,934	6,160	9,935	-999
Collingdale Borough	0.87	8,664	9,959	7,690	8,839	-1120
Colwyn Borough	0.25	2,453	9,812	2,110	8,440	-1372
Darby Borough	0.81	10,299	12,715	9,300	11,481	-1234
Darby Township	1.64	9,622	5,867	8,960	5,463	-404
East Lansdowne Borough	0.21	2,586	12,314	2,220	10,571	-1743
Eddystone Borough	0.96	2,442	2,544	2,130	2,219	-325
Folcroft Borough	1.38	6,978	5,057	6,330	4,587	-470
Glenolden Borough	0.86	7,476	8,693	6,370	7,407	-1286
Haverford Township	9.95	48,498	4,874	48,040	4,828	-46
Lansdowne Borough	1.20	11,044	9,203	9,890	8,242	-961
Lower Chichester Township	1.06	3,591	3,388	3,210	3,028	-360
Marcus Hook Borough	1.14	2,314	2,030	2,160	1,895	-135
Marple Township	10.43	23,737	2,276	23,110	2,216	-60
Millbourne Borough	0.07	943	13,471	830	11,857	-1614
Morton Borough	0.36	2,715	7,542	2,950	8,194	652
Nether Providence Township	4.64	13,456	2,900	13,730	2,959	59
Norwood Borough	0.81	5,985	7,389	5,820	7,185	-204
Parkside Borough	0.19	2,267	11,932	2,120	11,158	-774
Prospect Park Borough	0.73	6,594	9,033	6,200	8,493	-540
Radnor Township	13.83	30,878	2,233	30,640	2,215	-18
Ridley Township	5.18	30,791	5,944	27,530	5,315	-629
Ridley Park Borough	1.04	7,196	6,919	6,870	6,606	-313
Rutledge Borough	0.15	860	5,733	750	5,000	-733
Sharon Hill Borough	0.77	5,468	7,101	4,830	6,273	-828
Springfield Township	6.29	23,677	3,764	22,320	3,548	-216
Swarthmore Borough	1.38	6,170	4,471	5,860	4,246	-225
Tinicum Township	5.53	4,353	787	4,140	749	-38
Trainer Borough	0.98	1,901	1,940	2,200	2,245	305
Upland Borough	0.66	2,977	4,511	2,900	4,394	-117
Upper Darby Township	7.62	81,821	10,738	69,300	9,094	-1644
Yeadon Borough	1.6	11,762	7,351	10,470	6,544	-807
Eastern Municipalities	89.95	432,068	4,803	402,770	4,478	-325

Western Municipalities

Municipality	Square Miles	2000 Population	2000 Persons Per Square Mile	2025 Population	2025 Persons Per Square Mile	Change in Persons Per Square Mile 2000 to 2025
Aston Township	5.90	16,203	2,746	20,430	3,463	717
Bethel Township	5.44	6,421	1,180	6,250	1,149	-31
Brookhaven Borough	1.69	7,985	4,725	8,510	5,036	311
Chadds Ford Township	8.84	3,170	359	5,200	588	229
Chester Heights Borough	2.17	2,481	1,143	3,970	1,829	686
Concord Township	13.78	9,933	721	14,250	1,034	313
Edgmont Township	9.74	3,918	402	5,430	557	155
Media Borough	0.75	5,533	7,377	5,340	7,120	-257
Middletown Township	13.43	16,064	1,196	16,140	1,202	6
Newtown Township	10.11	11,700	1,157	11,880	1,175	18
Rose Valley Borough	0.74	944	1,276	1,070	1,446	170
Thornbury Township	9.16	7,093	774	7,230	789	15
Upper Chichester Township	6.80	16,842	2,477	20,810	3,060	583
Upper Providence Township	5.93	10,509	1,772	11,180	1,885	113
Western Municipalities	94.48	118,796	1,257	137,690	1,457	200
Delaware County	184.43	550,864	2,987	540,460	2,930	-57

Source: Delaware Valley Regional Planning Commission, 1999
Prepared by Delaware County Planning Department, 2000

Impact on Eastern/Western Fringe Areas

As noted previously and in subsequent sections of this plan, there are "western municipalities" located within the eastern/western "fringe" that may appropriately be served by public sewer authorities that are tributary to the DELCORA system serving the eastern part of the County. The municipalities viewed as "fringe" are primarily the "western" municipalities that totally or partially lie within the Crum Creek watershed. These include Edgmont, Newtown, and Upper Providence Townships.

Population forecasts are one way of predicting sewage facilities needs municipality-wide. Another way of evaluating potential sewage facilities needs for various areas within a municipality is to look at maximum build-out based on zoning. A recent report entitled Sanitary Sewage Flow Study for Portions of Edgmont Township, Newtown Township, and Upper Providence Township within the Crum Creek Watershed (December 19, 1999), prepared by Kelly Engineering for DELCORA, evaluated potential customers and sewage flows within the upper Crum Creek basin. While the report provided estimated flows based on projected residential and nonresidential equivalent dwelling units (EDUs), the report does not address population/housing densities within designated areas, ability of the soils to accommodate on-lot systems, the current location of the nearest public sewer line, etc. In subsequent chapters of this report, we will utilize this information in conjunction with maps showing soil suitability and the existing sewer network to identify the location of the nearest sewer interceptor to which flows could be conveyed.

An additional report prepared by Roy F. Weston, Inc. for DELCORA entitled Interceptor Evaluation Crum Creek and Little Crum Creek (March 24, 2000) provided an evaluation of sewer line capacities in the Crum Creek interceptor system. This report, as well as the information noted above, will be addressed as part of our alternatives analysis for this area.

Additional Fringe Areas

Other areas that might constitute a "secondary fringe area" include some of the municipalities in the Ridley Creek watershed. While several of the municipalities located in the middle of the watershed are served by the Media Sewage Treatment Plant, several others at the lower end of the watershed are already connected to the DELCORA system. Further analysis of conditions in this watershed will be performed as part of the western study.

CHAPTER 3

EXISTING WASTEWATER TREATMENT AND CONVEYANCE SYSTEMS

WASTEWATER TREATMENT AND CONVEYANCE AUTHORITIES SERVING DELAWARE COUNTY

Most of Delaware County's domestic sewage is currently conveyed and/or treated by one or more of the twenty public governmental authorities charged with these tasks (refer to Table 1-3 in Chapter 1). Homes and businesses in portions of the County not served by these authorities utilize individual on-lot or community treatment systems constructed to serve their respective homes or businesses. The following is a discussion of those municipal and non-municipal wastewater treatment and conveyance systems operating in the eastern study area. Note that many of these authorities serve more than one function within any given municipality.

Public organizations currently providing sewage treatment or conveyance service within the eastern study area are:

- Delaware County Regional Water Quality Control Authority (DELCORA) (T,C)
  - DELCORA Western Service Area
  - DELCORA Eastern Service Area
    - Muckinipates Sewer Authority (C)
    - Central Delaware County Authority (C)
    - Darby Creek Joint Authority (C)
    - Radnor-Haverford-Marple Sewer Authority (C)
- Tinicum Township (T,C)
- City of Philadelphia (T,C)

Public organizations currently providing sewage treatment or conveyance service within the western study area are:

- Brookhaven Borough (T,C)
- Chadds Ford Township Sewer Authority (T,C)
- Concord Township (T,C)
- Little Washington Wastewater Company (T,C)
- Rose Valley Borough (T,C)
- Southwest Delaware County Municipal Authority (T,C)
- Thornbury Township Board of Supervisors (T,C)
- City of Wilmington (T,C)

- Bethel Township Sewer Authority (C)
- Middletown Township Sewer Authority (C)
- Newtown Township Municipal Sewer Authority (C)
- Southern Delaware County Authority (C)
- Upper Providence Sewer Authority (C)
- New Castle County (C)

T – treatment authority
C – conveyance authority

A great deal of information associated with the many sewer systems noted above and below has been documented in digital form. A large plotted copy of selected sewage facility components for the Eastern Plan of Study appears as Map 3-1 in the back of the plan. For more information regarding the geographic information system (GIS) mapping that accompanies this report, refer to Appendix A which discusses the mapping process.

PUBLIC ORGANIZATIONS PROVIDING SEWAGE TREATMENT AND CONVEYANCE WITHIN THE EASTERN STUDY AREA

Wastewater Treatment Authorities

Delaware County Regional Water Quality Control Authority

Organizational Description

DELCORA was established in 1971 by the Delaware County Commissioners, pursuant to the Municipal Authorities Act, and its Board of Directors is appointed by Delaware County Council. DELCORA was authorized to exercise all powers granted under the Act to implement the Countywide wastewater management plan. DELCORA's role as an implementation agency involves the acquisition, holding, construction, improvement, maintenance, operation, owning, and leasing of sewer systems and sewage treatment facilities. DELCORA is financially self-sufficient; capital funds are raised through bond issues, while operation and maintenance expenses and debt service are covered by user charges. DELCORA owns and maintains the 44 MGD WRTP located in Chester, as well as an extensive system of wastewater conveyance facilities, and, in certain municipalities, the collector sewers.

DELCORA's service area is divided into eastern and western regional drainage districts as established in the Delaware County Regional Sewerage Project (November 1972). This plan was prepared by Albreit and Friel as the implementing document pursuant to the County's original Act 537 Sewerage

Facilities Plan (1971). The eastern regional drainage district serves a significant portion of the County's population east of Crum Creek (twenty-six municipalities). With the exception of Tinicum Township and portions of East Lansdowne, Millbourne, and Yeadon Boroughs and Haverford and Upper Darby Townships, flows are conveyed by four regional conveyance authorities and pumped to the PSWPCP. The major authorities which feed to the DELCORA system include RHM, CDCA, DCJA, and MA. Tinicum Township operates its own sewage treatment plant, and flows from portions of East Lansdowne, Millbourne, and Yeadon Boroughs and Haverford and Upper Darby Townships go directly into the Philadelphia sewer system. DELCORA has a long-term service contract with the Philadelphia Water Department which provides DELCORA 50 MGD of reserve capacity in the 210 MGD capacity PSWPCP. In 2000, DELCORA pumped an average of 39.78 MGD to PSWPCP for treatment.

Treatment Facility Description

The DELCORA WRTP is located at the foot of Booth Street in the City of Chester and serves DELCORA's Western Service Area. The plant, which has a rated treatment capacity of 44 MGD (92.3 MGD maximum with 30 MGD recycled to aeration basins), discharges to the Delaware River under NPDES Permit No. PA 0027103. In 2000, DELCORA averaged 30.88 MGD of flow through the WRTP. The maximum flow occurred on March 22 of that year (63.9 MGD). As noted in the Chapter 94 Report, organic capacity is not applicable since the NPDES permit for the plant addresses effluent. The design organic loading for the plant influent is 91,740 lbs. of BOD_5 per day. During 2000, the WRTP averaged 30,070 lbs. of BOD_5 per day in the influent and discharged 2,029 lbs./day.

The plant employs an aerated waste activated sludge process that provides primary and secondary treatment levels. The treatment processes include primary clarification, aeration, secondary clarification, post-aeration, and disinfection by chlorination. Sludge is thickened, dewatered, and incinerated. The ash is stored and transported to the City of Wilmington, Delaware sludge stabilization facility for disposal. During 2000, DELCORA landfilled 2,315 tons of dry ash. Wastewater flow to the WRTP is first treated in a preaeration basin. Next, solids are settled and removed during primary clarification. Flow is then directed to the aeration tanks where biological action takes place to remove organics. From the aeration tanks, flow is transferred to final clarifiers where more solids are settled and removed. The final step is the chlorine contact tanks, where disinfection to eliminate pathogens and bacteria takes place prior to discharge to the Delaware River.

Approximately 60% of DELCORA's WRTP flow is categorized as industrial wastewater (industrial reserve capacity of 29 MGD). Note that 99% of industrial flows are generated by two major industries, Kimberly-Clark Tissue Co. and Sun Company-Marcus Hook Refinery. The following is a list of the industrial users that discharge to the WRTP:

Significant Industrial User	Permitted Discharge (gpd)
Kimberly-Clark Tissue Co.	16,500,000
Sun Company-Marcus Hook Refinery	12,000,000
P. Q. Corporation	125,000
Foamex International, Inc.	80,000
Medford Incorporated	80,000
Stoney Creek Technologies, LLC	80,000
Esschem, Inc.	15,000
Marvec Manufacturing, Inc.	7,500
Kozmer Technologies, Ltd.	1,000

All industrial waste discharging to the WRTP must have a DELCORA issued Industrial Waste Permit in accordance with the EPA approved treatment program. Pretreated industrial wastewater must comply with limits established by DELCORA as approved by EPA.

Previous Upgrades

Over the past several years, DELCORA has been in the process of implementing contract improvements to upgrade the treatment at the WRTP. During 1989, DELCORA began a program to adjust the equipment and treatment process to improve effluent quality. Other than completing plans to install a new Continuous Emission Monitoring System (CEMS) unit in 1999, DELCORA's 1998 Chapter 94 Report does not indicate that DELCORA has any other upgrades scheduled at this time. It is DELCORA's intention to maximize the utilization of the WRTP. Plans to increase the rated capacity of the WRTP are being considered at this time.

Other Issues

On June 12, 1991, the City of Philadelphia transmitted a letter to DELCORA notifying the County of the City's intent to terminate its agreement to treat wastewater from Delaware County upon its thirty-year term on March 15, 2004. In general, the reasons for this relate to disagreements over capital contribution payments and increased wastewater

treatment rates. In 1995, the dispute was settled, and DELCORA and the City executed an amendment to the agreement that served as a settlement of the dispute.

In a legal opinion prepared by DELCORA's solicitor, Blank Rome Comisky & McCauley LLP, it was determined that "The City's 1991 letter did not constitute notice of termination of the agreement..." because the timing of the 1991 letter was not consistent with the termination clause in the March 15, 1974 agreement. Also, given the fact that the City's issues were addressed in the 1995 agreement, and the City has not since served a termination notice in accordance with the requirements of the 1974 agreement, the agreement with the City has not yet been terminated.

Scheduled Upgrades

In addition to the Central diversion project and pump station upgrades currently underway, DELCORA's Capital Projects Plan includes the following projects to be completed over the ensuing five years:

- Grit removal improvements
- Fine bubble aeration
- Dewatering upgrades
- Process automation including fiber optic installation and Supervisory Control and Data Acquisition (SCADA) system
- Conveyor and bar screen upgrades
- Tank structural repairs
- Safety improvements including a public address system, new fencing, and site security system

Current Plant Status

According to DELCORA's 2000 Chapter 94 Report, the WRTP continued to discharge high quality effluent with the following exceptions:

- January 2000 - BOD_5 percent removal fell to 88.1%, which is slightly below the minimum requirement of 89.25% removal.

- February 2000 - DELCORA had three exceptions to report. BOD_5 percent removal fell to 83.2%, which is below the minimum requirement of 89.25%. The BOD_5 maximum weekly average was 12,688 lbs., which was above the weekly maximum allotment of 10,500 lbs. The first-stage oxygen demand was 11,837 lbs., which was above the maximum allotment of 10,500 lbs.

The January and February 2000 violations were a direct result of a series of three toxic shock loads that entered the DELCORA aeration system between January 24, 2000 and February 12, 2000. DELCORA took swift remedial action to correct the problems that existed with the operating system and the affected parameters. By March, all parameters were in compliance.

DELCORA has initiated the design for an upgrade to the aeration process at the WRTP. The present aeration system at the WRTP uses mechanical surface aerators that are inefficient when compared to modern fine bubble diffusion systems. The design calls for a submerged diffuser system that is sized for the rated plant flow capacity of 44 MGD (capable of expanding up to 60 MGD if necessary) to be installed in the aeration basins. Blowers will supply compressed air to each of the four basins. There a submerged header/lateral system with fine bubble submerged diffusers will aerate and treat the wastewater.

Roy F. Weston, Inc. was commissioned to begin design work to replace the grit system. Weston also continues design work on the replacement of the surface aerators with a fine bubble diffused aeration system. A plant re-rate study is also in progress. A Part II Water Quality permit will be filed for the aeration project in FY 2002, following pilot testing and final design selection. In FY 2000, work was completed on a new access road. Work continued on the repair of clarifier T-15 and the EPS-1 upgrade.

Conveyance Facilities Description

As noted previously, DELCORA has two major service areas. Conveyance facilities serving the Eastern Service Area include a network of interceptors and pump stations, most of which are referenced in the following section covering the conveyance authorities which include CDCA, DCJA, and the MA. The final section of this chapter entitled Eastern Study Area (DELCORA Eastern Service Area) Infiltration and Inflow Analysis provides details concerning the condition of the entire eastern system.

Western Service Area/Western Regional Drainage District

The following information concerning the western drainage district has been extracted from recent Chapter 94 Reports.

Facilities operated by DELCORA in the western regional drainage district include the WRTP and the collection and conveyance systems in the City of Chester, the Boroughs of Upland and Parkside, and a portion of Chester Township. The City of Chester portion of DELCORA's Western Service Area is served by combined sewers. DELCORA has a Long-Term Combined Sewer

Overflow (CSO) Control Plan (April 1999) which lays out DELCORA's plans for dealing with issues and plans associated with combined sewers. The western regional drainage district collection system currently includes two pump stations and force mains, four lift stations, and approximately 147 miles of separate and combined sewers with twenty-five regulating chambers controlling wet-weather overflows.

The three pumping stations (PS) and four lift stations (LS) serving the DELCORA western regional drainage district include:

No.	Name	Location	Capacity (MGD)	1998 Average Flow (MGD)
1.	Chester Pump Station (PS)	113 West 2nd St., Chester	30.0	9.41
2.	Marcus Hook Pump Station (PS)	4th & Penn Sts., Marcus Hook	4.8	0.83
3.	Eddystone Pump Station (PS)	736 Eddystone Ave., Eddystone	2.0	0.31
4.	Broomall Street Pump Station (LS)	Delaware Ave. & Broomall St., Chester	N/A	N/A
5.	8th Street Pump Station (LS)	99 West 8th Street, Chester	N/A	N/A
6.	Feltonville Pump Station (LS)	Concord Road, Chester Township	N/A	N/A

As noted in DELCORA's CSO Control Plan, there are seven major interceptors that are part of the western system. They include:

1. Stoney Creek Interceptor
2. West End Interceptor
3. Front Street Interceptor
4. 2nd Street Interceptor
5. Chester Creek West Interceptor
6. Chester Creek East Interceptor
7. Ridley Creek Interceptor

The WRTP also processes wastewater flows from the following municipalities:

- Brookhaven Borough (via the Ridley Creek Interceptor)
- Eddystone Borough (via force main to a gravity sewer leading to the Chester Pump Station (CPS)

- Marcus Hook Borough (via force main to the WRTP)
- Rose Valley Borough (via the Ridley Creek Interceptor)
- Trainer Borough (via the Stoney Creek Interceptor)
- Lower Chichester Township (via Marcus Hook and the force main to the WRTP)
- Nether Providence Township (via the Ridley Creek Interceptor)

DELCORA has a service agreement with the above municipalities for treatment of wastewater only. Wastewater collection is provided by the municipalities themselves.

The following are 1998 Chapter 94 Report descriptions provided by the municipalities which convey flows to DELCORA's system:

- Brookhaven – via the Ridley Creek Interceptor through Parkside. "Considering the age, the general condition of the sewer system is good."
- Eddystone -- via the Eddystone Pump Station. "The Borough has completed the I&I repairs which eliminated major inflow problems in the conveyance system."
- Marcus Hook – via the Marcus Hook Pump Station. "...not aware of any problems with our sewer collection system."
- Rose Valley -- via the Ridley Creek Interceptor. "The condition of the sewer system is generally good."
- Lower Chichester – via the Marcus Hook Pump Station. "No data is available that the sewer system capacity is being exceeded or that excessive infiltration is evident."
- Nether Providence – via the Ridley Creek Interceptor. "The general condition of the sewer system is good."

In addition to those areas that currently flow to the WRTP, SDCA has filed an Act 537 plan with DEP which calls for diversion of 1.5 MGD from the City of Wilmington, Delaware to DELCORA. It is anticipated that this project will be completed by spring 2002.

Eastern Service Area

There are four conveyance authorities that transport sewage from the municipalities to the treatment authorities. The service areas associated with these conveyance authorities as noted in Table 1-3 are shown on Map 1-4 in Chapter 1. The same service areas as well as major municipal and non-municipal interceptors, pumping stations, and force mains are identified on Map 3-1 in the map pocket in the back of this document.

The reader should note that indented text listed below represents information taken from a report prepared by DELCORA for the purpose of developing this Act 537 document. It is entitled Act 537: Sewage Facilities Plan, Sewage Facilities Engineering Analysis (March 2000). Therefore, for more information concerning details of the analysis used to develop recommendations for each of the authorities, refer to the report itself. It should also be noted that line segment numbers used for the purposes of analysis do not correspond to the line segment identification numbers contained in the GIS map prepared by DCPD. When possible, DCPD has noted the corresponding GIS line segment.

Central Delaware County Authority

CDCA's service area spans the Crum Creek watershed and a portion of the Ridley Creek watershed. It has nine member municipalities that include Marple, Nether Providence, Ridley, and Springfield Townships and Morton, Prospect Park, Ridley Park, Rutledge, and Swarthmore Boroughs. A nine-member board was originally formed in 1938 to serve the treatment authority. However, as part of the implementation of the 1972 Delaware County Regional Sewerage Project, the Authority was one of three whose treatment plant was phased out of operation and whose flows are conveyed to the PSWPCP by DELCORA's pump stations and force mains.

CDCA maintains approximately twenty-one miles of sewer lines, four interceptors, and one pump station. The DELCORA report notes that a second pump station owned and operated by DELCORA serves as the terminus of all sewage flowing from CDCA. The major interceptors owned by CDCA include the Crum Creek Interceptor, the Little Crum Creek Interceptor, the Stony Creek Interceptor, and the Prospect Park Interceptor. Collectively, they comprise approximately 105,188 linear feet of pipe of various sizes. Refer to the Sewage Facilities Engineering Report for more detail concerning the sizes and conditions of the various segments of the CDCA system.

The following is a description of the pumping stations that serve the CDCA system as provided in the Sewage Facilities Engineering Analysis Report:

> The **Crum Creek Pump Station (CCPS)** is owned and operated by the CDCA and serves the Crum Creek Interceptor. Built in 1955, the pumping station has three pumps (each with a rating of 3,500 gallons per minute (gpm)) that have a combined maximum capacity of 16 MGD and a permitted combined capacity of 10 MGD. The CCPS pumps wastewater via a 24 inch cast force main along Chester Pike a distance of 1,700 feet. From this point the wastewater flows via gravity into the Little Crum Creek Interceptor.
>
> The **Central Delaware Pump Station (CDPS)** is owned and operated by DELCORA and serves the entire CDCA service area. Built in 1979, the CDPS has three 300 horsepower variable speed pumps designed to match the incoming flow. Each pump has a capacity of 7,000 gpm with a combined capacity of 40 MGD and a permitted combined capacity of 30 MGD. The CDPS pumps wastewater via a 36 inch prestressed concrete cylinder pipe along Darby Creek a distance of approximately 10,000 feet to the Muckinipates Pump Station (MPS) and ultimately ending at the PSWPCP.

An upgrade is currently underway which will pump wastewater to the WRTP via a new 36 inch ductile iron pipe force main to the (CPS) with remaining flow being pumped through the existing force main to the MPS. After the upgrade, the CPS will consist of four 450 horsepower variable speed pumps. Each pump will have the capacity of 9,300 gpm with a combined capacity of 53.5 MGD and a permitted capacity of 40 MGD.

Analysis of the CDCA system performed by DELCORA for the Sewage Facilities Engineering Analysis Report indicated the following:

> Within the Crum Creek Interceptor system, three pipe segments were identified with capacity limitations: segments #47, #52, and #69 [corresponding to GIS segment numbers C0045, C0051, and C0028]. In all cases the differential between demand flow and capacity is small and is probably compensated for by a slight pressure flow in that segment. The other solution to ensure that there are no capacity problems is to reduce I&I in the system, thus lowering the demand flow.
>
> The other identified problem within the CDCA system is that the peak expected daily flow from Table 1-2 (from the Sewage Facilities

Engineering Analysis Report) exceeds the pumping capacity of the CDPS. The potential solutions for this problem are to increase pumping capacity or to reduce I&I in the system. Given the small differential, the latter is the desired solution.

Construction has begun on a project that will divert a maximum of 12 MGD of CDCA's flows to DELCORA's plant in the City of Chester. Excess flows (ranging from 17-28 MGD) will be directed back to the PSWPCP. DELCORA's Chapter 94 Report notes that "the amount of split flow can be adjusted either up or down." For more information, refer to Act 537 Sewage Facilities Plan Partial Update, Facility Alternatives for the Treatment and Disposal of Wastewater from the Central Delaware County Authority Service Area.

Muckinipates Authority

The MA service area covers the Muckinipates Creek watershed that includes, in whole or in part, eight municipalities. The eight member municipalities are Darby, Ridley, Springfield, and Upper Darby Townships and Clifton Heights, Folcroft, Glenolden, and Norwood Boroughs. Each municipality has representation on MA's eight-member board. The MA is one of the three authorities that was converted from a treatment authority to a conveyance authority upon implementation of the 1972 Regional Sewerage Project.

The Authority is responsible for approximately 26,581 linear feet of sewer line of various sizes. There is only one major interceptor, the Muckinipates Creek Interceptor, controlled by the MA. Flows from the MA are conveyed to and pumped through a DELCORA-owned pump station to the PSWPCP for treatment.

The following is a description of the MPS that serves the MA system as provided in the Sewage Facilities Engineering Analysis Report:

> The **Muckinipates Pump Station** is owned and operated by DELCORA and serves the entire MA service area. Built in 1979, the MPS has three 100 horsepower variable speed vertical centrifugal pumps that allow operation to match incoming flow. Each pump has a capacity of 4,200 gpm with a combined capacity of approximately 18 MGD and a permitted combined capacity of 15 MGD. The MPS pumps wastewater into a 48 inch prestressed concrete cylinder pipe force main where it joins flows from CDPS and transports it along Darby Creek a distance of approximately 8,800 feet to the Darby Creek Pump Station (DCPS), ultimately ending at the PSWPCP.

Analysis of the MA system performed by DELCORA for the Sewage Facilities Engineering Analysis Report indicated the following:

> Within the Muckinipates Creek Interceptor system, six pipe segments were identified with capacity limitations: segments #9, #34, #37, #43, #68, and #69 [corresponding to GIS segment numbers J0067, J0066, J0043, J0040, J0030, and J0021]. In all cases the differential between demand flow and capacity is small and is probably compensated for by a slight pressure flow in that segment. The other solution to ensure that there are no capacity problems is to reduce I&I in the system, thus lowering the demand flow.
>
> The other identified problem within the MA system is that the peak expected daily flow from Table 1-2 of the Sewage Facilities Engineering Analysis Report exceeds the pumping capacity of the MPS. The potential solutions for this problem are to increase pumping capacity or to reduce I&I in the system. Given the small differential, the latter is the desired solution.

Darby Creek Joint Authority

DCJA was established in the mid 1930s as a treatment authority. It is one of three authorities that was converted from a treatment to a conveyance authority. Its service area encompasses most of the Darby Creek watershed and a portion of the Crum Creek watershed. The twelve member municipalities served by DCJA include Darby, Springfield, and Upper Darby Townships and Aldan, Clifton Heights, Collingdale, Colwyn, Darby, Folcroft, Lansdowne, Sharon Hill, and Yeadon Boroughs. RHM also has an agreement with DCJA.

DCJA owns and/or maintains approximately 48,921 linear feet of sewer line, three DCJA-owned interceptors, and three non-DCJA-owned interceptors. The three primary interceptor lines owned by DCJA are the Darby Creek Interceptor, the Cobbs Creek Interceptor, and the Hermesprota Creek Interceptor. The one pump station serving DCJA, which is owned and operated by DELCORA, pumps all sewage flows to the PSWPCP for treatment.

The following is a description of the pump station that serves the DCJA system as provided in the Sewage Facilities Engineering Analysis Report:

> The **Darby Creek Pump Station** is owned and operated by DELCORA and serves the entire DCJA service area. Built in 1976, the DCPS has two 700 horsepower variable speed vertical centrifugal pumps. Improvements in 1990 and 1994 added inverters to both pumps that allow variable speed operation to match incoming flow.

Each pump has a capacity of 25,000 gpm with a combined capacity of approximately 70 MGD and a permitted combined capacity of 50 MGD. The DCPS pumps wastewater into a 66 inch prestressed concrete cylinder pipe, where it joins flows from the CDPS and the MPS and transports these flows a distance of approximately 14,000 feet to the PSWPCP.

Analysis of the DCJA system performed by DELCORA for the Sewage Facilities Engineering Analysis Report indicated the following:

> Within the Darby Creek Interceptor system, numerous pipe segments were identified with capacity limitations, especially between segment #1 and segment #56 [corresponding to GIS segment numbers F0076 through F0151, excluding segments F0088 and F0089]. Given the significant differential between demand flow and capacity, it is doubtful that it can be compensated for by pressure flow without significant surcharging of the system. The solutions that ensure that there are no capacity problems are to install a parallel interceptor or to reduce I&I in the system, thus lowering the demand flow.
>
> The other identified problem within the DCJA system is that the peak expected daily flow from Table 1-2 [from the Sewage Facilities Engineering Analysis Report] exceeds the pumping capacity of the DCPS. The potential solutions for this problem are to increase pumping capacity or to reduce I&I in the system.

Radnor-Haverford-Marple Authority

RHM is a six-member board authority which was created in 1967. It is composed of two representatives from each of its three member municipalities, Radnor, Haverford, and Marple Townships. RHM's service area is a subportion of the Darby Creek watershed. In addition to servicing portions of its member communities, RHM also services a portion of Newtown Township. RHM manages approximately four miles of sewer lines, one parallel line, and one interceptor. There are also twenty-one metering stations in place within the system. All of RHM's flows are conveyed to DCJA's system.

A detailed flow capacity analysis presented in previous sections was unnecessary because a capacity analysis was conducted by the Authority in 1992 as part of its I&I Reduction Program. The parallel interceptors (24 inch and 30 inch sewers) have a design capacity of 20 MGD. The single 36 inch interceptor that connects the parallel interceptors to DJCA's Darby Creek Interceptor has a capacity of 16.79 MGD. This information is based on the

Infiltration/Inflow Reduction Program Report prepared by Roy F. Weston, Inc., dated August 1992.

Sludge/Biosolids Generation

DELCORA's Chapter 94 Report cited the following regarding sludge generation and processing at the WRTP located in the City of Chester:

> Activated sludge is removed from the system based on flow and solids concentration. The sludge is processed in an air flotation system prior to dewatering. The treated waste is then pumped to the filtration building at about 3-5% solids. The sludge can be directed to one or all of three filter belt presses. Sludge cake from the belt presses is conveyed to an incinerator. The ash is collected at the bottom of the incinerator and transported by air to two storage silos. The incinerator is normally operated twenty-four hours a day, seven days a week. An average of 24.38 tons of sludge were incinerated a day in 2000. The operation is permitted for 48 dry tons. Sludge reduction by incineration is about 75%. The ash is permitted for disposal in the State of Delaware, and all ash generated is disposed of there.

The approximately 24.5 dry tons incinerated per day at the DELCORA plant include sludge from its own treatment processes as well as an additional 2 to 10 tons per day from contract customers. In accepting contract sludge, DELCORA gives preference to Delaware County facilities. DELCORA asks for a minimum of 4% solids in contract sludge and charges higher rates if the solids drop below that percentage. Each incinerator unit is permitted to burn 48 tons per day for a total of 96 tons per day for the facility, and DELCORA is currently (2001) exceeding its goal of 10 tons per day of contract sludge.

Tinicum Township Delaware County Sewer Authority

Organizational Description

The Authority is authorized under the Municipal Authorities Act of 1945 as a leaseback authority, with the Authority owning the capital investment and Tinicum Township paying for operations. As such, the Authority is under no legal prohibition from serving areas outside of the Township. However, the Authority serves only the Township because Tinicum is geographically cut off from the rest of the County by water bodies. The service area, which includes the Lester and Essington areas, is flat and low, with a high water table. The Authority serves an estimated resident population of 4,510 and approximately 12,000 employees. As such, the Township's 2000 Chapter 94 Report indicated

that it was unable to assign a per capita usage value as employee usage is unknown.

Treatment Facility Description

The Tinicum plant is located on Chippewa Street in Essington, immediately south of I-95. The plant was built in 1965 to serve an equivalent population of 12,000, with an average design flow of 1.4 MGD and a maximum of 2.8 MGD. Secondary treatment is achieved through a two-stage, high-rate trickling filter process, with recirculation in each stage. Effluent is chlorinated and discharged to Darby Creek. The plant has a pattern of hydraulic overloads during wet weather. In 1987, the Tinicum Township Sewer Authority initiated planning under the Act 537 grants program to isolate and identify areas of I&I and determine appropriate corrective actions. The Township is still in the process of making corrections.

According to the Authority's Chapter 94 Report of 2000, "Peaks in the flow...are a result of excessive amounts of infiltration and inflow." The report notes that the Township is still in the process of implementing the recommended corrective measures contained in its I&I study. It further notes that "...corrective measures are helping and will continue to help alleviate possible future hydraulic overloading." The Chapter 94 Report states that "No hydraulic overloading is anticipated based upon geometric projections." At present, the Authority does not anticipate additional wastewater planning since flows have not reached the plant's design capacity of 1.4 MGD.

The Township has recently proposed a $1.7 million plant upgrade. Improvements are to include raising the trickling filter by four feet (to nine feet), replacing rock with plastic for more surface area, and adding an additional set of settling tanks.

Conveyance Facilities Description

Conveyance Lines

Tinicum Township owns and maintains a sewer system that serves the Township only. The 2000 Chapter 94 Report for the Township indicates that the system "...is generally in fair condition."

Pump Stations

Sewage flows by gravity to pump stations which pump flows to the plant. Sewage is conveyed to the treatment plant by a system using eleven pump stations. They are as follows:

No.	Name	Location	# Pumps	Total Cap.	Current Maximum Flow
1.	Essington	Front St. and Jansen Ave.	2	1,500 gpm	663,175 gpd
2.	Lester	Fourth Ave. and Chippewa St.	2	1,600 gpm	317,800 gpd
3.	Treatment Plant	Treatment Plant	2	2,000 gpm	703,275 gpd
4.	Holiday Inn	Industrial Highway	2	370 gpm	146,225 gpd
5.	Ramada Inn	Industrial Highway	2	570 gpm	53,950 gpd
6.	Manor Property	Wanamaker Ave.	2	300 gpm	149,325 gpd
7.	Taylor Avenue	Essington	2	400 gpm	25,000 gpd
8.	Second Street	Essington	2	350 gpm	102,475 gpd
9.	Tinicum Industrial Park	Former Westinghouse	1	unknown	48,250 gpd
10.	Comfort Inn	Industrial Highway	2	200 gpm	24,250 gpd
11.	Airport Business Center	International Court	2	600 gpm	16,600 gpd

The Township's Chapter 94 Report notes that most of these pump stations are in good working condition, with the Manor Station listed as "fair condition." Information concerning the Tinicum Industrial Park Pump Station is unknown.

Sludge/Biosolids Generation

Tinicum produces 40,000 gallons of wet sludge (5% solids) per month, which is hauled to DELCORA for further treatment and disposal.

City of Philadelphia Water Department

Organizational Description

The City of Philadelphia Water Department provides sewage treatment for flows originating in watersheds of the Schuylkill River, Cobbs Creek, and a major portion of Wissahickon Creek outside of Delaware County, and watersheds of Darby, Crum, Ridley, and Cobbs within Delaware County. The 103,800 acre drainage area consists of 27,200 acres within the City of Philadelphia, 60,000 acres of eastern Delaware County, and 16,000 acres of other suburban counties.

PSWPCP treats sewage originating in the Muckinipates, RHM, Central Delaware County, Darby Creek, and Upper Darby-Haverford service areas, making it the only treatment authority for twenty-six Delaware County municipalities and one of two authorities for another municipality (see Table 1-3 for a list of the conveyance and treatment authorities for each municipality). About 56 MGD of the 188 MGD flow treated at the PSWPCP comes from Delaware County (1999). These flows are channeled through the DELCORA pump stations of Darby Creek, Muckinipates, and Central Delaware County, with most of the flows being pumped by the DCPS and the DELCORA interceptor. Flows from Upper Darby and Haverford Townships and Millbourne, East Lansdowne, and Yeadon Boroughs enter directly into the City

of Philadelphia system through Upper Darby Township. Construction has begun on a project that will divert wastewater originating in CDCA to DELCORA's WRTP.

Treatment Facility Description

PSWPCP is located northeast of Philadelphia International Airport on Enterprise Avenue and discharges to the Delaware River. The plant is permitted to treat an annual average flow of 200 MGD and wet weather peak flows to 400 MGD. For 1999, the average annual flow was 187.5 MGD, and the peak flow was 476.0 MGD.

Secondary treatment is achieved through an activated sludge process. Major component processes include screening, grit removal, flocculation, primary sedimentation, oxygen aerated activated sludge generation, final sedimentation, and chlorination. Waste activated sludge from the final sedimentation tanks and from PSWPCP is thickened by dissolved air flotation and may be mixed with the primary sludge prior to anaerobic sludge digestion under controlled heating. Digested biosolids are transferred by pipeline to Philadelphia's Biosolids Recycling Plant (BRC) for dewatering and composting. Dewatering to 30% solids is achieved in high speed continuous centrifuges with polymer feed. Biosolids cake from the centrifuges is combined with wood chips and composted using forced aeration. Some biosolids cake is landfilled or used for agricultural purposes and strip mine reclamation. Prior to distribution as a soil conditioner, compost is screened to remove the wood chips, which are reused. Biosolids gas is used at the plant as fuel for biosolids heating and space heating, with the excess flared off. Screenings, grit, and scum are collected and disposed of in a sanitary landfill.

Design loadings are 339,000 lbs. of BOD_5 and 488,000 lbs. of suspended solids per day. The plant is designed to meet discharge standards of 30 mg/L BOD_5, 30 mg/L suspended solids, and 200 coliform MPN/100 ml.

In 1999, the fifth consecutive year without an effluent discharge violation for PSWPCP, suspended solids averaged 5mg/L in the effluent, constituting an average 96.9% removal rate; BOD_5 averaged 7 mg/L in the effluent, constituting an average 93.8% removal rate; and $CBOD_5$ averaged 3 mg/L in the effluent, constituting an average 97.2% removal rate.

Conveyance Facilities Description

Wastewater from Delaware County is conveyed to the PSWPCP in three ways. Most of the wastewater is pumped from DELCORA through a force main directly to the head of the plant. Wastewater from the Upper Darby Township

area is conveyed by gravity through two 24 inch pipes at 60th Street and Cobbs Creek Parkway to a five foot diameter brick Cobbs Creek Interceptor directly to the treatment plant. Wastewater from the area of Philadelphia International Airport located within Tinicum Township is conveyed without differentiation to the PSWPCP along with the remaining wastewater from the airport.

Sludge/Biosolids Generation

In fiscal year 1999 (July 1998-June 1999), Philadelphia's BRC processed a total of 58,693 dry tons of biosolids. Of this total, the PSWPCP generated 36,695 dry tons. This equates to an average of 100.5 dry tons of biosolids generated per day by the PSWPCP. Philadelphia disposes of its biosolids products through the marketing and free give-away of screened compost, agricultural applications, land reclamation projects, and landfilling.

EASTERN STUDY AREA (DELCORA EASTERN SERVICE AREA) INFILTRATION AND INFLOW ANALYSIS

Brief History

A major impetus for the preparation of this Countywide Act 537 plan update was the need to address changes in the conditions of the existing sewer system network serving eastern Delaware County. As early as the 1970s, several of the authorities serving eastern Delaware County were placed under sewer moratoria due to reports of excessive wet weather flows. DELCORA flows from CDCA, MA, and DCJA to the City of Philadelphia were often approaching or exceeding specified daily limits in their agreement, and DELCORA was faced with costs for the treatment of rainwater.

It was becoming apparent that the existing system was experiencing problems with I&I. Therefore, as early as 1985, in order to be eligible for funding of capital improvements (e.g., possible diversion of flows, plant expansion, and sewer line repair/replacement) to deal with these issues, DELCORA requested that the County coordinate with it to prepare an Act 537 plan update. DELCORA offered its services to DCPD to help coordinate a comprehensive I&I study of the three major authorities with reported severe I&I problems. The outcome of this study was to serve as the basis for an Official Act 537 Plan update (including analysis and recommendations) for the eastern (sewered) portions of Delaware County.

I&I Study Purpose and Scope

The following text is a summary discussion of the results of an I&I

study prepared for municipalities and authorities within DELCORA's eastern drainage district by Roy F. Weston, Inc. for DELCORA and DCPD for the purposes of this Act 537 plan update. The final report, which is entitled Act 537: Sewage Facilities Plan, Municipal & Authority Inflow and Infiltration Study, Summary Report (March 2000, revised July 2000), herein after referred to as the I&I Summary Report, is based on the results of individual I&I studies performed during 1996 and 1997 by the municipalities and authorities that service this specific portion of Delaware County. This report is incorporated by reference and should be considered a component of this Official Act 537 Plan. This document was distributed to municipalities in the fall of 2000. Additional copies are available upon request. Any variations or apparent inconsistencies in data are associated with variations in data provided to the consultant. For more detailed explanation of the contents of either the I&I Summary Report or the individual municipal and authority I&I studies, please refer to the respective reports.

As set forth in the Scope of Services for the I&I study, the purposes for performing the work were:

> To identify and resolve existing sewage disposal problems, to avoid potential sewage problems resulting from new land development, and to provide for the future disposal needs of the County by developing strategies to:
>
> 1. Ensure that a lack of sewage facilities does not impair economic growth,
>
> 2. Eliminate restrictions on sewer connections and prevent future connection bans,
>
> 3. Eliminate any existing health hazards and property damage from overloaded municipal systems and malfunctioning on-lot systems as well as prevent health hazards and property damage in the future,
>
> 4. Provide cost-effective solutions to sewage facility needs, and
>
> 5. Reduce the cost of conveying and treating extraneous water (I&I) in the Eastern Service Area.
>
> Specific tasks performed included:
>
> - Description of the study area
> - Review of plans and calculation of theoretical flow

- Flow monitoring
- Field investigation (including visual inspection for defects, smoke testing, and televising of lines)
- Data analysis
- Corrective action plan

Infiltration and Inflow Summary Report Results and Recommendations

The I&I Summary Report states the following with regard to the individual authority studies conducted for the purposes of inclusion in this document:

Central Delaware County Authority

Observed Problems

There were a number of observed problems associated with the CDCA sewer system. As stated in the I&I Summary Report:

- Signs of severe surcharging caused by numerous partial blockages were observed in the Prospect Park Interceptor.

- Inspection of the Little Crum Creek Interceptor revealed an area of visible infiltration along the south side of Ridley Park Lake.

- Five areas where old interceptor, thought to be abandoned, was still in service were observed.

- Inspection of the Crum Creek Interceptor creek crossings revealed visible infiltration at the crossing in Smedley Park.

Other Problems

DEP incident notification reports list pump station overflow occurrences caused by extreme precipitation events. Between August 1991 and August 2000, CDPS experienced twenty such extreme overflow events.

Corrective Action Plan

The corrective action plan for CDCA includes the following:

- Installing manhole inserts in all manholes.

- Slip lining the Smedley Park creek crossing.
- Televising the remaining creek crossings and slip lining if necessary.
- Cleaning the interceptors on a regular basis.
- Repairing remaining areas in the old interceptor (previously thought to be abandoned).

Darby Creek Joint Authority

Observed Problems

The I&I Summary Report indicated that flow metering confirms the presence of severe I&I. It specifically notes four major problem areas, two which have obstructions/blockages and two creek crossings that are allowing water to enter the interceptor.

Other Problems

DEP incident notification reports list pump station overflow occurrences caused by extreme precipitation events. Between August 1991 and August 2000, DCPS experienced six such overflow events.

Corrective Action Plan

The I&I Summary Report indicated that the DCJA Board recently approved a Routine Maintenance and Inspection Program for its interceptor system. The I&I Summary Report further outlined three additional corrective actions to be undertaken in addition to the approved maintenance program. They are as follows:

- Cleaning to remove blockages.
- Investigating the creek crossings and slip lining as necessary.
- Installing manhole inserts in all manholes.

Muckinipates Authority

Observed Problems

The I&I Summary Report indicated that historically two sections of the Muckinipates Creek Interceptor have been subject to surcharging. However, it notes that "The lack of properly recorded easements has created a number of difficulties in accessing and maintaining the interceptor." It also notes that "A total of 77 manhole covers were found to be subject to inflow, and 26 could not

be found or could not be opened." No problems were observed at the twelve stream crossings checked.

Other Problems

DEP incident notification reports list pump station overflow occurrences caused by extreme precipitation events. Between August 1991 and August 2000, MPS experienced seven such overflow events.

Corrective Action Plan

The I&I Summary Report recommended the following three corrective actions:

- Procuring and installing manhole inserts.
- Televising all lines to document I&I.
- Cleaning sewers and manholes.

Radnor-Haverford-Marple Sewer Authority

Observed Problems

The I&I Summary Report indicates that RHM has been conducting extensive on-going I&I studies for the past six years and that RHM provides corrective services to its member municipalities. The on-going studies have identified leaking pipe joints, cracked pipes, etc.

Corrective Action Plan

RHM has an on-going maintenance program that involves repair of leaking pipe joints. An extensive program undertaken in 1997 that involved repair and rehabilitation activities, installation of manhole inserts, as well as other municipal activities resulted in a total annual removal of 149,775 gallons per day (gpd) of I&I.

The respective individual municipal and authority studies show that a significant I&I problem exists in DELCORA's Eastern Service Area. Reduction of this I&I will provide a number of benefits to DELCORA, the authorities, and the individual municipalities which include:

- Increased sewer infrastructure capacity for other uses.
- Reduced treatment and operation and maintenance (O&M) costs associated with disposal.

- Reduction or elimination of potential public health hazards resulting from sewage overflows in various problem areas with overtaxed facilities.

Recommended programmatic corrective actions noted in the study include:

- Regular sewer cleaning.
- Implementation of an I&I monitoring program.
- Sewage facilities documentation.
- Implementation of a sewage facility management system.

Recommended Five Year Plan for Authorities

The following is the "generic" Five Year Plan recommended for adoption by the authorities:

Year One

- Review the I&I studies and determine where maintenance and sewer cleaning need to be conducted. Undertake maintenance and cleaning activities and identify any I&I problems observed.

- Review the I&I studies and I&I problems observed during maintenance and cleaning (above). Identify potential corrective actions required to reduce I&I and conduct a cost-benefit analysis to determine the corrective actions to be taken.

- Authorize the undertaking of the corrective actions. These actions would be scheduled to meet seasonal (construction) and financial constraints over the duration of the Five Year Plan.

- Identify routine maintenance practices that would lead to improved performance of the interceptor system. Prepare a Preventative Maintenance Plan that would include a sewer cleaning schedule, monitoring of "trouble" locations in the system, and other activities that would benefit the Authority. Include a procedure that would immediately identify I&I problems for subsequent corrective actions.

- Implement the Preventative Maintenance Plan.

- Install manhole inserts in all manholes.

Years Two through Five

- Undertake corrective actions. As the corrective actions are completed, monitor their performance.

- Implement the Preventative Maintenance Plan. Remedy observed I&I problems.

Results of the Municipal Infiltration and Inflow Studies

The Municipal & Authority Inflow and Infiltration Study, Summary Report states the following with regard to the individual municipal studies conducted for the purposes of inclusion in this document:

Each individual I&I study presented a series of municipality-specific recommendations to be undertaken. These are presented in each of the separate reports. There are, however, a number of corrective activities common to all municipalities. The relative costs for implementing the corrective actions in each municipality was normalized and is evaluated for comparison purposes in the Economic Evaluation section in Chapter 6.

A summary of observed problems and a corrective action plan specific to each municipality is provided in Section 2 of the Summary Report. Section 3 offers similar information for the authorities. The most notable analysis performed for the I&I Summary Report relates to the prioritization of corrective actions based on a number of factors, in particular, cost.

Conclusions of the Infiltration and Inflow Summary

Some of the major conclusions of the I&I Study are as follows. Within the DELCORA Eastern Service Area:

1. It is estimated that DELCORA's member municipalities and authorities are paying to treat over 14 MGD of I&I. Removal of this I&I could equate to significant conveyance and treatment capacity as well as significant cost savings to member municipalities.

2. Both CDCA and DCJA are currently under modified sewer bans ("restrictions") with respect to new connections. This is due to problems with wet weather capacity issues associated with the systems.

3. The various authority-owned pump stations have received numerous Notices of Violation for wet weather overflows. Such incidences can lead to health problems.

Priority Action Analysis Based on Cost

Table 3-1 (Table 4-2 in Section 4 of the Summary Report) summarizes the normalized costs of all of the needed repairs/corrections noted in the individual I&I studies and attaches a dollar figure. This particular table was useful for analysis in that it provided comparative information for the purpose of determining estimated costs for repair/replacement of both I&I, estimated reduction in gallons if the repairs were to be made, and cost per gallon of I&I removed.

Based on affordability of recommended corrective actions, the Summary Report prioritized corrections in order of cost-effectiveness:

1. Manhole inserts
2. Public education/information
3. Roof leader/sump pump disconnects
4. Manhole frame repairs
5. Slip lining of stream crossings
6. Chemical grouting
7. Manhole repairs
8. Slip lining of other segments
9. Inlet disconnects
10. Sewer replacement

In order to further prioritize corrective actions across municipal and authority boundaries, Table 3-2 (Table 5-3 in the Summary Report) provides a cost comparison of the estimated I&I reductions and cost per gallon reduction presented in Table 3-3 (Table 4-1 in the Summary Report) in terms of "bang for the buck" and affordability. Not only did this table identify gallons reduced and percent of I&I reduced, it also provided an estimated cost per EDU and an annual estimated cost per EDU based on a five year program of repair/replacement. It was assumed that an affordable program would be one that would result in a cost increase for sewer repairs of about $40 per year (or a total of about $200 over the five year program period).

As noted in Table 3-2 above, the results of the Summary Report indicated that most of the municipalities could easily afford to implement their corrective action plans. However, some municipalities might require outside assistance to fund corrections or would need to scale back the level of work. Municipalities of concern are Aldan Borough, Norwood Borough, Ridley Township, Rutledge Borough, Swarthmore Borough, and Yeadon Borough. These municipalities should consult the Summary Report for more

Table 4-2
Normalized Summary of Recomended I&I Reduction Program

Municipality	Sewer Length in Service Area (lf)	Inserts (ea)	Disconnect Inlets (ea)	MH Frame Repairs (ea)	MH Repairs (ea)	MH Liner / Replacement (ea)	Sewer Replacement (lf)	Chemical Grouting (lf)	Chemical Root Removal (lf)	Sewer Slip Lining (lf)	Estimated Inflow Cost	Estimated Infiltration Cost	Estimated I&I Cost	Estimated I&I Reduction[3] (gpd)	Cost per I&I Gallon Removed
Normalized unit cost[1]		$ 50	$ 2,500	$ 197	$ 685	$ 3,313	$ 130	$ 6.75	$ 2.20	$ 59					
Aldan Borough	68,750	200	-	-	400	-	-	2,000	-	3,000	$ 10,000	$ 464,500	$ 474,500	636,150	$ 0.75
Clifton Heights Borough	64,000	162	-	21	28	-	-	-	-	-	$ 12,237	$ 19,180	$ 31,417	814,000	$ 0.04
Collingdale Borough	75,000	-	-	-	14	18	1,000	4,752	-	5,586	$ -	$ 560,874	$ 560,874	300,000	$ 1.87
Colwyn Borough	17,670	85	-	-	20	-	-	-	-	-	$ 4,250	$ 13,700	$ 17,950	130,000	$ 0.14
Darby Borough	87,950	100	5	-	-	-	2,000	-	-	3,000	$ 17,500	$ 437,000	$ 454,500	447,000	$ 1.02
Darby Township	100,415	111	-	-	-	-	-	3,000	-	-	$ 5,550	$ 20,250	$ 25,800	290,000	$ 0.09
Folcroft Borough	58,785	42	-	-	-	-	-	-	-	373	$ 2,100	$ 22,007	$ 24,107	288,000	$ 0.08
Glenolden Borough	87,955	150	-	-	47	-	-	-	-	2,102	$ 7,500	$ 156,213	$ 163,713	1,380,000	$ 0.12
Lansdowne Borough	136,900	120	-	-	200	-	980	950	-	3,300	$ 6,000	$ 465,513	$ 471,513	529,000	$ 0.89
Marple Township	171,215	380	-	-	313	-	-	-	-	-	$ 19,000	$ 214,405	$ 233,405	585,000	$ 0.40
Morton Borough	40,090	132	-	-	7	-	-	-	-	744	$ 6,600	$ 48,691	$ 55,291	414,000	$ 0.13
Nether Providence Township	145,582	600	-	303	107	-	-	54,375	145,582	-	$ 89,691	$ 760,607	$ 850,298	149,000	$ 5.71
Norwood Borough	74,300	83	-	84	45	1	743	44,580	74,300	3,715	$ 20,698	$ 814,288	$ 834,986	112,300	$ 7.44
Prospect Park Borough	73,300	100	-	-	83	-	-	15,555	-	2,400	$ 5,000	$ 303,451	$ 308,451	963,000	$ 0.32
Ridley Park Borough	99,000	292	-	-	47	-	-	-	-	1,114	$ 14,600	$ 97,921	$ 112,521	1,250,000	$ 0.09
Ridley Township	367,000	161	-	-	101	-	-	-	-	43,300	$ 8,050	$ 2,623,885	$ 2,631,935	2,950,000	$ 0.89
Rutledge Borough	13,450	33	-	-	-	-	435	-	-	1,190	$ 1,650	$ 126,760	$ 128,410	463,000	$ 0.28
Sharon Hill Borough	64,634	-	-	-	-	-	-	-	-	4,780	$ -	$ 282,020	$ 282,020	380,000	$ 0.74
Springfield Township	440,145	1,000	-	-	-	-	-	-	-	1,000	$ 50,000	$ 59,000	$ 109,000	350,000	$ 0.31
Swarthmore Borough	95,000	4	-	-	7	-	1,749	-	-	4,130	$ 200	$ 475,835	$ 476,035	270,000	$ 1.76
Upper Darby Township	272,761	20	-	948	409	1	1,162	5,790	-	1,924	$ 187,756	$ 587,137	$ 774,893	620,000	$ 1.25
Yeadon Borough	114,500	300	-	-	400	-	5,725	68,700	114,500	5,725	$ 15,000	$ 2,071,650	$ 2,086,650	131,000	$ 15.93
Municipal Totals	2,668,402	4,075	5	1,356	2,228	20	13,794	199,702	334,382	87,383	$ 483,382	$10,624,886	$11,108,268	13,451,450	$ 0.83
Central Delaware County Authority	121,064	540	-	-	108	-	-	-	43,300	850	$ 27,000	$ 219,390	$ 246,390	253,480	$ 0.97
Darby Creek Joint Authority	48,921	250	-	-	28	-	-	-	24,000	107	$ 12,500	$ 78,293	$ 90,793	87,380	$ 1.04
Muckinipates Authority	26,581	77	-	-	-	-	-	-	-	-	$ 3,850	$ -	$ 3,850	23,100	$ 0.17
Radnor-Haverford-Marple Sewer Authority[2]	1,072,000	265	-	-	1,825	-	-	23,010	104,665	-	$ 13,250	$ 1,635,706	$ 1,648,956	748,775	$ 2.20
Authority Totals	1,268,566	1,132	-	-	1,961	-	-	23,010	171,965	957	$ 56,600	$ 1,933,389	$ 1,989,989	$ 1,112,735	$ 1.79

Notes:
[1] Includes 25% for engineering, legal, procurement costs, etc.
[2] Actual repairs from 1997 and includes all member municipalities.
[3] Estimated I&I reduction for Springfield Twp., CDCA, DJCA, and MA based on 300 gpd per insert, 60 gpd per manhole repair, and 50 gpd per linear foot of pipe grout/slip line/replacement.

Table 5-3
Reduction Program Cost-Effectiveness per EDU

No.	Municipality	I&I Reduction[1] ($)	Est. I&I Reduction (gpd)	Cost per I&I gpd Removed	Potential I&I Reduction	Population (Yr. 2000 Projection)[2]	Estimated EDUs[3]	Total Est. Rehab Cost per EDU	Annual Est. Rehab Cost per EDU[4]	Comments
1	Darby Township	$ 25,800	290,000	$ 0.09	2%	10,580	3,779	$ 6.83	$ 1.37	Very low cost per user
2	Folcroft Borough	$ 24,107	288,000	$ 0.08	2%	7,340	2,621	$ 9.20	$ 1.84	Very low cost per EDU
3	Clifton Heights Borough	$ 31,417	814,000	$ 0.04	6%	6,930	2,475	$ 12.69	$ 2.54	Low cost per EDU; relatively high potential I&I reduction
4	Springfield Township	$ 109,000	350,000	$ 0.31	3%	23,500	8,393	$ 12.99	$ 2.60	
5	Colwyn Borough	$ 17,950	130,000	$ 0.14	1%	2,500	893	$ 20.10	$ 4.02	
6	Marple Township	$ 233,405	585,000	$ 0.40	4%	23,350	8,339	$ 27.99	$ 5.60	
7	Ridley Park Borough	$ 112,521	1,250,000	$ 0.09	9%	7,430	2,654	$ 42.40	$ 8.48	Low cost per EDU; high potential I&I reduction
8	Morton Borough	$ 55,291	414,000	$ 0.13	3%	2,810	1,004	$ 55.07	$ 11.01	
9	Glenolden Borough	$ 163,713	1,380,000	$ 0.12	10%	7,140	2,550	$ 64.20	$ 12.84	Low cost per EDU; high potential I&I reduction
10	Upper Darby Township	$ 774,893	620,000	$ 1.25	5%	27,000	9,643	$ 80.36	$ 16.07	
11	Lansdowne Borough	$ 471,513	529,000	$ 0.89	4%	11,290	4,032	$ 116.94	$ 23.39	
12	Darby Borough	$ 454,500	447,000	$ 1.02	3%	10,740	3,836	$ 118.48	$ 23.70	
13	Prospect Park Borough	$ 308,451	963,000	$ 0.32	7%	6,650	2,375	$ 129.87	$ 25.97	Moderately low cost per EDU; high potential I&I reduction
14	Sharon Hill Borough	$ 282,020	380,000	$ 0.74	3%	5,570	1,989	$ 141.79	$ 28.36	
15	Collingdale Borough	$ 560,874	300,000	$ 1.87	2%	8,820	3,150	$ 178.06	$ 35.61	
16	Nether Providence Township	$ 850,298	149,000	$ 5.71	1%	13,160	4,700	$ 180.91	$ 36.18	Small potential I&I reduction
17	Swarthmore Borough	$ 476,035	270,000	$ 1.76	2%	6,060	2,164	$ 219.98	$ 44.00	
18	Ridley Township	$ 2,631,935	2,950,000	$ 0.89	22%	30,490	10,889	$ 241.71	$ 48.34	Moderately high cost per EDU; very high potential I&I reduction
19	Aldan Borough	$ 474,500	636,150	$ 0.75	5%	4,570	1,632	$ 290.75	$ 58.15	High cost per EDU; relatively small number of EDUs; relatively high potential I&I reduction
20	Norwood Borough	$ 834,986	112,300	$ 7.44	1%	6,160	2,200	$ 379.54	$ 75.91	Very high cost per EDU; small potential I&I reduction
21	Rutledge Borough	$ 128,410	463,000	$ 0.28	3%	840	300	$ 428.03	$ 85.61	High cost per EDU; very small number of EDUs
22	Yeadon Borough	$ 2,086,650	131,000	$ 15.93	1%	11,600	4,143	$ 503.66	$ 100.73	Very high cost per EDU; small potential I&I reduction
	Municipal Totals	$ 11,108,268	13,451,450	$ 0.83		234,530	83,761	$ 132.62	$ 26.52	
	Top 10 Totals (50%)	$ 1,548,097	6,121,000	$ 0.25	46%	118,580	42,350	$ 36.55	$ 7.31	
	Top 16 Totals (75%)	$ 4,475,752	8,889,000	$ 0.50	66%	174,810	62,432	$ 71.69	$ 14.34	
1	Muckinipates Authority	$ 3,850	23,100	$ 0.17	2%	38,492	13,747	$ 0.28	$ 0.06	
2	Darby Creek Joint Authority	$ 90,793	87,380	$ 1.04	8%	100,944	36,052	$ 2.52	$ 0.50	
3	Central Delaware County Authority	$ 246,390	253,480	$ 0.97	23%	84,811	34,768	$ 7.09	$ 1.42	
4	Radnor Haverford Marple Sewer Authority	$ 1,648,956	748,775	$ 2.20	67%	73,828	26,367	$ 62.54	$ 12.51	
	Authority Totals	$ 1,989,989	1,112,735	$ 1.79	100	298,076	110,934	$ 17.94	$ 3.59	

Notes:
[1] Costs presented are based on normalized costs presented in Tables 4-1 and 4-2.
[2] Population figures based on Delaware County Planning Department figures.
[3] EDUs (equivalent dwelling units) based on uniform assumed household size of 2.8 persons per dwelling unit.
[4] Annual estimated rehabilitation cost per EDU is based on 5-year program period.

Table 4-1
Effort and Cost Summary of Recommended I&I Reduction Program

Municipality	TV (lf)	TV/Clean (lf)	Chemical Grouting (lf)	Chemical Root Removal (lf)	Sewer Slip Lining (lf)	Sewer Replacement (lf)	Inserts (ea)	Manhole Cleaning (lf)	Reset Frame (ea)	Seal Frame (ea)	Frame & Cover Replacement (ea)	Manhole Repair/Seal (ea)	MH Chimney Seal (ea)	Manhole Liner (ea)	Manhole Replacement (ea)	Disconnect Inlets (ea)
Aldan Borough		$ 8.33	$ 30.00 [1]		$ 50		$ 50					$ 300	$ 250			
Clifton Heights Borough							$ 40			$ 300	$ 250	$ 500	$ 250			
Collingdale Borough						$ 80						$ 1,150		$ 2,500	$ 2,500	
Colwyn Borough							$ 50				$ 1,000	$ 720				
Darby Borough					$ 37	$ 140	$ 30									$ 2,000
Darby Township							$ 47									
Folcroft Borough																
Glenolden Borough					$ 48		$ 34									
Lansdowne Borough						$ 300 [1]										
Marple Township	$ 1.63						$ 50				$ 1,250	$ 720				
Morton Borough					$ 47		$ 34									
Nether Providence Township	$ 0.65		$ 5.00	$ 1.75			$ 36		$ 140	$ 50	$ 480	$ 410	$ 300			
Norwood Borough	$ 0.65		$ 5.00	$ 1.75	$ 44	$ 100	$ 36	$ 150	$ 140	$ 50	$ 480	$ 600	$ 300		$ 2,500	
Prospect Park Borough	$ 1.50		$ 4.50		$ 135 [1]		$ 50				$ 1,000	$ 720				
Ridley Park Borough					$ 55		$ 34									
Ridley Township					$ 42		$ 34									
Rutledge Borough					$ 52		$ 34									
Sharon Hill Borough		$ 5.00			$ 100 [1]											
Springfield Township																
Swarthmore Borough																
Upper Darby Township			$ 7.50		$ 200 [1]	$ 100		$ 150	$ 250			$ 650	$ 500		$ 4,000	
Yeadon Borough	$ 0.65		$ 5.00	$ 1.75	$ 52	$ 100										
Normalized unit cost [2]	$ 1.27	$ 8.33	$ 6.75	$ 2.20	59.00	$ 130	$ 50	$ 188	$ 221	62.50	$ 929	$ 801	$ 400	$ 3,125	$ 3,750	$ 2,500
Aldan Borough		5,360	2,000		3,000		200					200	200			
Clifton Heights Borough							162			21	4	7	17			
Collingdale Borough	6,300		4,752		5,586	1,000						14		14	4	
Colwyn Borough							85				8	12				
Darby Borough					3,000	2,000	100									5
Darby Township			3,000				111									
Folcroft Borough					373		42									
Glenolden Borough					2,102		150				12	35				
Lansdowne Borough			950		3,300	980	120					200				
Marple Township	171,600						380				40	273				
Morton Borough					744		132				7					
Nether Providence Township	145,582		54,375	145,582			600		162	141	8	45	54			
Norwood Borough	74,300		44,580	74,300	3,715	743	83	46	41	43	6	27	12		1	
Prospect Park Borough	71,280		15,555		2,400		100				2	81				
Ridley Park Borough					3,114		292				12	35				
Ridley Township					43,300		161				28	73				
Rutledge Borough					1,190	435	33									
Sharon Hill Borough		21,161			4,780											
Springfield Township [3]					1,000		1,000									
Swarthmore Borough					4,130	1,249	4				3		4			
Upper Darby Township			5,790		1,924	1,162	20	317	948			409			1	
Yeadon Borough	114,500		68,700	114,500	5,725	5,725	300						300			
Central Delaware County Authority		86,563		43,300	850		540					108				
Darby Creek Joint Authority		47,800		24,000	107		139					28				
Muckinipates Authority		28,581					77									
Radnor-Haverford-Marple Sewer Authority [4]	900,995		23,010	104,665			265					1,825				

Notes:
[1] Unit cost outside the norm. Not used to compute normalized cost.
[2] Includes 25% for engineering, legal, procurement costs, etc.
[3] Projected based on work reported to have been performed in recent years.
[4] Actual repairs from 1997 and includes all member municipalities.

information regarding modifications in the rehabilitation program and/or need for additional funding to complete the work within five years.

Analysis of DELCORA-Owned/Managed Facilities

Observed and Suspected Problems

DELCORA received correspondence from EPA on April 11, 2000, that directed DELCORA to provide O&M information about the facilities owned and operated by DELCORA pursuant to Section 308 of the Clean Water Act (33 U.S.C. 1318). On June 29, 2000, DELCORA submitted a detailed response pertaining to DELCORA's Western Service Area. A detailed response pertaining to DELCORA's Eastern Service Area was submitted on September 6, 2000. On March 2, 2001, DELCORA received a follow-up request for clarification of five items and provided this information to EPA on April 6, 2001. Since this submission, no further correspondence has been received.

CONVEYANCE AUTHORITIES SERVING "FRINGE" AREAS THAT FEED TO THE DELCORA SEWER NETWORK

Newtown Township Municipal Sewer Authority

The Newtown Township Municipal Sewer Authority was organized in the mid 1950s. The Authority has a five-member board responsible for overseeing the Township's on-lot sewage treatment programs and sewage treatment and conveyance facilities which include a stream discharge plant and gravity lines and pump stations that connect to the RHM sewer system.

Southern Delaware County Authority

SDCA's member municipalities are Upper Chichester and Bethel Townships. The Authority was organized in 1954 and has five board members. The Authority's service area covers portions of Marcus Hook and Naamans Creeks and Bezer's Run watersheds. It maintains 342,422 miles of sewer lines and five interceptors. Approximately 1.5 MGD of sewage flows are conveyed to the New Castle County Authority's system. Ultimate treatment of these flows is at the City of Wilmington's Water Pollution Control Plant. Per a recent agreement with Southwest Delaware County Municipal Authority (SWDCMA), additional flows are treated at the Baldwin Run Plant in Aston Township.

Upper Providence Township Sewer Authority

The Upper Providence Township Sewer Authority, created in 1978, has seven board members and maintains the 9.66 miles of sewer lines in Upper Providence Township. Although not fully sewered, Upper Providence has an extensive public sewer system which lies partially in both the Ridley and Crum Creeks watersheds. The flows are conveyed to and treated at the Little Washington Wastewater Company Treatment Plant which is located in Upper Providence Township. Various private treatment systems service the unsewered areas of Upper Providence Township. Recently, a section of Upper Providence connected to the SWDCMA system.