EXHIBIT O3

CORRECTIVE ACTION PLAN

CORRECTIVE ACTION PLAN YEARLY UPDATE

FOR THE

THE TOWNSHIP OF LOWER MAKEFIELD COLLECTION SYSTEM

LOCATED IN

LOWER MAKEFIELD TOWNSHIP
BUCKS COUNTY, PENNSYLVANIA

PREPARED FOR

THE TOWNSHIP OF LOWER MAKEFIELD
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1.0 EXECUTIVE SUMMARY

A Settlement Agreement between Bucks County Water and Sewer Authority (BCWSA) and the Pennsylvania Department of Environmental Protection (PADEP) was reached which included the establishment of the Neshaminy Interceptor Corrective Action Plan (NICAP) and the Neshaminy Interceptor Connection Management Plant (NICMP) for the Neshaminy Interceptor. All municipalities who are tributary to the Neshaminy Interceptor are required to update their Municipal Act 537 Plans, prepare a Sewer System Needs Analysis for their communities, and complete a comprehensive Inflow and Infiltration (I/I) evaluation with an abatement plan for their sanitary sewers. As a result, Lower Makefield Township submitted a Corrective Action Plan (CAP) to the PADEP on September 21, 2017 for review and approval. The CAP was approved by means of approval of the Lower Makefield Township Act 537 Plan on November 5, 2018.

The CAP addresses three service areas within Lower Makefield Township which are tributary to the Neshaminy Interceptor. The three service areas are the Core Creek Interceptor Service Area identified in yellow on the attached General Sewer Plan in Appendix A, Middletown Township Service Area which is identified in turquoise on the General Sewer Plan, and the Falls Township Contract Area which is identified in purple on the General Sewer Plan.

The CAP includes an I/I abatement plan along with a Connection Management Plan (CMP) that has been reviewed and approved by BCWSA and PADEP in 2015 and the efforts are to further monitor the connections which occur within Lower Makefield Township's Neshaminy Interceptor Service Area.

This update is in accordance with the requirement of the approved CAP to provide yearly progress updates in conjunction with the annual Chapter 94 Report. This submission is the third annual update.

2.0 CORRECTIVE ACTION PLAN PROGRESS

2.1 Connection Management Plan

The Connection Management Plan (CMP) was first approved in 2015 and has since been revised to include the current needs of the Township. The latest CMP was approved by PA DEP in a letter dated August 28, 2020. To date, PA DEP has only released connections through 2017 to Lower Makefield Township. Proposed connections for 2018 may be released to those municipalities that are in compliance with the flow limits established in their supplementary agreement with BCWSA and the remaining available capacity in the Neshaminy Interceptor Sewer System, as determined by BCWSA and DEP.

DEP will review the addition of 2018 connections and will coordinate with BCWSA in the release of these connections on a project by project basis.

Municipalities will need to utilize any miscellaneous connections already released to them for infill and new development prior to using any of the 2018 miscellaneous connections that may be released to the municipality.

2.2 Progress to Date

Study Area A-1

Lower Makefield Township has installed three (3) of the four (4) temporary meters which were proposed for Study Area A-1. As further discussed below and in the subsequent section, the fourth meter location initially proposed in the CAP was not necessary based on the data collected from the installed meters in Study Area A-1. The Flow Meter Location Exhibit attached in Appendix B identifies the locations of the temporary meters and the Sub-Meter Basins. Below is a summary of the meter installation and locations.

Two meters, identified as Meter FV-1 and NC-108, were installed in Meter Sub-Basin A-1 in November of 2017. These two meters were faulty and were subsequently removed.

Three new meters were installed on September 5, 2018 at manhole FV-1, FV-39, and NC-108. These three meters have been identified as Submeter Area 1 (MH NC-108), Submeter Area 2 (MH FV-39), and Submeter Area 3 (MH FV-1).

After review of the meter flow data collected between the end of 2018 and beginning of 2019, the meter installed in Submeter Area 1 at MH NC-108 was relocated to MH NC-121 on May 17, 2019.

Each of the current meters installed in Study Area A-1 are labeled on the Flow Meter Location Exhibit (Appendix B) as Submeter A1-1 (MH NC-121), Submeter A1-2 (MH FV-39), and Submeter A1-3 (MH FV-1).

The Township has installed and collected data from four temporary meter locations within Study Area A-1. Based on the data collected within Study Area A-1 and as more fully described within Section 2.3 below, no additional meter locations are proposed at this time in Study Area 1. The relocation of Submeter A1-1 to an upstream manhole provided additional flow data from a fourth location within the study area.

On January 24, 2020, the Township removed the temporary flow meters from their locations in Study Area A-1, so that they could be used to begin monitoring flows in Study Area A-2.

Study Area A-2

Lower Makefield Township has installed three (3) temporary meters which were proposed for Study Area A-2. The Flow Metering Exhibit attached in Appendix B identifies the locations of the temporary meters and the Sub-Meter Basins. Below is a summary of the meter installation and locations.

Temporary flow meters were installed at Manhole HS-4 on January 27, 2020, at Manhole BE-33 on February 15, 2020, and at Manhole NC-102 on February 24, 2020.

Each of the current meters installed in Study Area A-2 are labeled on the Flow Meter Location Exhibit (Appendix B) as Submeter A2-1 (MH HS-4), Submeter A2-2 (MH BE-33), and Submeter A2-4 (MH NC-102).

The Township has installed and collected data for one year from three temporary meter locations within Study Area A-2. Based on the data collected within Study Area A-2 and as more fully described within Section 2.3 below, it is recommended to remove the temporary meter installed in Manhole HS-4 so that it can be used to monitor other portions of Study Area A-2. Additional data collection is recommended within Study Area A-2 to further isolate potential sources of I/I.

Lateral Inspection Ordinance

The Lower Makefield Township Sewer Authority authorized the drafting of a Lateral Inspection Ordinance at their November 2018 Authority meeting. The draft ordinance was reviewed at their January 2019 Authority meeting. The Authority brought up many valuable comments concerning how this would be implemented with respect to the numerous condominium units. It was discussed to do the condominium associations on a schedule rather than on a property sale basis.

The draft ordinance was publicly discussed with the Board of Supervisors at their March 6, 2019 public meeting. The main purpose of the presentation was to introduce the ordinance to the board and the public. It was discussed that a public education process would be necessary. It was also stressed to reach out and receive input from the numerous condominium associations. The board requested that the draft ordinance be revised to incorporate the discussion at the meeting and follow up discussions with the condominium associations.

Lower Makefield Township adopted Resolution No. 421 at the December 4, 2019 Board of Supervisors meeting requiring the inspection and, if necessary, repair of

private sanitary sewer laterals prior to the sale/transfer of properties. The Ordinance became effective February 1, 2020.

Since the Ordinance was adopted, a total of 508 lateral inspections have been completed, fifty eight (58) of which required repair or replacement. The lateral inspections revealed pipe deterioration, sags, root penetration, and cleanout/vent caps in need of repair. Of the 58 laterals requiring repair, 4 laterals have been replaced, and repairs have been completed on 29 laterals. The remaining repairs and additional lateral inspections will continue to be implemented in 2021 in accordance with the Ordinance. A summary of the lateral inspections is included in Appendix E. Additionally, some of the lateral inspections have also identified potential sources of I/I within the Township right of way portion of the sanitary sewers which have been identified and prioritized for repair. The Township is repairing the laterals within the right of way in groups based upon the I/I potential of each lateral.

2.3 Flow Meter Analysis

2.3.1 Study Area A-1

The flow meter data collected between January 1, 2019 and December 31, 2019 for Submeter No. 1 (MH NC-121), Submeter No. 2 (MH FV-39), and Submeter No. 3 (MH FV-1) is attached in Appendix C. Also included in Appendix C is a table summarizing the flow data for each flow meter. Provided below is a summary of the data analyzed.

Submeter 1 – MH NC-108

As reported in the March 7, 2019 CAP Update Report, the meter data for Manhole NC-108 begins in September 2018. During the time frame September 2018 through January 2019, the average daily flow was 92,475 gpd. Additional data has been collected from Submeter 1 through March 2019. During the time period January 2019 through March 2019, the average daily flow was 94,535 gpd.

As Submeter Area 2 flows into Submeter Area 1, the flows for Submeter Area 1 were calculated by subtracting Submeter Area 2 flows from Submeter Area 1 flows. Since the submission of the March 2019 CAP Update, the number of edus connected to Submeter Area 1 was reevaluated. The number of edus connected in Submeter Area 1 is 195 edus, rather than the previously reported 161 edus. This increase in edus is a result of additional homes connected to the public sanitary sewer system between 2012 and 2019 that were not included in the previous assessment. The average flow per edu for Submeter 1 (MH NC-108) is 485 gpd/edu (94,535 gpd / 195 edus).

This is extremely high compared to other municipal systems. This is also significantly higher than the other two Submeter Areas 2 and 3 that have a flow per edu of 165 gpd/edu (Area 2) and 113 gpd/edu (Area 3). As described below, the location of Submeter 1 was moved in April 2019 to MH NC-121 in an attempt to isolate the source of the excess flow within Study Area A-1.

Submeter 1 – MH NC-121

As discussed in Section 2.2 above, the location of Submeter 1 was relocated from Manhole NC-108 to Manhole NC-121 on May 17, 2019. The relocation of Submeter 1 to upstream Manhole NC-121 was done to isolate a potential area of I/I within the system between Manhole NC-121 and NC-108. The relocation also removed the flows that were previously flowing into Submeter 1 from Submeter 2, as well as 17 homes from the Farmview II development.

The data for Submeter 1 at Manhole NC-121 ranges from May 17, 2019 through December 31, 2019, 2019. The flow meter data is provided in Appendix C. During this time frame, the average daily flow was 71,120 gpd.

The number of edus connected in Submeter Area 1 is 178 edus. The average flow per edu is 400 gpd/edu (71,120 gpd / 178 edus). This data is summarized on the table provided in Appendix C.

The relocation of Submeter 1 reveals that the average flow per edu is nearly identical with only a slight decrease from 485 gpd/edu to 400 gpd/edu. This indicates that the portion of sanitary sewer main along Core Creek between Manhole NC-108 and Manhole NC-121 is not identified as a potential area of concern and that additional evaluation is required upstream of Manhole NC-121.

This area includes more recently constructed residential developments in the 1990s and 2000s. The Dolington Estates I development on Silverwood Drive, Grandview Drive, and Beacon Hill Drive was constructed between 1996 and 1999. The Dolington Estates II development along Powderhorn Drive and Trowbridge Drive was constructed between 1999 and 2002. Remaining development along Graystone Drive, Payten Lane, Tristen Lane, Georgian Court, and Jase Drive was constructed within the last eight years. As such, these areas would not be expected to have high rates of I/I.

The oldest portion of the sanitary sewer system includes the sanitary sewer between Manhole NC-121 to Manhole BA-3 along Lindenhurst Road. The sanitary sewer mains in this area were televised, and there were no significant deficiencies identified during the televising of the sanitary sewer mains. The manholes were also visually inspected for leaks or manholes that would be prone to inflow by being in low lying areas. There were none identified.

It is assumed that the primary cause of the elevated flow per edu in this area is the laterals. There were not any major leaking laterals identified at the time of the televising that would allow Lower Makefield Township to take action against a property owner under their lateral ordinance. Lower Makefield Township will televise this area again during a wet period of time to verify if any source of I/I can be identified. The ultimate solution to the elevated flow per edu will be through the inspection and repair of the private portion of the laterals that will occur upon every property transfer. It is noted that this has proven to be one of the most effective means of I/I removal over the long term.

Submeter 2 – MH FV-39

Submeter 2 was installed in Manhole FV-39 in September 2018. During the time frame January 1, 2019 to December 31, 2019, the average daily flow was 43,686 gpd. The number of edus connected in Submeter Area 2 is 264 edus. The flow per edu is 165 gpd/edu (43,686 gpd / 264 edus). This data is summarized on the table provided in Appendix C.

The flow per edu remains consistent with the flow per edu reported in the March 2019 Update Report (174 gpd/edu) and is slightly lower than average for a tight new system. This indicates that this area is not a significant source of I/I. As such, this area may be considered acceptable and further investigations concentrated in other areas.

Submeter 3 – MH FV-1

Submeter 3 was installed in Manhole FV-1 in September 2018. During the time frame January 1, 2019 through December 31, 2019 the average daily flow was 12,200 gpd. The number of edus connected in Submeter Area 3 is 108 edus. The flow per edu is 113 gpd/edu (12,200 gpd / 108 edus). This data is summarized on the table provided in Appendix C.

The flow per edu remains consistent with the flow per edu reported in the March 2019 Update Report (100 gpd/edu) and is significantly lower than the generally accepted flow per edu of between 200 to 300 gpd/edu for an average to good system. This indicates that this area is not a significant source of I/I. As such, this area may be considered acceptable and further investigations concentrated in other areas.

2.3.2 Study Area A-2

The flow meter data collected between February 2020 and December 2020 for Submeter Area 1 (MH HS-4), Submeter Area 2 (MH BE-33), and Submeter Area 4 (MH HS-4) is attached in Appendix C. Also included in Appendix C is a table

summarizing the flow data for each flow meter. Provided below is a summary of the data analyzed.

Submeter Area 1 (MH HS-4)

Submeter 1 was installed in Manhole HS-4 on January 27, 2020. The flows to this area include older homes located along Hillside Lane and Spring Lane as well as newer homes along Silver Stream Drive. The number of edus connected in Submeter Area 1 is 48 edus.

Between February 1, 2020 through December 31, 2020 the average daily flow was 5,744 gpd. The flow per edu is 120 gpd/edu (5,744 gpd / 48 edus). This data is summarized on the table provided in Appendix C.

The flow per edu is significantly lower than the generally accepted flow per edu of between 200 to 300 gpd/edu for an average to good system. This indicates that this area is not a significant source of I/I. As such, this area may be considered acceptable and further investigations concentrated in other areas.

Submeter Area 2 (MH BE-33)

Submeter 2 was installed in Manhole BE-33 on February 15, 2020. The flows to this area include homes within the Makefield Brook 1 and Makefield Brook 2 as well as upstream flows from Submeter Area A-1. There is a total of 129 edus within the Makefield Brook Sections 1 and 2. Including the upstream edus from Area A-1, the total number of edus is 699.

While the flow meter was installed on February 15, 2020, consistent flow meter readings were not collected until February 24, 2020. Therefore, this data was omitted from the analysis as it is not representative of the actual flow conditions. Between February 25, 2020 through December 31, 2020 the average daily flow was 195,180 gpd. The flow per edu is 279 gpd/edu (195,180 gpd / 699 edus). This data is summarized on the table provided in Appendix C. It should be noted that the flow units are off by a factor of ten in the table.

The flow per edu measured by the flow meter is within the generally accepted flow per edu of between 200 to 300 gpd/edu for an average to good system.

Submeter Area 4 (MH NC-102)

Submeter 4 was installed in Manhole NC-102 on February 24, 2020. The flows to this area include all of the sanitary sewer from Study Area A-1. Therefore, this location will be used to subtract from downstream meter manholes in order to isolate flows within Study Area A-2 for analysis. There is a total of 570 edus upstream of MH NC-102.

Between February 25, 2020 through December 31, 2020 the average daily flow was 103,655 gpd. The flow per edu is 182 gpd/edu (103,655 gpd / 570 edus). This data is summarized on the table provided in Appendix C.

The flow per edu is lower than the generally accepted flow per edu of between 200 to 300 gpd/edu for an average to good system. This indicates that this area is not a significant source of I/I. As discussed in Section 2.3.1 above, significant areas of potential I/I were not identified within the southeastern portion of Study Area A-1. Additional investigations within Study Area A-1 were recommended to be focused on the area of Lindenhurst Road in the northwestern portion of Study Area A-1.

While flows upstream of Manhole NC-102 do not appear to indicate significant I/I, it is recommended that the meter remain in place to continue monitoring flows into Study Area A-2 and to isolate flows in other portions of Study Area A-2 for additional analysis in Study Area A-2.

BCWSA Lindenhurst Meter (D.P. 6)

In addition to the temporary flow meters, the BCWSA Lindenhurst Meter (D.P. 6) records flows from the western portion of Study Area A-2. This area includes residential neighborhoods along the north and south sides of Twining Road. Homes in this area were generally constructed in the late 1980s and early 1990s. This area includes a total of 246 edus.

As summarized on the table provided in Appendix C, the average daily flow was 58,262 gpd from February 1, 2020 through December 31, 2020. This is a flow per edu of 237 gpd/edu (58,262 gpd / 246 edus).

The flow per edu is within the generally accepted flow per edu of between 200 to 300 gpd/edu for an average to good system. This indicates that this area is not a significant source of I/I.

BCWSA 2001 Meter (D.P. 6A)

In addition to the temporary flow meters installed in Study Area A-2, the BCWSA 2001 Meter (D.P.6A) records all of the flows from Study Area A-1 and A-2, except for the western most portion of Study Area A-2 which is monitored by the BCWSA Lindenhurst Meter (discussed above). To determine the portion of flow within Study Area A-2 flowing to the BCWSA 2001 Meter, the flow from the temporary meter installed at Manhole NC-102 (Submeter A2-4) was subtracted from the BCWSA 2001 Meter. The total number of edus located within Study Area A-2 and flowing to the BCWSA 2001 Meter is 747 edus.

As summarized on the table provided in Appendix C, the average daily flow from February 1, 2020 through December 31, 2020 was 364,185 gpd. Subtracting out the flows from Submeter Area 4 (NC-102), the average flow is 260,530 gpd (364,185 gpd – 103,655 gpd). This is a flow per edu of 349 gpd/edu (260,530 gpd / 747 edus).

On a per edu basis, this flow of 349 gpd/edu is high compared to other municipal systems. This is also significantly higher than the Lindenhurst Meter (237 gpd/edu) and the temporary flow meters at Submeter Area 1 (120 gpd/edu), Submeter Area 2 (279 gpd/edu), and Submeter Area 4 (182 gpd/edu). Therefore, additional flow metering is recommended between manhole NC-102 and NC-84 (located just upstream of BCWSA Meter 2001).

2.4 Sewer Main Inspection and Repair Summary

Study Area A-1

Based on the flow meter data collected between September 2018 and December 2019, video inspections and repairs are proposed to begin during the 2020-2021 wet weather season. The location of the televising is included in Appendix D.

The sanitary sewer mains in this area were televised and there were no significant deficiencies identified during the televising of the sanitary sewer mains. The manholes were also visually inspected for leaks or manholes that would be prone to inflow by being in low lying areas. There were none identified.

It is assumed that the primary cause of the elevated flow per edu in this area is the laterals. There was not any major leaking laterals identified at the time of the televising that would allow Lower Makefield Township to take action against a property owner under their lateral ordinance. Lower Makefield Township will televise this area again during a wet period of time to verify if any source of I/I can be identified. The ultimate solution to the elevated flow per edu will be through the inspection and repair of the private portion of the laterals that will occur upon every property transfer. It is noted that this has proven to be one of the most effective means of I/I removal over the long term.

As part of the I/I removal efforts in 2020, Lower Makefield Township retained Advanced Rehabilitation Technology, Inc. to install interior manhole lining systems on five (5) manholes within the Neshaminy Interceptor Sewer Service Area.

Within Study Area A-1 in the Neshaminy Interceptor Service Area, two (2) forcemain discharge manholes from the Farmview Pump Station (identified as Manhole FV-72 and Manhole FV-72A) were included in the rehabilitation efforts.

Both manholes showed significant signs of deterioration. The liner installed within the manholes will be a permanent long-term repair to these manholes and will prevent I/I from entering the sanitary sewer system.

The three additional manholes located within Study Area D were also lined and are discussed in the section below.

Lower Makefield Township as part of the CAP and in conjunction with their I/I program budgeted $175,000.00 for cured in place pipe liners and $20,000.00 for manhole rehabilitation in 2020 in the Neshaminy Interceptor Service Area. These projects were completed and 1,977 linear feet of ten inch sanitary sewer mains were lined using CIPP and five manholes were rehabilitated utilizing a spray liner in 2020.

The majority of this work was completed in Study Area E for two main reasons. The first reason is that the area downstream of where the work was completed previously experienced a SSO that led to a Notice of Violation. While that SSO was primarily caused by root intrusion that restricted the flows, there are clearly elevated flows as the Derbyshire Pump Station diverts flows from this Study Area when the sanitary sewer main surcharges. The second reason is that no major sources of I/I were identified during the televising inspection of the sanitary sewer mains in this study area.

Study Area A-2

There have been no video inspections or repairs made to the sanitary sewer system in Study Area A-2 as of the date of this report. Lower Makefield Township is still in the monitoring phase of the flows during the wet season as the meters that were first installed in February 2020 and have continued to collect data.

Study Area D

In 2020, Advanced Rehabilitation Technology, Inc. installed interior manhole lining systems on three (3) forcemain discharge manholes from the Oxford Glen/Yardley Oaks Pump Station. These manholes are identified as 2D, 2E, and 2E-1. Each of these manholes showed significant signs of deterioration. The liner installed within the manholes will be a permanent long-term repair to these manholes and will prevent I/I from entering the sanitary sewer system.

Study Area E

As part of the I/I removal efforts in 2020, Lower Makefield Township retained Standard Pipe Services, LLC to clean, televise and install cured-in-place pipe (CIPP) liner on approximately 4,330 linear feet of ten inch and twelve inch

diameter sanitary sewer main.

Within Study Area E in the Neshaminy Interceptor Sewer Service Area, a total of 1,977 linear feet of sanitary sewer main was cleaned, televised, and CIPP liner installed. The segments lined included between MH9 to MH8, MH8 to MH7, MH7 to MH6, MH6 to MH5, MHD225 to MHD 224, MHD224 to MHD223, and MHD223 to MHD221. In addition to the CIPP liner, 60 joints were grouted.

During the televising of the sanitary sewer main, significant areas of infiltration were observed between MH6 to MH7, and MH225 to MH-1. Significant obstructions and blockages were observed between MH223 to MH222. The CIPP will be a permanent long-term repair to the sanitary sewer main which will reduce I&I to the sewer system and provide a structural improvement to the existing sanitary sewer main. In addition to the sanitary sewer main, eleven (11) sanitary sewer laterals were televised, cleaned and reinstated using a 2-foot CIPP liner.

The post CIPP liner installation televising documented the effectiveness of the CIPP liner in removing I&I from the sanitary sewer system. The Derbyshire metering pit is located just downstream of this area which will continue to be monitored in 2021 to document the effectiveness of the I/I repairs.

2.5 Study Area Priorities

Lower Makefield Township has significantly increased their annual capital budget from the $50,000.00 per year that was committed to in the original CAP to approximately $200,000.00 per year. This is an increase of 400%. While Lower Makefield will continue to follow the below order of monitoring and evaluation Study Areas, if significant sources of I/I are identified in the Study Area that is proposed to have repairs completed the monies will be spent in other Study Areas where significant sources of I/I have been identified. The use of flow data along with physical inspections has been utilized in other Study Areas to identify areas with significant I/I potential. These areas are then televised to confirm the actual locations for the I/I removal projects.

1. Study Area A-1
2. Study Area A-2
3. Study Area B-1 and B-2
4. Study Area C
5. Study Area D
6. Study Area E
7. Study Area F

2.6 Anticipated Schedule for the Next Eight Years

Lower Makefield Township is continuing to collect and analyze flow meter data from each Study Area. In accordance with the approved CAP, the anticipated schedule is as follows:

YEAR ONE (2019)

1. Receipt of CAP Approval letter from PADEP.
    - **Obtained on November 5, 2018 with the Act 537 Plan Approval.**
2. Install micro meters in Study Area A-1 within 4 months after receiving approval of CAP.
    - **Submeter No. 1, No. 2 and No. 3 were reinstalled in September 2018. Submeter No. 1 relocated in April 2019.**
3. Pre-meter Study Area A-1 during the wet weather season.
    - **Submeter No. 1, No. 2 and No. 3 were reinstalled in September 2018. Submeter No. 1 relocated in April 2019.**
4. Televise and complete an inspection report for all sewer mains in Study Area A-1 during wet weather season.
    - **Televising was completed.**
5. Televise and complete an inspection report for all laterals in Study Area A-1 during wet weather season. Laterals will be televised from the main to the transition.
    - **Televising was completed.**
6. Visually inspect and complete a manhole inspection report for all manholes in Study Area A-1 during wet weather season.
    - **Visual inspections were completed.**
7. Monitor and record all issued Certificate of Compliances for laterals located on private property.
    - **Laterals were inspected on all property transfers.**
8. Identify all found defects and recommended repair method.
    - **No major defects were identified.**
9. Install Parson Manhole Inserts in manholes that require them.
    - **No major defects were identified.**
10. Prioritize and schedule the repair of defects (Mains, Manholes and laterals) within budget constraints.
    - **No major defects were identified.**
11. Compare flows to existing permanent BCW&SA flow meters and analyze for trends. (Same for all subsequent years)
    - **Analysis was completed.**
12. The Annual Chapter 94 Report will provide an update on the I/I Rehabilitation progress. Submit to PADEP before March 31.
    - **Submitted as part of the 2019 Chapter 94 Report.**

B. YEAR TWO (2020)

1. STUDY AREA A-1

a. Post meter the area during the wet weather season.
b. Analyze flow data (average daily, minimum daily, maximum daily, peak hourly flows).
   - **Completed.**
c. Compare pre-and post-meter data to determine the reduction of flows (average daily, minimum daily, maximum daily, peak hourly flows).
   - **No repairs completed.**
d. Analyze flows from permanent BCW&SA flow meters for comparison (Same for all subsequent years)
e. Compare actual water usage to the sewer flows to determine I/I in the study area.
f. Determine the effectiveness of the repairs.
g. Determine if additional repairs/rehabilitation are needed.

Lower Makefield Township as part of the CAP and in conjunction with their I/I program budgeted $175,000.00 for cured in place pipe liners and $20,000.00 for manhole rehabilitation in 2020 in the Neshaminy Interceptor Service Area. These projects were completed and 1,977 linear feet of ten inch sanitary sewer mains were lined using CIPP and five manholes were rehabilitated utilizing a spray liner in 2020.

The majority of this work was completed in Study Area E for two main reasons. The first reason is that the area downstream of where the work was completed previously experienced a SSO that led to a Notice of Violation. While that SSO was primarily caused by root intrusion that restricted the flows, there are clearly elevated flows as the Derbyshire Pump Station diverts flows from this Study Area when the sanitary sewer mains surcharges. The second reason is that no major sources of I/I were identified during the televising inspection of the sanitary sewer mains in this study area.

2. STUDY AREA A-2

a. Install micro meters in Study Area A-2 at the latest on December 1st of Year 2 wet weather season.
   - **Submeter No. 1, No. 2 and No. 3 were installed in January and February 2020.**
b. Pre-meter Study Area A-2 during the wet weather season.
   - **Submeter No. 1, No. 2 and No. 3 were installed in January and February 2020.**
c. Televise and complete an inspection report for all sewer mains in

Study Area A-2 during wet weather season.

- **The monies that were allocated for televising during 2020 were spent in Study Area E because the flow meter data in this subarea did not indicate a significant source of I/I compared to Study Area E. There is one section along a stream that did have slightly elevated flows of approximately 350 gpd/edu that will be televised in 2021.**

d. Televise and complete an inspection report for all laterals in Study Area A-2 during wet weather season. Laterals will be televised from the main to the transition.

- **When the section with slightly elevated flow per edu is televised in 2021, any leaking laterals will be televised.**

e. Visually inspect and complete a manhole inspection report for all manholes in Study Area A-2 during wet weather season.

- **Completed.**

f. Monitor and record all issued Certificate of Compliances for laterals located on private property.

- **Laterals were inspected on all property transfers.**

g. Identify all found defects and recommended repair method.
h. Install Parson Manhole Inserts in manholes that require them.
i. Prioritize and schedule the repair of defects (Mains, Manholes and laterals) within budget constraints.

- **This will be completed once televising has been completed.**

j. The Annual Chapter 94 Report will provide an update on the I/I Rehabilitation progress. Submit to PADEP before March 31.

C. YEAR THREE (2021)

1. STUDY AREA A-2

a. Post meter the area during the wet weather season.
b. Analyze flow data (average daily, minimum daily, maximum daily, peak hourly flows).
c. Compare pre-and post-meter data to determine the reduction of flows (average daily, minimum daily, maximum daily, peak hourly flows).
d. Compare actual water usage to the sewer flows to determine I/I in the study area.
e. Determine the effectiveness of the repairs.
f. Determine if additional repairs/rehabilitation are needed.

2. STUDY AREA B-1 and B-2

   a. Install micro meters in Study Area B-1 and B-2 at the latest on December 1st Year 3.
   b. Pre-meter Study Area B-1 and B-2 during the wet weather season.
   c. Televise and complete an inspection report for all sewer mains in Study Area B-1 and B-2 during wet weather season.
   d. Televise and complete an inspection report for all laterals in Study Area B-1 and B-2 during wet weather season. Laterals will be televised from the main to the transition.
   e. Visually inspect and complete a manhole inspection report for all manholes in Study Area B-1 and B-2 during wet weather season.
   f. Monitor and record all issued Certificate of Compliances for laterals located on private property.
   g. Identify all found defects and recommended repair method.
   h. Install Parson Manhole Inserts in manholes that require them.
   i. Prioritize and schedule the repair of defects (Mains, Manholes and laterals) within budget constraints.
   j. The Annual Chapter 94 Report will provide an update on the I/I Rehabilitation progress. Submit to PADEP before March 31.

D. YEAR FOUR (2022)

1. STUDY AREA B-1 and B-2

   a. Post meter the area during the wet weather season.
   b. Analyze flow data (average daily, minimum daily, maximum daily, peak hourly flows.
   c. Compare pre-and post-meter data to determine the reduction of flows (average daily, minimum daily, maximum daily, peak hourly flows).
   d. Compare actual water usage to the sewer flows to determine I/I in the study area.
   e. Determine the effectiveness of the repairs.
   f. Determine if additional repairs/rehabilitation are needed.

2. STUDY AREA C

   a. Install micro meters in Study Area C at the latest on December 1st of Year 4
   b. Pre-meter Study Area C during the wet weather season.
   c. Televise and complete an inspection report for all sewer mains in Study Area C during wet weather season.
   d. Televise and complete an inspection report for all laterals in Study Area C during wet weather season. Laterals will be televised from

the main to the transition.

e. Visually inspect and complete a manhole inspection report for all manholes in Study Area C during the wet weather season.
f. Monitor and record all issued Certificate of Compliances for laterals located on private property.
g. Identify all found defects and recommended repair method.
h. Install Parson Manhole Inserts in manholes that require them.
i. Prioritize and schedule the repair of defects (Mains, Manholes and laterals) within budget constraints.
j. The Annual Chapter 94 Report will provide an update on the I/I Rehabilitation progress. Submit to PADEP by March 31.

E. YEAR FIVE (2023)

1. STUDY AREA C

a. Post meter the area during the wet weather season.
b. Analyze flow data (average daily, minimum daily, maximum daily, peak hourly flows).
c. Compare pre-and post-meter data to determine the reduction of flows (average daily, minimum daily, maximum daily, peak hourly flows).
d. Compare actual water usage to the sewer flows to determine I/I in the study area.
e. Determine the effectiveness of the repairs.
f. Determine if additional repairs/rehabilitation are needed.

2. STUDY AREA D

a. Install micro meters in Study Area D at the latest on December 1st of Year 5
b. Pre-meter Study Area D during the wet weather season.
c. Televise and complete an inspection report for all sewer mains in Study Area D during wet weather season.
d. Televise and complete an inspection report for all laterals in Study Area D during wet weather season. Laterals will be televised from the main to the transition.
e. Visually inspect and complete a manhole inspection report for all manholes in Study Area D during the wet weather season.
f. Monitor and record all issued Certificate of Compliances for laterals located on private property.
g. Identify all found defects and recommended repair method.
h. Install Parson Manhole Inserts in manholes that require them.
i. Prioritize and schedule the repair of defects (Mains, Manholes and

laterals) within budget constraints.

j. The Annual Chapter 94 Report will provide an update on the I/I Rehabilitation progress. Submit to PADEP by March 31.

F. YEAR SIX (2024)

1. STUDY AREA D

a. Post meter the area during the wet weather season.
b. Analyze flow data (average daily, minimum daily, maximum daily, peak hourly flows).
c. Compare pre-and post-meter data to determine the reduction of flows (average daily, minimum daily, maximum daily, peak hourly flows).
d. Compare actual water usage to the sewer flows to determine I/I in the study area.
e. Determine the effectiveness of the repairs.
f. Determine if additional repairs/rehabilitation are needed.

2. STUDY AREA E

a. Install micro meters in Study Area E at the latest on December 1st of Year 6
b. Pre-meter Study Area E during the wet weather season.
c. Televise and complete an inspection report for all sewer mains in Study Area E during wet weather season.
d. Televise and complete an inspection report for all laterals in Study Area F during wet weather season. Laterals will be televised from the main to the transition.
e. Visually inspect and complete a manhole inspection report for all manholes in Study Area E during the wet weather season.
f. Monitor and record all issued Certificate of Compliances for laterals located on private property.
g. Identify all found defects and recommended repair method.
h. Install Parson Manhole Inserts in manholes that require them.
i. Prioritize and schedule the repair of defects (Mains, Manholes and laterals) within budget constraints.
j. The Annual Chapter 94 Report will provide an update on the I/I Rehabilitation progress. Submit to PADEP by March 31.

G. YEAR SEVEN (2025)

1. STUDY AREA E

a. Post meter the area during the wet weather season.
b. Analyze flow data (average daily, minimum daily, maximum daily, peak hourly flows).
c. Compare pre-and post-meter data to determine the reduction of flows (average daily, minimum daily, maximum daily, peak hourly flows).
d. Compare actual water usage to the sewer flows to determine I/I in the study area.
e. Determine the effectiveness of the repairs.
f. Determine if additional repairs/rehabilitation are needed.

2. STUDY AREA F

a. Install micro meters in Study Area F at the latest on December 1st of Year 7
b. Pre-meter Study Area F during the wet weather season.
c. Televise and complete an inspection report for all sewer mains in Study Area F during wet weather season.
d. Televise and complete an inspection report for all laterals in Study Area F during wet weather season. Laterals will be televised from the main to the transition.
e. Visually inspect and complete a manhole inspection report for all manholes in Study Area F during the wet weather season.
f. Monitor and record all issued Certificate of Compliances for laterals located on private property.
g. Identify all found defects and recommended repair method.
h. Install Parson Manhole Inserts in manholes that require them.
i. Prioritize and schedule the repair of defects (Mains, Manholes and laterals) within budget constraints.
j. The Annual Chapter 94 Report will provide an update on the I/I Rehabilitation progress. Submit to PADEP by March 31.

H. YEAR EIGHT (2026)

1. STUDY AREA F

a. Post meter the area during the wet weather season.
b. Analyze flow data (average daily, minimum daily, maximum daily, peak hourly flows).
c. Compare pre-and post-meter data to determine the reduction of flows (average daily, minimum daily, maximum daily, peak hourly

flows).

d. Compare actual water usage to the sewer flows to determine I/I in the study area.
e. Determine the effectiveness of the repairs.
f. Determine if additional repairs/rehabilitation are needed.

I. YEAR NINE AND BEYOND (2027)

The Township will continue to flow monitor one study area a year to determine if additional analysis and/or repairs are required based upon increases in flows not due to additional development. If additional repairs are required then the repairs will be performed in the following budget year. The order that the study areas will be reevaluated may change in order of priority based upon field observations and the analysis of flows at the permanent flow metering locations.

This process will be repeated until all study areas have been rehabilitated. After year eight, the Township will do an overall assessment of the system and development of a yearly I/I abatement program.

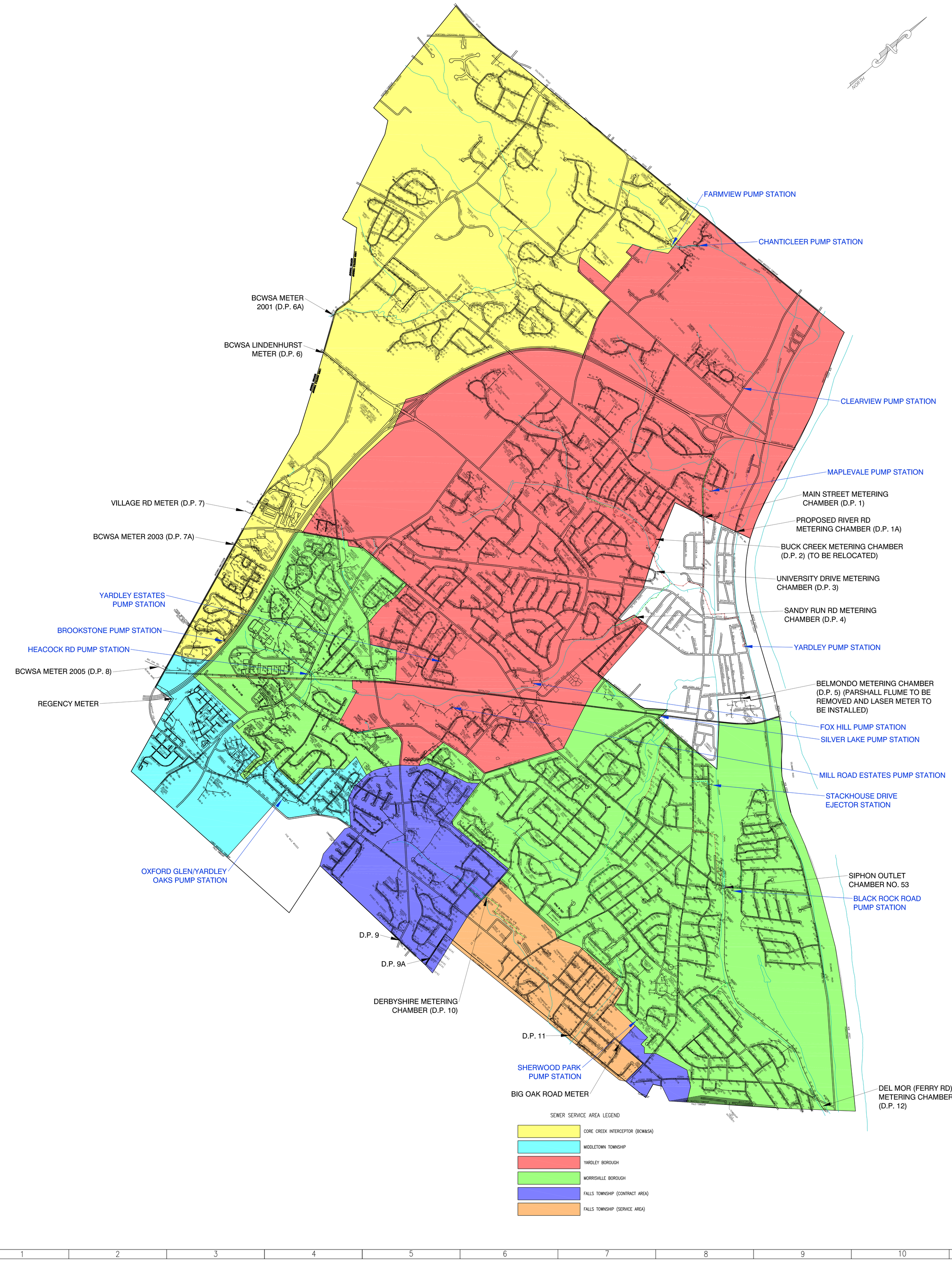
2.7 Anticipated Budget for the Next Five Years

Lower Makefield Township originally committed to allocate $50,000 a year towards removing I/I from the Neshaminy Interceptor Service Area. Starting in 2020, Lower Makefield Township increased this budget to approximately $200,000.00 per year for the next seven years with an inflation escalator for each year. The allocation of this money is approximately $175,000.00 for cured in place pipe liners and $25,000.00 for manhole rehabilitation. This is an over 400% increase in budgeted monies to reduce the I/I in the Neshaminy Interceptor Service Area.

As previously stated, while Lower Makefield Township will continue to follow the study area order for the flow metering program, the monies will be utilized in the areas that have the highest identified sources of I/I. This methodology will have the greatest impact on reducing the overall flows to the Neshaminy Interceptor. Lower Makefield Township has also chosen to utilize permanent means of repairing the sanitary sewer mains through installation of CIPP liner that eliminates all joints and installing liners up four feet on all laterals.

APPENDIX A

GENERAL PLAN OF SEWER SERVICE AREAS



0 1000 2000 3000

1"=1000'

Number	Description	Date
1	Revision To Morrisville Borough Service Area	8/31/08

GENERAL PLAN OF SANITARY SEWERS WITH SEWER SERVICE AREAS
FOR
LOWER MAKEFIELD TOWNSHIP

Ebert Engineering, Inc.
Water and Wastewater Engineering
PO Box 540
4092 Skippack Pike, Suite 202
Skippack, PA 19474
Phone (610) 584 6701
Fax (610) 584 6704
E-mail febert@ebertengineering.com

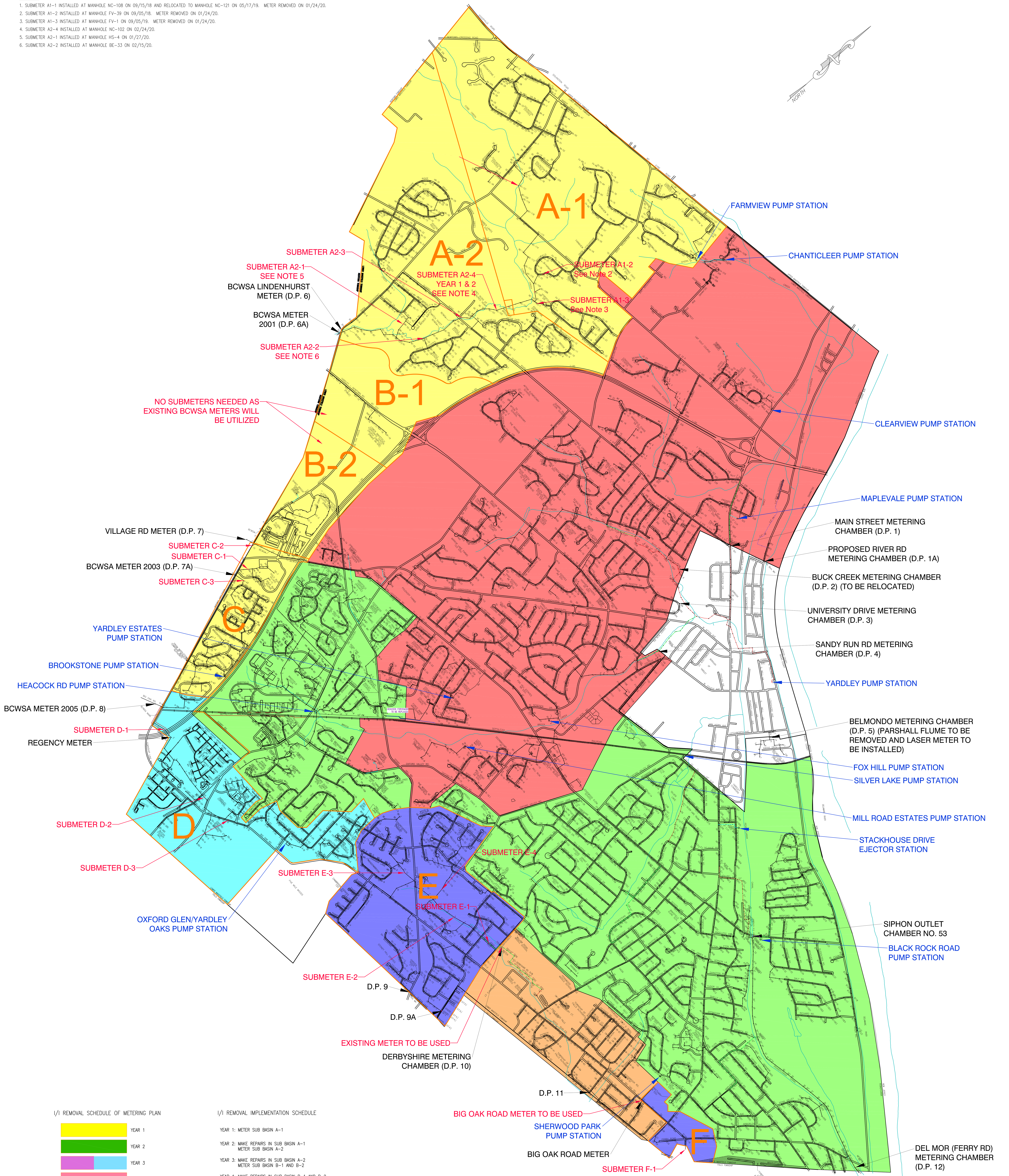
Drawn By	Project Engr.	Checked By	Scale	Job No.	Date	Drawing No.
EMK	FEE	FEE	1"/1000'	068-001	05/16/16	1 OF 1

APPENDIX B

FLOW METER LOCATION EXHIBIT

NOTES:

1. SUBMETER A1–1 INSTALLED AT MANHOLE NC–108 ON 09/15/18 AND RELOCATED TO MANHOLE NC–121 ON 05/17/19. METER REMOVED ON 01/24/20.
2. SUBMETER A1–2 INSTALLED AT MANHOLE FV–39 ON 09/05/18. METER REMOVED ON 01/24/20.
3. SUBMETER A1–3 INSTALLED AT MANHOLE FV–1 ON 09/05/19. METER REMOVED ON 01/24/20.
4. SUBMETER A2–4 INSTALLED AT MANHOLE NC–102 ON 02/24/20.
5. SUBMETER A2–1 INSTALLED AT MANHOLE HS–4 ON 01/27/20.
6. SUBMETER A2–2 INSTALLED AT MANHOLE BE–33 ON 02/15/20.



I/I REMOVAL SCHEDULE OF METERING PLAN

YEAR 1
YEAR 2
YEAR 3
YEAR 4
YEAR 5
YEAR 6
YEAR 7

I/I REMOVAL IMPLEMENTATION SCHEDULE

YEAR 1: METER SUB BASIN A–1

YEAR 2: MAKE REPAIRS IN SUB BASIN A–1
METER SUB BASIN A–2

YEAR 3: MAKE REPAIRS IN SUB BASIN A–2
METER SUB BASIN B–1 AND B–2

YEAR 4: MAKE REPAIRS IN SUB BASIN B–1 AND B–2
METER SUB BASIN C

YEAR 5: MAKE REPAIRS IN SUB BASIN C
METER SUB BASIN D

YEAR 6: MAKE REPAIRS IN SUB BASIN D
METER SUB BASIN E

YEAR 7: MAKE REPAIRS IN SUB BASIN E
METER SUB BASIN F

YEAR 8: MAKE REPAIRS IN SUB BASIN F

0 1000 2000 3000
1"=1000'

Z:\068-001 – Lower Makefield\Current\068001-I and I Blow Ups.dwg ~ I-I METERING PLAN

FLOW METER LOCATION EXHIBIT
PREPARED FOR
LOWER MAKEFIELD TOWNSHIP
LOCATED IN
BUCKS COUNTY, PENNSYLVANIA

Ebert Engineering, Inc.
Water and Wastewater Engineering
PO Box 540
4397 Skippack Pike
Skippack, PA 19474
Phone (610) 584 6701
Fax (610) 584 6704
E-mail febert@ebertengineering.com

Number	Description	Date
1	UPDATED SUBMETER LOCATIONS	08/27/20

Drawn By	Project Engr.	Checked By	Scale	Job No.	Date	Drawing No.
EMK	FEE	FEE	1"=1000'	068–001	05/16/16	1 OF 1

APPENDIX C

FLOW METER DATA

Overall Flow Meter Readings for CMP						
Subbasin A-2 (2020)						Inches of Rain
Monthly Flow Meter Reading		Monthly Flow Meter Reading		Monthly Flow Meter Reading		
Submeter Area A2-4		Submeter Area A2-1		Submeter Area A2-2		
Meter #1, Manhole NC-102		Meter #2, Manhole HS-4		Meter #3, Manhole BE-33		
Month	Average Daily Total (gals)	Month	Average Daily Total (gals)	Month	Average Daily Total (gals)	
January-20	*	January-20	*	January-20	*	1.91
February-20	79,809	February-20	1,989	February-20	20,034	2.66
March-20	103,616	March-20	3,417	March-20	16,097	3.68
April-20	122,077	April-20	7,715	April-20	19,923	2.35
May-20	120,255	May-20	6,900	May-20	19,437	2.46
June-20	102,282	June-20	6,156	June-20	20,432	4.07
July-20	90,976	July-20	6,272	July-20	16,569	2.91
August-20	88,510	August-20	6,889	August-20	17,243	4.59
September-20	88,530	September-20	5,346	September-20	19,390	3.44
October-20	95,454	October-20	5,452	October-20	18,060	3.77
November-20	109,391	November-20	5,890	November-20	23,674	2.60
December-20	139,307	December-20	7,159	December-20	23,838	4.52
Ave	**103,655**	**Ave**	**5,744**	**Ave**	**19,518**	
Total edus	570	Total edus	48	Total edus	699	
Flow/edu	182	Flow/edu	120	Flow/edu	28	
Total Ave Flows[(1)] (Submeter Area 2)	**318,791**	**BCWSA Meter (Lindenhurst)[(2)]**	**58,262**	**BCWSA Meter (2001)[(2)]**	**364,185**	

Notes:

* Asterisk indicates no data is available for this location

Meter #3 in Manhole NC-121 was removed on January 24, 2020 and reinstalled in Manhole BE-33 on February 15, 2020.

Meter #2 in Manhole FV-39 was removed on January 24, 2020 and reinstalled in Manhole HS-4 on January 27, 2020.

Meter #1 in Manhole FV-1 was removed on January 24, 2020 and reinstalled in Manhole NC-102 on February 24, 2020.

(1) Total Ave Flows for Submeter Area 2 calculated by subtracting NC-102 flows from BCWSA Meter 2001 flows plus flows from BCWSA Lindenhurst Meter

(2) BCWSA Meter Flows for Lindenhurst and 2001 locations is average flow for February through December 2020

Overall Flow Meter Reading for CMP								
Subbasin A-1 (2019)								
Monthly Flow Meter Reading		Monthly Flow Meter Reading		Monthly Flow Meter Reading		Monthly Flow Meter Reading		Inches of Rain
Submeter Area 1**		Submeter Area 1**		Submeter Area 2		Submeter Area 3		
Meter #3 NC-108		Meter #3 NC-121		Meter #2 FV-39		Meter #1 FV-1		
Month	Average Daily Total (gals)	Month	Average Daily Total (gals)	Month	Average Daily Total (gals)	Month	Average Daily Total (gals)	
January-19	95,722	January-19	*	January-19	49,844	January-19	14,072	3.61
February-19	91,383	February-19	*	February-19	46,799	February-19	7,073	1.53
March-19	96,500	March-19	*	March-19	49,682	March-19	12,344	2.80
April-19	*	April-19	*	April-19	43,380	April-19	12,185	4.13
May-19	*	May-19	73,573	May-19	51,330	May-19	13,715	7.57
June-19	*	June-19	86,790	June-19	46,664	June-19	11,772	6.03
July-19	*	July-19	87,213	July-19	39,208	July-19	9,555	6.21
August-19	*	August-19	87,537	August-19	35,667	August-19	13,217	3.39
September-19	*	September-19	59,981	September-19	33,127	September-19	12,076	2.17
October-19	*	***October-19	42,778	October-19	34,064	October-19	11,368	4.82
November-19	*	November-19	60,301	November-19	39,900	November-19	15,125	1.83
December-19	*	December-19	70,784	December-19	54,564	December-19	13,900	4.70
Ave	**94,535**	**Ave**	**71,120**	**Ave**	**43,686**	**Ave**	**12,200**	
Total edus	195	Total edus	178	Total edus	264	Total edus	108	
Flow/edu	485	Flow/edu	400	Flow/edu	165	Flow/edu	113	
		Total Ave Flows (Submeter Area 1, 2, and 3)	**127,006**	**BCWSA Meter (Lindenhurst)**	**59,960**	**BCWSA Meter 2001**	**397,780**	

* - Submeter Area 1 meter was removed from manhole NC-108 in March 2019 and relocated to manhole NC-121 in May of 2019.

** - To calculate Submeter Area 1, Submeter Area 2 was subtracted from the flows of Submeter 1 as Area 2 flows into Area 1. Submeter Area

*** - No data collected from October 10th through October 31 at NC-121 due to battery failure

Site Name	Meter #1 NC-102	Meter #1 NC-102	Meter #1 NC-102				
Isco Quantity	Flow Rate	Flow Rate	Min/Max	Flow Rate	Min/Max	Volume	
Label	Avg Flow Rate	Min Flow Rate	Min/Max	Max Flow Rate	Min/Max	Daily Total	
Units	gpm	gpm	Date/Time	gpm	Date/Time	gal	
Resolution	0.1	0.1	N/A	0.1	N/A	0.1	
Significant Digits	0	0	N/A	0	N/A	0	
2/1/2020 0:00	0.04	0.024	1:45:00 PM	0.146	12:00:00 AM	58.074	
2/2/2020 0:00	0.148	0.141	6:30:00 AM	0.188	12:00:00 AM	212.546	
2/3/2020 0:00	0.148	0.142	2:30:00 AM	0.153	2:45:00 AM	213.081	
2/4/2020 0:00	0.158	0.142	6:45:00 PM	0.191	9:00:00 AM	227.751	
2/5/2020 0:00	0.173	0.143	10:15:00 AM	0.226	8:30:00 AM	248.409	
2/6/2020 0:00	0.19	0.15	6:45:00 AM	0.203	10:30:00 PM	273.635	
2/7/2020 0:00	0.162	0.1	4:00:00 PM	0.325	2:15:00 PM	232.876	
2/8/2020 0:00	0.112	0.022	12:00:00 AM	0.126	12:15:00 AM	160.823	
2/9/2020 0:00	0.018	0.015	9:00:00 AM	0.021	9:00:00 PM	26.602	
2/10/2020 0:00	0.018	0.016	9:00:00 PM	0.02	2:30:00 AM	26.029	
2/11/2020 0:00	0.017	0.015	3:00:00 PM	0.019	10:45:00 PM	24.69	
2/12/2020 0:00	0.018	0.015	9:00:00 AM	0.019	1:45:00 AM	25.32	
2/13/2020 0:00	0.018	0.015	3:30:00 PM	0.02	6:30:00 AM	25.421	
2/14/2020 0:00	0.021	0.015	2:00:00 PM	0.113	12:00:00 AM	29.876	
2/15/2020 0:00	0.416	0.115	12:15:00 AM	0.689	1:00:00 PM	599.316	
2/16/2020 0:00	0.455	0.327	1:00:00 AM	0.647	12:45:00 PM	654.683	
2/17/2020 0:00	0.364	0.237	5:30:00 PM	0.623	7:30:00 PM	524.497	
2/18/2020 0:00	0.298	0.223	6:45:00 PM	0.49	11:45:00 AM	429.658	
2/19/2020 0:00	0.313	0.208	3:15:00 PM	0.556	7:30:00 PM	450.973	
2/20/2020 0:00	0.336	0.217	11:45:00 PM	0.467	1:00:00 PM	483.614	
2/21/2020 0:00	0.261	0.146	7:45:00 AM	0.385	2:45:00 PM	375.738	
2/22/2020 0:00	0.296	0.187	6:00:00 AM	0.454	1:15:00 PM	426.802	
2/23/2020 0:00	0.234	0.134	7:45:00 AM	0.363	8:30:00 PM	336.57	
2/24/2020 0:00	44.62	0.065	10:00:00 AM	108.403	8:30:00 PM	64253	start monitoring flows
2/25/2020 0:00	60.289	11.315	3:30:00 AM	100.523	8:15:00 PM	86816	
2/26/2020 0:00	55.383	11.136	5:30:00 AM	111.423	7:30:00 AM	79752	
2/27/2020 0:00	62.09	10.954	1:45:00 AM	116.008	7:45:00 AM	89410.3	
2/28/2020 0:00	54.332	9.445	3:45:00 AM	106.955	7:45:00 AM	78237.7	
2/29/2020 0:00	55.823	9.888	6:30:00 AM	109.203	10:45:00 AM	80384.9	
						79,809	
3/1/2020 0:00	66.137	10.233	4:30:00 AM	121.411	8:30:00 PM	95236.9	
3/2/2020 0:00	65.439	10.652	5:15:00 AM	125.746	8:00:00 AM	94232.2	
3/3/2020 0:00	66.712	12.443	4:15:00 AM	143.791	8:30:00 PM	96064.8	
3/4/2020 0:00	56.864	10.383	4:45:00 AM	107.968	7:30:00 AM	81884.5	
3/5/2020 0:00	51.227	9.548	3:00:00 AM	108.491	8:15:00 AM	73766.6	
3/6/2020 0:00	55.845	9.07	4:00:00 AM	116.399	8:15:00 AM	80416.4	
3/7/2020 0:00	63.36	8.56	5:00:00 AM	118.159	6:45:00 PM	91238.5	
3/8/2020 0:00	65.306	9.764	4:45:00 AM	129.82	11:00:00 AM	94040.8	
3/9/2020 0:00	56.865	11.43	3:15:00 AM	137.405	6:45:00 AM	81886.2	
3/10/2020 0:00	59.024	9.411	4:30:00 AM	156.478	7:00:00 AM	84995.3	
3/11/2020 0:00	63.443	10.565	4:15:00 AM	123.788	7:00:00 AM	91358	
3/12/2020 0:00	58.477	12.578	3:45:00 AM	123.239	7:30:00 AM	84206.7	
3/13/2020 0:00	62.498	12.019	3:30:00 AM	127.922	10:30:00 AM	89996.9	
3/14/2020 0:00	69.022	10.229	5:00:00 AM	125.834	1:00:00 PM	99391.6	
3/15/2020 0:00	69.596	10.546	3:30:00 AM	126.729	12:00:00 PM	100218	
3/16/2020 0:00	67.387	9.989	3:30:00 AM	121.707	10:30:00 AM	97036.7	
3/17/2020 0:00	73.107	12.01	2:00:00 AM	136.876	9:30:00 AM	105274	
3/18/2020 0:00	70.628	11.82	4:00:00 AM	120.193	7:30:00 PM	101704	
3/19/2020 0:00	86.716	15.467	2:15:00 AM	154.462	7:45:00 PM	124871	
3/20/2020 0:00	79.778	15.06	5:00:00 AM	141.644	8:30:00 AM	114881	
3/21/2020 0:00	71.137	15.319	3:30:00 AM	130.526	11:30:00 AM	102437	
3/22/2020 0:00	69.629	12.129	4:45:00 AM	129.621	8:30:00 PM	100265	
3/23/2020 0:00	89.283	13.477	3:15:00 AM	169.113	7:30:00 PM	128568	
3/24/2020 0:00	88.435	18.662	4:45:00 AM	155.552	7:30:00 PM	127346	
3/25/2020 0:00	81.891	17.009	4:45:00 AM	140.304	7:30:00 PM	117922	
3/26/2020 0:00	80.282	14.119	4:45:00 AM	150.277	7:45:00 PM	115606	
3/27/2020 0:00	83.486	14.914	3:00:00 AM	154.382	9:00:00 AM	120220	
3/28/2020 0:00	78.362	17.094	6:15:00 AM	137.4	12:15:00 PM	112841	
3/29/2020 0:00	95.846	19.734	4:00:00 AM	164.374	7:15:00 PM	138019	
3/30/2020 0:00	99.286	16.807	5:00:00 AM	169.191	12:15:00 PM	142973	
3/31/2020 0:00	85.554	13.639	3:15:00 AM	175.371	6:15:00 PM	123198	
						103,616	
4/1/2020 0:00	90.685	17.935	2:00:00 AM	153.559	6:30:00 PM	130586	
4/2/2020 0:00	86.41	14.571	3:45:00 AM	151.989	8:15:00 AM	124430	

4/3/2020 0:00	80.954	15.255	5:45:00 AM	164.555	8:45:00 AM	116574
4/4/2020 0:00	82.094	12.846	4:15:00 AM	144.405	12:45:00 PM	118215
4/5/2020 0:00	77.197	10.613	6:00:00 AM	145.542	10:15:00 AM	111164
4/6/2020 0:00	72.951	12.273	5:00:00 AM	146.719	7:30:00 PM	105050
4/7/2020 0:00	73.119	13.802	4:00:00 AM	140.068	8:30:00 AM	105291
4/8/2020 0:00	84.151	14.26	1:00:00 AM	142.054	10:00:00 AM	121178
4/9/2020 0:00	78.878	13.5	1:30:00 AM	143.667	9:30:00 AM	113585
4/10/2020 0:00	80.08	13.93	5:45:00 AM	140.075	2:45:00 PM	115315
4/11/2020 0:00	85.618	13.143	12:30:00 AM	152.69	10:30:00 AM	123290
4/12/2020 0:00	92.708	14.814	3:15:00 AM	187.468	9:45:00 AM	133499
4/13/2020 0:00	110.405	15.46	3:30:00 AM	201.851	8:45:00 AM	158983
4/14/2020 0:00	91.88	14.094	1:30:00 AM	165.704	7:15:00 PM	132308
4/15/2020 0:00	92.693	14.973	5:00:00 AM	152.696	8:45:00 AM	133477
4/16/2020 0:00	89.192	13.023	5:15:00 AM	149.263	9:45:00 AM	128436
4/17/2020 0:00	89.426	15.766	4:15:00 AM	142.482	8:15:00 PM	128774
4/18/2020 0:00	85.753	15.274	3:00:00 AM	175.341	12:45:00 PM	123485
4/19/2020 0:00	84.043	11.942	5:45:00 AM	146.482	11:30:00 AM	121022
4/20/2020 0:00	77.426	12.968	2:15:00 AM	131.182	6:30:00 PM	111494
4/21/2020 0:00	81.604	13.736	2:30:00 AM	143.133	8:45:00 AM	117510
4/22/2020 0:00	79.353	13.718	1:45:00 AM	141.263	8:45:00 AM	114268
4/23/2020 0:00	78.144	14.156	4:45:00 AM	134.322	8:00:00 AM	112528
4/24/2020 0:00	86.975	15.131	4:15:00 AM	166.631	9:15:00 AM	125244
4/25/2020 0:00	78.345	12.142	3:30:00 AM	139.397	6:45:00 PM	112817
4/26/2020 0:00	85.29	15.771	5:30:00 AM	164.896	5:00:00 PM	122818
4/27/2020 0:00	85.41	14.195	4:30:00 AM	167.226	7:45:00 PM	122990
4/28/2020 0:00	87.181	16.487	12:15:00 AM	153.105	8:00:00 PM	125540
4/29/2020 0:00	86.211	13.029	2:30:00 AM	142.218	9:00:00 AM	124144
4/30/2020 0:00	89.09	13.935	2:15:00 AM	154.816	6:15:00 PM	128289
						122,077
5/1/2020 0:00	114.574	52.683	4:15:00 AM	167.966	10:00:00 AM	164986
5/2/2020 0:00	84.053	14.974	4:15:00 AM	143.964	10:30:00 AM	121037
5/3/2020 0:00	80.288	13.675	3:30:00 AM	144.961	9:15:00 PM	115615
5/4/2020 0:00	86.138	15.442	3:30:00 AM	164.34	9:45:00 AM	124039
5/5/2020 0:00	85.48	18.764	5:45:00 AM	153.475	9:30:00 PM	123091
5/6/2020 0:00	89.914	17.677	5:30:00 AM	155.251	11:15:00 AM	129477
5/7/2020 0:00	76.007	12.541	5:30:00 AM	129.191	10:30:00 AM	109450
5/8/2020 0:00	76.569	12.393	6:15:00 AM	141.429	7:00:00 PM	110259
5/9/2020 0:00	81.282	11.976	6:00:00 AM	149.077	12:30:00 PM	117046
5/10/2020 0:00	82.217	12.46	5:00:00 AM	150.045	12:30:00 PM	118392
5/11/2020 0:00	87.877	14.143	6:00:00 AM	158.04	9:30:00 AM	126542
5/12/2020 0:00	84.9	15.768	4:30:00 AM	144.815	9:45:00 PM	122256
5/13/2020 0:00	74.177	13.551	4:45:00 AM	124.802	10:15:00 AM	106815
5/14/2020 0:00	78.493	12.809	6:00:00 AM	130.245	9:45:00 AM	113030
5/15/2020 0:00	83.984	15.55	3:45:00 AM	144.954	9:30:00 AM	120938
5/16/2020 0:00	82.159	15.813	5:45:00 AM	154.915	11:15:00 AM	118309
5/17/2020 0:00	85.154	14.716	3:00:00 AM	153.983	7:45:00 PM	122622
5/18/2020 0:00	85.817	15.298	5:00:00 AM	147.575	11:15:00 AM	123576
5/19/2020 0:00	84.915	14.22	4:45:00 AM	160.367	10:15:00 AM	122278
5/20/2020 0:00	88.605	17.032	5:00:00 AM	171.145	9:45:00 AM	127592
5/21/2020 0:00	87.79	17.445	5:45:00 AM	158.807	8:45:00 PM	126418
5/22/2020 0:00	89.739	17.292	5:15:00 AM	153.148	12:45:00 PM	129224
5/23/2020 0:00	91.783	18.153	2:45:00 AM	163.962	1:15:00 PM	132167
5/24/2020 0:00	87.224	16.582	2:00:00 AM	151.994	12:00:00 PM	125603
5/25/2020 0:00	76.669	14.505	5:45:00 AM	160.91	10:00:00 AM	110404
5/26/2020 0:00	81.081	13.068	5:30:00 AM	151.347	10:00:00 AM	116757
5/27/2020 0:00	75.183	13.638	4:45:00 AM	132.803	8:45:00 PM	108263
5/28/2020 0:00	82.718	15.888	3:00:00 AM	153.317	10:00:00 PM	119114
5/29/2020 0:00	73.061	-27.101	6:15:00 PM	146.501	9:15:00 AM	105208
5/30/2020 0:00	74.945	12.851	6:00:00 AM	136.668	1:30:00 PM	107921
5/31/2020 0:00	76.017	14.078	5:30:00 AM	132.589	12:45:00 PM	109465
						120,255
6/1/2020 0:00	74.622	14.113	5:45:00 AM	137.604	10:15:00 AM	107456
6/2/2020 0:00	66.522	11.274	4:15:00 AM	135.729	10:15:00 AM	95791.2
6/3/2020 0:00	73.727	12.52	4:45:00 AM	161.022	1:00:00 PM	106167
6/4/2020 0:00	70.951	11.642	5:30:00 AM	133.091	9:30:00 AM	102169
6/5/2020 0:00	76.51	14.276	5:15:00 AM	129.02	5:15:00 PM	110174
6/6/2020 0:00	72.408	13.623	5:45:00 AM	138.23	10:30:00 AM	104267
6/7/2020 0:00	66.921	13.921	6:00:00 AM	124.594	4:30:00 PM	96365.8
6/8/2020 0:00	74.412	13.12	4:00:00 AM	153.913	9:45:00 AM	107153
6/9/2020 0:00	73.47	12.839	4:45:00 AM	136.164	10:45:00 AM	105797
6/10/2020 0:00	71.14	13.865	4:00:00 AM	135.121	10:15:00 PM	102442
6/11/2020 0:00	69.797	12.423	5:00:00 AM	120.77	9:15:00 AM	100508

6/12/2020 0:00	63.541	11.809	5:30:00 AM	110.329	9:45:00 AM	91499.4
6/13/2020 0:00	67.723	11.531	5:45:00 AM	119.361	1:15:00 PM	97520.9
6/14/2020 0:00	69.146	11.329	5:30:00 AM	127.139	12:00:00 PM	99570.5
6/15/2020 0:00	66.512	10.768	5:15:00 AM	134.1	9:45:00 AM	95777.5
6/16/2020 0:00	62.042	13.407	4:15:00 AM	108.148	8:15:00 AM	89341.2
6/17/2020 0:00	67.349	11.288	5:30:00 AM	121.801	10:00:00 AM	96982.2
6/18/2020 0:00	69.494	13.587	5:30:00 AM	127.193	9:30:00 AM	100071
6/19/2020 0:00	66.578	12.725	4:15:00 AM	129.675	10:00:00 AM	95871.9
6/20/2020 0:00	68.997	9.861	5:15:00 AM	130.255	4:30:00 PM	99355.7
6/21/2020 0:00	72.532	11.542	5:00:00 AM	134.633	12:30:00 PM	104446
6/22/2020 0:00	66.564	10.988	4:15:00 AM	123.478	8:30:00 PM	95852.6
6/23/2020 0:00	65.845	10.877	5:30:00 AM	117.962	9:00:00 AM	94816.5
6/24/2020 0:00	69.406	11.684	2:45:00 AM	138.097	9:30:00 PM	99944.9
6/25/2020 0:00	70.994	11.196	5:45:00 AM	135.477	8:00:00 PM	102232
6/26/2020 0:00	73.894	12.456	4:45:00 AM	145.387	9:00:00 AM	106408
6/27/2020 0:00	76.346	12.155	6:15:00 AM	141.097	10:45:00 AM	109938
6/28/2020 0:00	82.717	13.375	4:30:00 AM	139.335	11:15:00 AM	119112
6/29/2020 0:00	83.205	14.83	5:00:00 AM	162.957	10:15:00 AM	119815
6/30/2020 0:00	77.513	15.069	5:15:00 AM	150.801	9:15:00 AM	111619
						102,282
7/1/2020 0:00	73.653	13.709	5:15:00 AM	127.379	9:45:00 AM	106060
7/2/2020 0:00	66.226	9.996	5:15:00 AM	138	9:00:00 AM	95365.3
7/3/2020 0:00	63.369	11.789	5:15:00 AM	138.292	1:30:00 PM	91251.3
7/4/2020 0:00	60.729	11.2	5:00:00 AM	118.955	11:15:00 AM	87449.6
7/5/2020 0:00	54.937	8.922	6:15:00 AM	129.103	9:00:00 PM	79108.8
7/6/2020 0:00	57.036	8.587	5:00:00 AM	116.323	10:00:00 AM	82131.8
7/7/2020 0:00	55.21	8.216	5:15:00 AM	107.493	8:15:00 AM	79502.2
7/8/2020 0:00	63.071	7.849	5:45:00 AM	105.603	9:30:00 AM	90821.8
7/9/2020 0:00	58.94	7.819	5:15:00 AM	110.7	6:15:00 PM	84874.1
7/10/2020 0:00	71.331	8.23	4:45:00 AM	131.393	1:30:00 PM	102717
7/11/2020 0:00	71.861	12.027	6:15:00 AM	126.65	12:15:00 PM	103480
7/12/2020 0:00	64.976	9.073	5:00:00 AM	116.635	10:00:00 AM	93565
7/13/2020 0:00	67.05	10.351	5:30:00 AM	130.912	9:15:00 AM	96551.8
7/14/2020 0:00	64.174	10.276	4:30:00 AM	114.51	10:15:00 PM	92411.2
7/15/2020 0:00	63.885	8.809	5:15:00 AM	113.568	9:15:00 AM	91994.9
7/16/2020 0:00	59.485	8.03	4:30:00 AM	109.113	9:15:00 PM	85659
7/17/2020 0:00	59.759	8.539	3:45:00 AM	108.966	9:45:00 AM	86053.6
7/18/2020 0:00	57.895	10.897	6:15:00 AM	111.664	10:45:00 AM	83368.4
7/19/2020 0:00	60.286	8.804	5:15:00 AM	108.758	8:30:00 PM	86811.6
7/20/2020 0:00	59.624	8.885	6:00:00 AM	113.159	9:15:00 PM	85858.2
7/21/2020 0:00	61.336	10.241	4:30:00 AM	111.209	10:00:00 AM	88323.5
7/22/2020 0:00	59.855	9.348	5:15:00 AM	117.164	8:30:00 PM	86191.3
7/23/2020 0:00	62.251	8.744	5:15:00 AM	110.163	8:45:00 AM	89641.8
7/24/2020 0:00	68.441	9.779	5:15:00 AM	128.119	1:45:00 PM	98555.6
7/25/2020 0:00	70.655	11.138	4:30:00 AM	125.465	12:00:00 PM	101743
7/26/2020 0:00	68.734	10.251	5:00:00 AM	118.31	12:00:00 PM	98977.2
7/27/2020 0:00	63.015	10.713	4:45:00 AM	115.76	9:30:00 PM	90741.4
7/28/2020 0:00	61.955	9.94	4:30:00 AM	119.593	8:45:00 AM	89214.5
7/29/2020 0:00	60.592	8.914	4:45:00 AM	113.483	10:15:00 AM	87253.2
7/30/2020 0:00	66.116	10.738	5:00:00 AM	118.161	8:15:00 AM	95207.6
7/31/2020 0:00	62.066	8.6	4:15:00 AM	128.02	12:15:00 PM	89374.6
						90,976
8/1/2020 0:00	61.184	10.458	6:00:00 AM	111.075	7:30:00 PM	88104.7
8/2/2020 0:00	62.004	9.802	5:45:00 AM	112.693	10:45:00 AM	89285.3
8/3/2020 0:00	58.483	10.29	4:30:00 AM	119.262	10:00:00 AM	84216
8/4/2020 0:00	71.447	8.794	3:00:00 AM	198.803	11:45:00 AM	102884
8/5/2020 0:00	60.05	12.374	5:15:00 AM	116.609	10:00:00 AM	86472.5
8/6/2020 0:00	71.101	11.387	3:30:00 AM	119.186	9:15:00 PM	102385
8/7/2020 0:00	72.169	10.507	5:00:00 AM	139.817	8:15:00 PM	103924
8/8/2020 0:00	73.991	13.361	6:45:00 AM	134.034	12:00:00 PM	106547
8/9/2020 0:00	72.65	12.76	6:15:00 AM	137.988	12:30:00 PM	104616
8/10/2020 0:00	69.77	12.19	4:45:00 AM	122.679	10:45:00 AM	100468
8/11/2020 0:00	67.724	10.672	5:15:00 AM	119.467	8:15:00 AM	97522.8
8/12/2020 0:00	64.23	11.379	4:30:00 AM	134.132	10:15:00 AM	92491.3
8/13/2020 0:00	67.06	8.304	5:00:00 AM	119.345	9:15:00 AM	96566.2
8/14/2020 0:00	64.411	11.438	5:15:00 AM	134.88	9:30:00 AM	92752.3
8/15/2020 0:00	60.701	8.116	6:00:00 AM	120.813	8:00:00 PM	87408.7
8/16/2020 0:00	65.08	8.974	4:45:00 AM	131.805	7:30:00 PM	93715.2
8/17/2020 0:00	64.064	10.649	4:00:00 AM	133.416	10:00:00 AM	92252.5
8/18/2020 0:00	65.299	8.841	5:30:00 AM	122.285	8:15:00 AM	94030.9
8/19/2020 0:00	62.125	10.129	5:30:00 AM	119.249	9:45:00 AM	89460
8/20/2020 0:00	54.017	8.533	4:45:00 AM	107.318	9:30:00 AM	77785.1

8/21/2020 0:00	56.303	8.557	5:30:00 AM	102.645	11:15:00 PM	81076.7
8/22/2020 0:00	54.885	7.864	5:15:00 AM	104.229	11:00:00 AM	79034.5
8/23/2020 0:00	56.545	8.842	6:00:00 AM	114.343	11:15:00 AM	81424.5
8/24/2020 0:00	54.511	7.937	4:15:00 AM	117.448	10:00:00 AM	78496
8/25/2020 0:00	56.07	8.019	4:00:00 AM	111.142	10:45:00 AM	80740.4
8/26/2020 0:00	53.878	7.721	5:15:00 AM	104.71	10:15:00 AM	77585
8/27/2020 0:00	52.679	8.121	5:30:00 AM	106.038	9:00:00 AM	75857.4
8/28/2020 0:00	57.185	10.021	4:30:00 AM	110.57	5:15:00 PM	82346.5
8/29/2020 0:00	52.837	8.193	5:00:00 AM	118.299	12:15:00 PM	76084.6
8/30/2020 0:00	50.081	7.688	4:15:00 AM	110.628	9:15:00 PM	72116.4
8/31/2020 0:00	52.892	7.68	5:15:00 AM	122.228	9:00:00 PM	76163.8
						88,510
9/1/2020 0:00	49.256	8.449	5:30:00 AM	121.072	8:15:00 PM	70929.2
9/2/2020 0:00	56.616	9.16	2:30:00 AM	102.998	8:45:00 AM	81526.9
9/3/2020 0:00	62.475	9.277	5:30:00 AM	180.95	8:30:00 PM	89964.3
9/4/2020 0:00	56.945	10.348	5:15:00 AM	113.498	9:00:00 AM	82000.7
9/5/2020 0:00	61.884	9.695	4:45:00 AM	117.12	10:15:00 AM	89112.3
9/6/2020 0:00	58.95	9.409	5:15:00 AM	111.484	10:45:00 AM	84887.5
9/7/2020 0:00	65.224	9.378	4:45:00 AM	110.456	9:30:00 PM	93922.1
9/8/2020 0:00	63.079	8.673	4:15:00 AM	254.617	8:15:00 AM	90833.2
9/9/2020 0:00	57.983	8.601	5:00:00 AM	136.362	8:15:00 AM	83494.8
9/10/2020 0:00	66.398	11.132	5:15:00 AM	128.45	8:45:00 PM	95613.2
9/11/2020 0:00	62.529	10.972	4:45:00 AM	130.448	9:00:00 AM	90041.5
9/12/2020 0:00	60.831	9.477	6:00:00 AM	102.003	11:30:00 AM	87596.8
9/13/2020 0:00	64.213	8.351	4:45:00 AM	116.905	9:45:00 AM	92466.2
9/14/2020 0:00	59.641	8.872	5:15:00 AM	118.292	8:45:00 PM	85882.4
9/15/2020 0:00	60.686	9.096	3:30:00 AM	124.647	8:30:00 AM	87388.2
9/16/2020 0:00	59.416	8.131	4:00:00 AM	116.629	9:30:00 AM	85558.6
9/17/2020 0:00	55.952	8.558	4:30:00 AM	112.796	8:30:00 AM	80571.6
9/18/2020 0:00	55.837	8.083	4:45:00 AM	107.441	8:00:00 AM	80405.2
9/19/2020 0:00	59.193	7.79	4:45:00 AM	113.836	11:00:00 AM	85237.4
9/20/2020 0:00	67.181	8.396	6:00:00 AM	130.896	8:45:00 PM	96741.2
9/21/2020 0:00	60.418	8.315	4:00:00 AM	124.8	9:15:00 AM	87002.6
9/22/2020 0:00	61.488	7.632	4:45:00 AM	120.905	8:30:00 AM	88542.3
9/23/2020 0:00	61.249	10.027	5:15:00 AM	127.978	8:15:00 AM	88198
9/24/2020 0:00	60.236	8.489	5:00:00 AM	117.742	9:00:00 PM	86740.4
9/25/2020 0:00	55.971	8.009	5:15:00 AM	112.399	9:15:00 AM	80598.6
9/26/2020 0:00	59.499	8.082	5:15:00 AM	113.799	11:30:00 AM	85678.7
9/27/2020 0:00	64.602	8.487	6:00:00 AM	121.588	7:00:00 PM	93026.3
9/28/2020 0:00	63.988	9.294	4:30:00 AM	135.155	8:30:00 PM	92142.8
9/29/2020 0:00	66.187	8.016	4:00:00 AM	134.337	7:45:00 PM	95309.6
9/30/2020 0:00	86.459	34.746	1:45:00 AM	145.284	2:45:00 AM	124501
						88,530
10/1/2020 0:00	66.854	11.451	4:30:00 AM	123.879	8:45:00 PM	96269.1
10/2/2020 0:00	62.61	11.669	5:15:00 AM	135.683	9:30:00 AM	90158.4
10/3/2020 0:00	64.06	9.371	5:15:00 AM	117.374	10:15:00 AM	92246.1
10/4/2020 0:00	63.927	9.992	4:00:00 AM	132.579	8:15:00 PM	92055
10/5/2020 0:00	62.182	8.631	5:00:00 AM	110.556	8:15:00 PM	89542.8
10/6/2020 0:00	61.626	9.673	4:45:00 AM	124.659	8:00:00 AM	88740.9
10/7/2020 0:00	58.054	8.422	4:15:00 AM	109.65	7:00:00 PM	83598.3
10/8/2020 0:00	59.65	7.933	3:00:00 AM	118.351	8:30:00 AM	85896.5
10/9/2020 0:00	56.768	8.202	5:45:00 AM	122.58	8:30:00 AM	81746.4
10/10/2020 0:00	56.257	9.855	5:15:00 AM	118.433	10:15:00 AM	81010.3
10/11/2020 0:00	68.696	8.576	5:30:00 AM	140.647	2:45:00 PM	98922.2
10/12/2020 0:00	74.202	11.303	5:30:00 AM	128.243	8:45:00 PM	106851
10/13/2020 0:00	68.595	12.787	4:15:00 AM	126.575	8:15:00 AM	98776.8
10/14/2020 0:00	67.993	12.066	5:00:00 AM	137.569	8:15:00 AM	97909.4
10/15/2020 0:00	62.714	10.959	4:30:00 AM	130.853	9:15:00 AM	90308.3
10/16/2020 0:00	73.327	10.505	3:30:00 AM	130.249	1:30:00 PM	105590
10/17/2020 0:00	71.449	12.968	5:15:00 AM	131.542	11:00:00 AM	102886
10/18/2020 0:00	70.564	9.818	5:30:00 AM	139.854	9:30:00 PM	101613
10/19/2020 0:00	64.618	11.496	4:45:00 AM	120.063	10:30:00 AM	93050.1
10/20/2020 0:00	60.234	10.383	4:00:00 AM	125.337	8:15:00 AM	86737.3
10/21/2020 0:00	62.37	9.873	5:15:00 AM	119.819	9:15:00 AM	89812.5
10/22/2020 0:00	61.461	9.94	4:30:00 AM	125.13	7:30:00 PM	88503.9
10/23/2020 0:00	61.462	10.099	5:15:00 AM	123.161	12:00:00 PM	88505.9
10/24/2020 0:00	63.066	9.302	5:45:00 AM	120.971	10:15:00 AM	90815.2
10/25/2020 0:00	70.787	8.711	3:45:00 AM	138.2	12:15:00 PM	101934
10/26/2020 0:00	65.326	9.127	4:30:00 AM	124.002	9:00:00 AM	94069.3
10/27/2020 0:00	62.614	9.282	5:00:00 AM	123.511	10:30:00 AM	90164.4
10/28/2020 0:00	63.22	9.829	6:00:00 AM	117.928	8:45:00 AM	91036.2
10/29/2020 0:00	85.838	9.537	5:00:00 AM	152.389	1:30:00 PM	123606

10/30/2020 0:00	89.523	14.007	5:30:00 AM	156.63	8:45:00 AM	128913
10/31/2020 0:00	74.859	13.348	4:00:00 AM	132.002	11:30:00 AM	107797
						95,454
11/1/2020 0:00	75.302	12.515	7:45:00 AM	135.781	12:15:00 PM	108435
11/2/2020 0:00	69.742	12.232	3:30:00 AM	134.895	9:00:00 AM	100429
11/3/2020 0:00	68.395	12.163	5:45:00 AM	118.742	8:30:00 PM	98488.5
11/4/2020 0:00	69.293	12.487	6:30:00 AM	130.907	9:30:00 AM	99781.7
11/5/2020 0:00	68.429	12.254	6:00:00 AM	133.384	10:30:00 AM	98537.1
11/6/2020 0:00	67.883	13.109	4:45:00 AM	125.47	10:15:00 AM	97751.8
11/7/2020 0:00	66.304	12.833	6:15:00 AM	121.994	11:00:00 AM	95477.5
11/8/2020 0:00	72.399	11.615	7:15:00 AM	149.287	11:00:00 AM	104254
11/9/2020 0:00	68.572	12.767	6:15:00 AM	124.365	8:30:00 PM	98743.9
11/10/2020 0:00	70.488	12.184	6:45:00 AM	145.116	9:30:00 AM	101502
11/11/2020 0:00	70.911	13.484	5:30:00 AM	147.344	8:30:00 PM	102112
11/12/2020 0:00	80.367	14.442	7:00:00 AM	144.905	10:00:00 AM	115729
11/13/2020 0:00	76.765	14.635	4:30:00 AM	134.085	9:00:00 PM	110542
11/14/2020 0:00	75.772	15.423	5:15:00 AM	142.142	12:45:00 PM	109111
11/15/2020 0:00	78.862	14.824	7:15:00 AM	140.906	12:45:00 PM	113562
11/16/2020 0:00	74.029	13.413	5:15:00 AM	133.698	9:30:00 AM	106602
11/17/2020 0:00	73.136	12.195	6:00:00 AM	120.053	9:45:00 AM	105316
11/18/2020 0:00	76.76	12.619	6:00:00 AM	133.147	9:15:00 AM	110535
11/19/2020 0:00	78.927	14.461	5:45:00 AM	135.861	10:15:00 AM	113655
11/20/2020 0:00	72.604	14.504	6:30:00 AM	134.056	10:15:00 AM	104550
11/21/2020 0:00	76.852	15.008	5:15:00 AM	130.961	3:30:00 PM	110666
11/22/2020 0:00	78.89	15.086	6:30:00 AM	136.508	11:00:00 AM	113601
11/23/2020 0:00	79.587	14.636	2:15:00 AM	124.909	8:45:00 AM	114606
11/24/2020 0:00	81.566	12.614	4:30:00 AM	163.376	9:45:00 AM	117455
11/25/2020 0:00	79.584	13.303	3:45:00 AM	167.903	6:30:00 PM	114601
11/26/2020 0:00	91.693	13.013	6:00:00 AM	175.883	12:30:00 PM	132039
11/27/2020 0:00	79.251	14.268	3:15:00 AM	136.624	10:15:00 AM	114122
11/28/2020 0:00	77.673	14.288	6:00:00 AM	151.611	11:00:00 AM	111849
11/29/2020 0:00	78.356	13.055	5:45:00 AM	163.24	11:15:00 AM	112833
11/30/2020 0:00	100.591	12.934	4:45:00 AM	223.227	6:15:00 PM	144852
						109,391
12/1/2020 0:00	95.977	19.285	5:15:00 AM	157.826	9:00:00 AM	138207
12/2/2020 0:00	87.641	15.758	6:00:00 AM	143.587	8:15:00 AM	126202
12/3/2020 0:00	84.316	16.776	3:45:00 AM	141.067	8:45:00 PM	121415
12/4/2020 0:00	80.313	15.889	4:30:00 AM	127.336	9:45:00 AM	115651
12/5/2020 0:00	102.262	16.529	4:15:00 AM	167.116	12:30:00 PM	147258
12/6/2020 0:00	92.83	16.494	6:00:00 AM	153.304	12:45:00 PM	133675
12/7/2020 0:00	89.402	15.602	5:45:00 AM	148.586	8:15:00 PM	128739
12/8/2020 0:00	84.265	14.989	3:30:00 AM	149.931	9:15:00 AM	121341
12/9/2020 0:00	82.232	14.739	4:45:00 AM	161.6	9:30:00 AM	118414
12/10/2020 0:00	82.127	15.005	4:15:00 AM	135.982	8:30:00 PM	118263
12/11/2020 0:00	88.819	16.659	5:00:00 AM	149.407	6:30:00 PM	127900
12/12/2020 0:00	91.447	18.573	6:15:00 AM	155.502	1:15:00 PM	131683
12/13/2020 0:00	89.667	17.299	5:45:00 AM	141.754	11:45:00 AM	129121
12/14/2020 0:00	91.711	18.413	4:30:00 AM	150.888	7:45:00 PM	132064
12/15/2020 0:00	84.638	16.625	4:15:00 AM	155.897	9:15:00 AM	121879
12/16/2020 0:00	90.868	18.347	4:45:00 AM	151.564	9:30:00 AM	130850
12/17/2020 0:00	92.698	18.567	5:45:00 AM	153.093	7:45:00 PM	133486
12/18/2020 0:00	91.012	17.932	5:00:00 AM	163.222	9:00:00 AM	131058
12/19/2020 0:00	96.673	19.067	4:15:00 AM	154.153	11:30:00 AM	139209
12/20/2020 0:00	99.238	18.93	4:45:00 AM	164.413	1:00:00 PM	142903
12/21/2020 0:00	102.567	18.237	5:00:00 AM	156.328	7:30:00 PM	147696
12/22/2020 0:00	107.188	19.337	4:45:00 AM	174.398	9:15:00 AM	154350
12/23/2020 0:00	108.66	24.513	5:30:00 AM	173.594	9:00:00 AM	156471
12/24/2020 0:00	119.739	21.584	4:45:00 AM	213.149	12:00:00 AM	172424
12/25/2020 0:00	157.295	104.952	5:30:00 AM	258.964	12:45:00 AM	226505
12/26/2020 0:00	111.824	51.939	5:00:00 AM	183.679	11:30:00 AM	161026
12/27/2020 0:00	100.503	17.984	4:15:00 AM	166.954	12:30:00 PM	144725
12/28/2020 0:00	101.459	21.934	5:30:00 AM	159.962	11:15:00 AM	146101
12/29/2020 0:00	102.099	25.521	5:45:00 AM	165.652	9:15:00 AM	147022
12/30/2020 0:00	93.442	15.938	4:00:00 AM	158.203	10:30:00 AM	134557
12/31/2020 0:00	96.061	21.146	6:00:00 AM	153.697	12:15:00 PM	138328
						139,307

Site Name	Meter #2 HS-4	Meter #2 HS-4	Meter #2 HS-4			
Isco Quantity	Flow Rate	Flow Rate	Min/Max	Flow Rate	Min/Max	Volume
Label	Avg Flow Rate	Min Flow Rate	Min/Max	Max Flow Rate	Min/Max	Daily Total
Units	gpm	gpm	Date/Time	gpm	Date/Time	gal
Resolution	0.1	0.1	N/A	0.1	N/A	0.1
Significant Digits	0	0	N/A	0	N/A	0
2/1/2020 0:00	3.903	1.766	1:30:00 AM	12.299	9:30:00 PM	5620.89
2/2/2020 0:00	3.647	1.691	10:00:00 AM	8.482	10:45:00 PM	5251.47
2/3/2020 0:00	2.815	0.534	10:15:00 AM	7.264	1:15:00 AM	4053.73
2/4/2020 0:00	2.098	0.868	3:45:00 AM	9.523	9:30:00 AM	3020.67
2/5/2020 0:00	1.707	0.67	11:30:00 PM	6.422	9:45:00 AM	2457.64
2/6/2020 0:00	2.114	0.553	12:45:00 AM	5.786	5:30:00 PM	3044.73
2/7/2020 0:00	2.148	0.868	11:45:00 PM	4.767	5:00:00 AM	3093.61
2/8/2020 0:00	1.05	0.328	11:00:00 PM	4.816	4:45:00 PM	1512.44
2/9/2020 0:00	1.582	0.18	4:15:00 AM	6.338	12:00:00 PM	2277.78
2/10/2020 0:00	1.116	0.222	3:15:00 AM	4.012	9:00:00 PM	1607.61
2/11/2020 0:00	1.517	0.17	3:15:00 PM	5.982	7:45:00 PM	2184.31
2/12/2020 0:00	0.707	0.08	9:45:00 PM	3.994	7:45:00 AM	1017.73
2/13/2020 0:00	0.548	0.136	1:15:00 AM	2.351	7:45:00 AM	788.736
2/14/2020 0:00	0.492	0.096	3:45:00 AM	2.013	9:30:00 PM	709.096
2/15/2020 0:00	0.466	0.048	4:45:00 AM	2.139	9:30:00 AM	671.153
2/16/2020 0:00	0.919	0.166	11:30:00 AM	4.416	5:30:00 PM	1323.26
2/17/2020 0:00	0.843	0.151	10:30:00 PM	3.142	11:30:00 AM	1213.35
2/18/2020 0:00	0.731	0.098	1:45:00 AM	3.022	7:45:00 AM	1052.53
2/19/2020 0:00	0.897	0.177	9:45:00 AM	3.028	8:45:00 PM	1291.17
2/20/2020 0:00	0.8	0.161	2:45:00 AM	2.503	10:15:00 AM	1151.71
2/21/2020 0:00	0.712	0.16	4:45:00 AM	3.527	9:15:00 PM	1025.38
2/22/2020 0:00	0.923	0.273	2:45:00 AM	3.106	8:15:00 PM	1329.57
2/23/2020 0:00	1.256	0.271	6:15:00 AM	4.513	11:15:00 AM	1808.98
2/24/2020 0:00	1.43	0.183	2:45:00 PM	4.791	9:30:00 AM	2059.83
2/25/2020 0:00	1.194	0.337	4:15:00 AM	3.025	7:45:00 AM	1719.07
2/26/2020 0:00	1.263	0.381	4:15:00 PM	6.488	11:15:00 AM	1818.4
2/27/2020 0:00	1.113	0.278	4:00:00 AM	3.576	8:00:00 PM	1602.87
2/28/2020 0:00	1.237	0.371	3:15:00 AM	5.755	8:00:00 AM	1781.14
2/29/2020 0:00	0.837	0.238	3:15:00 AM	3.167	2:00:00 PM	1204.77
						1,989
3/1/2020 0:00	0.871	0.407	5:30:00 AM	2.19	7:00:00 PM	1254.63
3/2/2020 0:00	0.83	0.335	1:00:00 PM	3.082	8:15:00 AM	1195.81
3/3/2020 0:00	0.87	0.273	3:15:00 AM	3.499	8:30:00 PM	1252.18
3/4/2020 0:00	0.688	0.183	11:15:00 PM	3.567	7:45:00 AM	990.643
3/5/2020 0:00	0.506	0.097	4:15:00 AM	2.367	7:30:00 AM	728.213
3/6/2020 0:00	0.54	0.158	12:45:00 AM	2.082	6:30:00 AM	777.566
3/7/2020 0:00	0.639	0.162	5:15:00 AM	5.094	2:30:00 PM	920.79
3/8/2020 0:00	0.818	0.216	5:00:00 AM	2.97	11:45:00 AM	1178.05
3/9/2020 0:00	0.954	0.247	1:00:00 AM	4.211	6:45:00 PM	1373.43
3/10/2020 0:00	1.685	0.509	2:00:00 AM	6.319	8:00:00 PM	2425.93
3/11/2020 0:00	2.063	0.627	1:45:00 AM	6.109	6:45:00 AM	2970.38
3/12/2020 0:00	2.36	0.894	12:45:00 AM	5.896	7:45:00 PM	3397.85
3/13/2020 0:00	2.699	0.95	11:00:00 PM	9.755	6:45:00 AM	3887.16
3/14/2020 0:00	2	0.554	3:30:00 AM	5.084	12:15:00 PM	2880.42

3/15/2020 0:00	2.011	0.498	12:00:00 AM	9.808	10:30:00 AM	2895.77
3/16/2020 0:00	1.715	0.363	7:00:00 PM	5.886	6:15:00 PM	2470.01
3/17/2020 0:00	2.114	0.379	10:15:00 PM	8.081	10:45:00 AM	3043.64
3/18/2020 0:00	1.753	0.27	12:15:00 AM	9.863	8:30:00 PM	2524.93
3/19/2020 0:00	2.757	0.656	12:15:00 AM	9.945	6:00:00 PM	3969.54
3/20/2020 0:00	3.136	0.659	12:15:00 AM	11.543	6:00:00 PM	4516.56
3/21/2020 0:00	2.74	0.803	5:30:00 AM	14.882	12:45:00 PM	3945.2
3/22/2020 0:00	3.825	1.092	11:45:00 PM	14.634	9:30:00 AM	5508.11
3/23/2020 0:00	5.095	1.083	12:45:00 AM	15.286	6:30:00 PM	7337.13
3/24/2020 0:00	1.64	0.643	11:15:00 PM	4.151	5:45:00 PM	2361.92
3/25/2020 0:00	1.581	0.392	12:45:00 AM	9.926	6:45:00 PM	2276.96
3/26/2020 0:00	3.559	1.064	2:15:00 AM	15.51	6:45:00 PM	5124.26
3/27/2020 0:00	5.136	1.643	9:30:00 PM	13.704	5:00:00 PM	7396.44
3/28/2020 0:00	5.241	1.557	1:00:00 AM	13.937	1:15:00 PM	7546.58
3/29/2020 0:00	6.052	2.135	2:15:00 AM	16.354	1:30:00 PM	8714.16
3/30/2020 0:00	4.178	0.621	3:00:00 AM	10.829	6:45:00 AM	6015.84
3/31/2020 0:00	3.509	1.343	11:45:00 PM	12.624	10:30:00 AM	5053.62
						3,417
4/1/2020 0:00	3.374	1.335	12:45:00 AM	12.685	7:15:00 PM	4858.56
4/2/2020 0:00	4.747	2.249	11:00:00 PM	14.31	11:30:00 AM	6835.79
4/3/2020 0:00	5.047	1.986	4:30:00 AM	17.4	5:00:00 PM	7267.1
4/4/2020 0:00	4.566	2.549	5:00:00 PM	11.094	10:45:00 AM	6574.96
4/5/2020 0:00	5.225	2.767	3:15:00 PM	14.013	7:00:00 PM	7524.62
4/6/2020 0:00	5.215	-5.401	3:45:00 PM	14.031	7:00:00 AM	7509.85
4/7/2020 0:00	7.183	3.433	5:30:00 AM	16.876	9:45:00 AM	10344
4/8/2020 0:00	6.193	3.329	7:15:00 PM	13.92	9:30:00 PM	8917.89
4/9/2020 0:00	5.962	2.981	7:30:00 AM	20.134	5:45:00 PM	8585.67
4/10/2020 0:00	5.43	2.996	1:30:00 PM	13.265	7:30:00 AM	7819.3
4/11/2020 0:00	5.425	2.788	9:00:00 PM	14.343	6:30:00 PM	7812.46
4/12/2020 0:00	4.896	2.011	2:30:00 AM	12.457	7:00:00 PM	7050.43
4/13/2020 0:00	6.352	2.348	1:00:00 AM	15.42	4:15:00 PM	9146.26
4/14/2020 0:00	6.281	3.452	2:45:00 AM	12.373	7:45:00 PM	9044.17
4/15/2020 0:00	6.476	3.418	2:15:00 AM	11.729	7:45:00 PM	9325.08
4/16/2020 0:00	5.817	3.181	9:30:00 PM	12.101	5:45:00 PM	8376.93
4/17/2020 0:00	6.256	3.359	1:30:00 AM	18.048	7:45:00 PM	9008.24
4/18/2020 0:00	5.61	2.65	2:45:00 PM	11.728	7:00:00 PM	8079.11
4/19/2020 0:00	6.549	2.878	12:00:00 AM	13.476	4:45:00 PM	9429.98
4/20/2020 0:00	5.671	2.579	4:30:00 AM	38.565	6:30:00 PM	8165.66
4/21/2020 0:00	6.004	2.093	12:00:00 AM	15.824	5:45:00 PM	8645.14
4/22/2020 0:00	5.057	1.542	3:00:00 AM	16.158	6:45:00 PM	7281.84
4/23/2020 0:00	5.461	2.296	4:15:00 AM	11.873	2:30:00 PM	7864.16
4/24/2020 0:00	6.025	2.89	11:45:00 PM	14.171	8:30:00 AM	8676.04
4/25/2020 0:00	4.66	2.635	2:30:00 AM	10.083	9:15:00 AM	6709.84
4/26/2020 0:00	4.345	2.342	12:00:00 AM	10.3	10:00:00 AM	6257.27
4/27/2020 0:00	4.473	2.091	1:00:00 AM	11.133	6:45:00 AM	6441.76
4/28/2020 0:00	4.017	1.775	2:30:00 AM	10.225	5:30:00 PM	5784.5
4/29/2020 0:00	3.872	1.824	1:00:00 AM	11.739	6:00:00 PM	5575.09
4/30/2020 0:00	4.55	2.234	10:15:00 PM	9.588	4:00:00 PM	6552.34
						7,715
5/1/2020 0:00	5.181	-3.989	6:45:00 PM	15.615	1:45:00 PM	7460.86
5/2/2020 0:00	6.662	3.27	11:00:00 PM	17.235	2:30:00 PM	9593.07
5/3/2020 0:00	6.426	2.801	4:15:00 AM	22.277	1:00:00 PM	9253.47

5/4/2020 0:00	5.589	2.723	1:30:00 AM	13.546	10:00:00 AM	8048.17
5/5/2020 0:00	6.86	3.105	3:30:00 AM	26.194	7:30:00 PM	9877.68
5/6/2020 0:00	4.581	2.334	8:00:00 PM	9.158	7:45:00 PM	6596.19
5/7/2020 0:00	5.036	2.068	11:30:00 PM	14.849	10:00:00 PM	7252.27
5/8/2020 0:00	5.021	1.96	2:45:00 AM	16.874	12:15:00 AM	7230.39
5/9/2020 0:00	4.704	1.54	12:15:00 AM	10.437	9:00:00 AM	6773.82
5/10/2020 0:00	6.352	-6.286	6:30:00 AM	19.729	1:15:00 PM	9146.97
5/11/2020 0:00	5.485	2.266	11:00:00 PM	14.355	12:15:00 PM	7899.09
5/12/2020 0:00	3.703	1.667	1:30:00 AM	8.508	8:30:00 PM	5331.87
5/13/2020 0:00	4.06	1.877	4:15:00 AM	10.565	7:45:00 PM	5846.52
5/14/2020 0:00	4.601	2.175	1:30:00 AM	9.545	10:30:00 AM	6625.15
5/15/2020 0:00	5.155	2.772	1:30:00 AM	11.763	8:45:00 PM	7423.79
5/16/2020 0:00	5.117	2.321	12:45:00 AM	11.366	11:15:00 AM	7367.95
5/17/2020 0:00	4.766	0.833	12:00:00 AM	9.284	11:45:00 AM	6863.75
5/18/2020 0:00	3.956	0.433	2:00:00 AM	9.064	7:45:00 PM	5697.13
5/19/2020 0:00	4.319	1.326	10:30:00 PM	12.149	7:45:00 AM	6218.95
5/20/2020 0:00	2.546	1.087	11:00:00 AM	5.323	7:45:00 AM	3666.71
5/21/2020 0:00	3.413	0.766	2:00:00 AM	10.579	7:30:00 PM	4914.14
5/22/2020 0:00	4.861	1.639	3:30:00 AM	8.819	6:15:00 PM	7000.5
5/23/2020 0:00	5.001	2.279	12:30:00 PM	11.044	2:15:00 PM	7200.91
5/24/2020 0:00	4.492	1.786	3:45:00 AM	10.812	5:45:00 PM	6468.45
5/25/2020 0:00	4.796	1.848	2:00:00 AM	9.504	8:00:00 PM	6906.21
5/26/2020 0:00	4.711	1.353	7:15:00 PM	10.829	7:45:00 AM	6783.89
5/27/2020 0:00	4.108	1.581	2:00:00 AM	9.827	7:45:00 PM	5915.96
5/28/2020 0:00	4.343	2.47	11:30:00 PM	8.329	8:30:00 PM	6253.2
5/29/2020 0:00	4.191	1.85	1:00:00 AM	9.72	8:45:00 PM	6035.22
5/30/2020 0:00	4.298	1.835	6:15:00 PM	9.418	5:45:00 PM	6189.75
5/31/2020 0:00	4.197	1.981	2:45:00 AM	9.713	9:00:00 PM	6043.68
						6,900
6/1/2020 0:00	5.065	1.736	11:45:00 PM	10.318	10:15:00 AM	7293.26
6/2/2020 0:00	4.89	1.641	2:15:00 AM	11.207	7:00:00 PM	7041.71
6/3/2020 0:00	5.003	2.093	12:00:00 AM	11.103	10:45:00 AM	7204.06
6/4/2020 0:00	4.333	1.474	2:15:00 AM	12.843	9:00:00 PM	6239.31
6/5/2020 0:00	4.743	1.786	2:30:00 AM	11.727	4:00:00 PM	6830.08
6/6/2020 0:00	4.353	1.825	1:45:00 AM	11.774	10:30:00 AM	6268.03
6/7/2020 0:00	3.905	1.992	11:45:00 PM	9.123	12:15:00 PM	5622.5
6/8/2020 0:00	4.459	1.619	4:15:00 AM	9.476	8:00:00 PM	6420.76
6/9/2020 0:00	4.77	2.16	1:45:00 AM	14.884	7:45:00 AM	6869.09
6/10/2020 0:00	4.622	2.08	3:15:00 AM	8.613	7:45:00 AM	6656.16
6/11/2020 0:00	3.927	1.404	3:45:00 AM	8.883	10:00:00 AM	5655.29
6/12/2020 0:00	4.071	1.681	6:15:00 AM	15.609	7:45:00 PM	5861.76
6/13/2020 0:00	5.348	-6.326	2:00:00 PM	15.14	2:45:00 PM	7701.54
6/14/2020 0:00	4.628	1.242	4:15:00 AM	13.821	9:00:00 PM	6664.03
6/15/2020 0:00	4.948	1.181	11:15:00 PM	14.536	11:45:00 AM	7125.32
6/16/2020 0:00	4.734	1.304	1:00:00 AM	13.067	6:30:00 PM	6817.05
6/17/2020 0:00	4.253	-15.264	4:15:00 PM	19.556	6:15:00 AM	6123.67
6/18/2020 0:00	4.04	0.921	12:30:00 AM	11.251	9:15:00 PM	5817.35
6/19/2020 0:00	4.707	2.055	2:30:00 AM	16.913	10:00:00 AM	6777.42
6/20/2020 0:00	5.099	2.571	8:15:00 AM	11.724	10:00:00 AM	7342.39
6/21/2020 0:00	3.686	1.475	11:30:00 PM	8.068	8:00:00 PM	5308.47
6/22/2020 0:00	3.906	1.595	2:45:00 AM	9.93	9:30:00 PM	5625.34
6/23/2020 0:00	4.381	1.351	11:30:00 PM	9.866	8:30:00 AM	6308.67

6/24/2020 0:00	4.425	1.506	1:30:00 AM	10.951	9:00:00 PM	6372.4
6/25/2020 0:00	3.666	0.713	12:00:00 AM	8.131	8:15:00 PM	5279.41
6/26/2020 0:00	3.02	0.999	12:30:00 AM	8.311	9:45:00 PM	4348.99
6/27/2020 0:00	4.179	1.476	4:45:00 AM	9.785	10:30:00 PM	6017.39
6/28/2020 0:00	3.692	0.781	12:00:00 AM	8.22	10:45:00 AM	5316.56
6/29/2020 0:00	2.258	-7.818	7:00:00 PM	7.488	8:00:00 PM	3251
6/30/2020 0:00	3.132	0.675	1:30:00 AM	13.49	8:30:00 PM	4509.79
						6,156
7/1/2020 0:00	3.937	-9.231	8:30:00 PM	8.683	6:30:00 PM	5669.61
7/2/2020 0:00	4.394	1.53	11:45:00 PM	7.393	9:00:00 PM	6326.68
7/3/2020 0:00	4.653	1.841	10:15:00 PM	10.525	9:00:00 PM	6699.87
7/4/2020 0:00	4.36	1.662	2:30:00 AM	11.513	12:45:00 PM	6278.03
7/5/2020 0:00	3.695	-20.926	3:45:00 PM	9.392	12:45:00 PM	5320.94
7/6/2020 0:00	4.407	2.151	1:15:00 AM	10.403	8:30:00 PM	6346.27
7/7/2020 0:00	4.413	1.515	11:45:00 PM	9.884	8:00:00 AM	6354.98
7/8/2020 0:00	3.27	-12.52	8:00:00 PM	6.473	6:00:00 AM	4709.37
7/9/2020 0:00	1.52	-13.392	10:30:00 AM	6.918	9:45:00 AM	2188.22
7/10/2020 0:00	6.025	-6.42	9:45:00 AM	24.2	1:30:00 PM	8675.36
7/11/2020 0:00	6.719	3.074	9:45:00 AM	18.451	12:30:00 PM	9674.87
7/12/2020 0:00	5.926	2.426	6:30:00 AM	19.65	1:45:00 PM	8534.15
7/13/2020 0:00	4.219	1.822	2:30:00 AM	10.028	7:30:00 PM	6075.3
7/14/2020 0:00	4.568	1.741	1:45:00 AM	12.422	8:00:00 PM	6577.92
7/15/2020 0:00	4.593	1.486	11:45:00 PM	11.935	8:30:00 PM	6614.32
7/16/2020 0:00	3.934	1.109	1:30:00 AM	8.05	8:45:00 PM	5665.45
7/17/2020 0:00	3.912	1.214	11:30:00 PM	9.478	7:45:00 AM	5633.05
7/18/2020 0:00	4.164	1.09	3:00:00 AM	11.167	11:45:00 AM	5996
7/19/2020 0:00	5.058	2.335	2:45:00 AM	18.583	8:15:00 PM	7283.69
7/20/2020 0:00	5.553	1.804	4:30:00 PM	17.842	7:45:00 PM	7996.61
7/21/2020 0:00	4.029	1.891	5:15:00 AM	12.444	9:00:00 PM	5801.27
7/22/2020 0:00	4.998	1.589	11:45:00 PM	14.908	8:00:00 AM	7197
7/23/2020 0:00	3.98	1.27	5:15:00 AM	18.531	7:15:00 PM	5731.3
7/24/2020 0:00	3.676	0.778	3:45:00 AM	15.964	9:00:00 PM	5293.53
7/25/2020 0:00	5.466	2.24	3:30:00 PM	11.957	5:15:00 PM	7870.58
7/26/2020 0:00	5.262	2.43	2:30:00 AM	14.307	7:45:00 PM	7577.3
7/27/2020 0:00	4.845	-8.716	10:30:00 PM	12.063	7:45:00 AM	6976.39
7/28/2020 0:00	3.312	-18.412	8:45:00 PM	7.519	8:00:00 AM	4769.03
7/29/2020 0:00	3.201	-12.715	7:45:00 AM	7.614	9:00:00 PM	4609.7
7/30/2020 0:00	3.623	1.446	2:30:00 AM	6.963	7:15:00 PM	5217.33
7/31/2020 0:00	3.307	1.137	1:30:00 AM	9.001	6:45:00 AM	4761.96
						6,272
8/1/2020 0:00	3.26	1.506	2:15:00 AM	7.719	5:15:00 PM	4695.03
8/2/2020 0:00	3.611	0.486	12:00:00 AM	12.037	8:45:00 PM	5200.29
8/3/2020 0:00	3.88	1.362	2:45:00 AM	11.92	11:00:00 AM	5587.54
8/4/2020 0:00	5.18	-2.543	10:30:00 AM	18.326	11:00:00 AM	7459.2
8/5/2020 0:00	5.92	2.171	7:15:00 AM	13.111	8:00:00 PM	8524.16
8/6/2020 0:00	4.744	1.131	11:15:00 PM	14.235	8:00:00 PM	6830.94
8/7/2020 0:00	3.35	0.935	2:00:00 AM	14.997	6:00:00 PM	4823.87
8/8/2020 0:00	4.218	1.681	1:30:00 AM	9.546	9:15:00 AM	6073.59
8/9/2020 0:00	4.716	1.802	9:00:00 AM	13.611	1:00:00 PM	6790.81
8/10/2020 0:00	4.351	2.476	8:00:00 PM	11.768	7:45:00 AM	6264.91
8/11/2020 0:00	4.463	1.751	9:45:00 PM	14.637	2:15:00 PM	6426.34
8/12/2020 0:00	5.297	1.147	1:30:00 AM	10.797	8:15:00 AM	7628.13

8/13/2020 0:00	5.407	3.632	11:45:00 AM	10.59	7:45:00 AM	7785.64
8/14/2020 0:00	5.903	3.534	2:00:00 PM	12.449	3:15:00 PM	8500.36
8/15/2020 0:00	6.487	4.24	8:15:00 AM	11.575	11:15:00 AM	9340.74
8/16/2020 0:00	5.894	2.668	2:15:00 AM	17.519	7:45:00 PM	8487.59
8/17/2020 0:00	6.374	3.052	12:45:00 AM	16.161	6:15:00 PM	9178.49
8/18/2020 0:00	4.866	1.853	3:15:00 AM	10.635	8:00:00 PM	7007.18
8/19/2020 0:00	5.953	2.696	2:45:00 AM	10.862	11:00:00 PM	8572.57
8/20/2020 0:00	5.616	3.142	3:15:00 AM	11.468	7:45:00 AM	8086.53
8/21/2020 0:00	6.096	3.01	1:45:00 AM	12.68	10:45:00 AM	8777.58
8/22/2020 0:00	5.556	2.529	12:00:00 AM	10.309	8:45:00 PM	8000.39
8/23/2020 0:00	4.922	2.215	4:45:00 AM	10.548	9:15:00 AM	7087.01
8/24/2020 0:00	4.604	1.781	1:30:00 AM	9.421	9:45:00 PM	6630.15
8/25/2020 0:00	4.72	1.838	1:30:00 AM	8.212	8:15:00 PM	6796.77
8/26/2020 0:00	3.22	1.391	4:00:00 PM	13.008	7:45:00 PM	4636.19
8/27/2020 0:00	4.216	1.724	9:00:00 AM	7.59	4:00:00 PM	6071.72
8/28/2020 0:00	4.449	2.696	3:15:00 AM	10.868	5:00:00 PM	6407.14
8/29/2020 0:00	4.131	2.345	8:15:00 AM	10.233	11:45:00 AM	5948.44
8/30/2020 0:00	3.407	1.701	4:45:00 AM	6.14	6:00:00 PM	4906.36
8/31/2020 0:00	3.491	1.54	1:00:00 AM	6.407	7:45:00 AM	5027.62
						6,889
9/1/2020 0:00	3.075	1.496	10:45:00 PM	5.936	9:15:00 AM	4427.88
9/2/2020 0:00	2.883	1.08	4:45:00 AM	7.357	4:30:00 PM	4152.16
9/3/2020 0:00	3.664	1.725	9:45:00 PM	20.502	8:30:00 PM	5275.64
9/4/2020 0:00	3.615	0.934	11:00:00 PM	10.307	8:45:00 AM	5205.21
9/5/2020 0:00	3.106	0.754	5:30:00 AM	16.623	2:00:00 PM	4473.34
9/6/2020 0:00	4.683	3.015	3:15:00 PM	8.134	6:00:00 AM	6743.65
9/7/2020 0:00	4.115	2.349	10:45:00 PM	7.39	8:30:00 PM	5924.96
9/8/2020 0:00	3.674	0.912	4:15:00 AM	6.606	10:30:00 PM	5290.36
9/9/2020 0:00	4.147	1.887	12:00:00 AM	14.368	7:45:00 AM	5971.29
9/10/2020 0:00	4.302	1.64	4:45:00 AM	14.483	7:30:00 PM	6194.7
9/11/2020 0:00	3.912	0.845	5:15:00 AM	10.072	7:45:00 AM	5633.02
9/12/2020 0:00	4.691	2.041	2:30:00 AM	11.869	4:30:00 PM	6755.42
9/13/2020 0:00	4.612	1.141	10:30:00 PM	10.234	4:15:00 PM	6641.85
9/14/2020 0:00	3.806	0.912	2:15:00 AM	13.927	10:30:00 AM	5481.31
9/15/2020 0:00	3.175	1.125	3:15:00 PM	7.914	7:30:00 AM	4572.7
9/16/2020 0:00	3.54	1.424	11:30:00 PM	12.372	7:30:00 PM	5097.34
9/17/2020 0:00	3.777	1.202	1:45:00 AM	17.297	7:30:00 AM	5438.24
9/18/2020 0:00	3.663	1.658	12:45:00 AM	9.785	6:15:00 AM	5274.91
9/19/2020 0:00	3.458	1.524	2:15:00 PM	13.019	10:30:00 AM	4979.54
9/20/2020 0:00	3.805	1.524	2:30:00 AM	12.268	9:15:00 AM	5479.73
9/21/2020 0:00	4.201	-4.521	6:30:00 PM	14.105	7:45:00 AM	6049.23
9/22/2020 0:00	4.54	2.183	4:00:00 PM	13.864	6:15:00 AM	6537.95
9/23/2020 0:00	4.003	-4.959	12:00:00 AM	10.262	7:30:00 AM	5764.09
9/24/2020 0:00	1.464	-4.047	12:30:00 AM	5.944	1:30:00 AM	2107.54
9/25/2020 0:00	3.363	0.448	12:15:00 AM	9.733	6:45:00 PM	4842.66
9/26/2020 0:00	3.294	0.966	2:15:00 AM	8.771	12:45:00 PM	4743.24
9/27/2020 0:00	4.135	1.89	2:15:00 AM	10.001	9:15:00 AM	5953.69
9/28/2020 0:00	3.674	1.3	11:30:00 AM	17.213	10:30:00 AM	5290.15
9/29/2020 0:00	3.194	1.17	10:15:00 AM	5.937	7:15:00 PM	4599.8
9/30/2020 0:00	3.809	1.102	6:45:00 AM	13.171	7:15:00 PM	5484.7
						5,346
10/1/2020 0:00	4.35	1.046	2:15:00 AM	11.782	5:45:00 PM	6264.69

10/2/2020 0:00	4.417	1.864	10:00:00 PM	15.283	9:30:00 AM	6360.54
10/3/2020 0:00	3.896	1.289	1:45:00 AM	11.175	2:15:00 PM	5610.19
10/4/2020 0:00	2.175	-21.657	11:00:00 AM	13.296	8:30:00 PM	3131.96
10/5/2020 0:00	4.338	-14.24	5:45:00 AM	19.398	7:45:00 AM	6246.55
10/6/2020 0:00	3.682	1.219	12:15:00 AM	13.684	7:45:00 AM	5302.54
10/7/2020 0:00	3.536	1.22	10:45:00 AM	9.446	7:30:00 AM	5092.17
10/8/2020 0:00	3.348	-14.111	7:30:00 AM	10.562	7:00:00 PM	4821.33
10/9/2020 0:00	4.011	1.774	2:15:00 AM	15.888	8:00:00 AM	5775.24
10/10/2020 0:00	3.07	1.627	3:15:00 PM	6.699	11:00:00 AM	4420.58
10/11/2020 0:00	2.988	1.44	5:45:00 AM	7.112	11:15:00 AM	4303.15
10/12/2020 0:00	3.562	1.52	3:00:00 PM	7.112	8:00:00 PM	5129.25
10/13/2020 0:00	3.467	1.563	11:45:00 PM	8.652	7:45:00 PM	4992.76
10/14/2020 0:00	3.252	1.242	1:00:00 AM	7.396	7:30:00 PM	4683.25
10/15/2020 0:00	2.529	1.389	3:00:00 PM	4.292	12:15:00 PM	3641.66
10/16/2020 0:00	3.071	1.642	1:30:00 AM	6.175	8:30:00 PM	4422.19
10/17/2020 0:00	2.957	1.006	5:15:00 AM	7.243	8:45:00 AM	4257.46
10/18/2020 0:00	4.514	1.909	2:30:00 AM	10.122	11:00:00 AM	6500.62
10/19/2020 0:00	3.636	1.324	4:00:00 AM	8.397	6:45:00 PM	5235.41
10/20/2020 0:00	4.927	1.751	1:30:00 AM	17.532	7:30:00 AM	7094.92
10/21/2020 0:00	4.694	1.922	5:15:00 PM	11.093	8:45:00 PM	6759.62
10/22/2020 0:00	4.936	2.393	3:00:00 AM	9.827	9:15:00 AM	7107.8
10/23/2020 0:00	5.28	2.086	11:30:00 AM	9.099	2:45:00 PM	7602.55
10/24/2020 0:00	5.609	2.908	5:45:00 AM	10.289	8:30:00 PM	8076.88
10/25/2020 0:00	4.294	1.783	4:45:00 AM	12.62	4:00:00 PM	6183.23
10/26/2020 0:00	4.292	1.925	12:45:00 AM	9.964	7:45:00 AM	6180.75
10/27/2020 0:00	3.673	0.75	8:45:00 PM	8.886	10:15:00 AM	5289.75
10/28/2020 0:00	2.742	0.635	12:45:00 AM	9.376	11:30:00 AM	3948.35
10/29/2020 0:00	3.741	1.05	4:45:00 AM	9.685	11:45:00 PM	5387.45
10/30/2020 0:00	2.883	1.065	1:15:00 AM	6.711	8:30:00 PM	4151.05
10/31/2020 0:00	3.498	1.306	3:15:00 AM	7.496	10:00:00 PM	5036.97
						5,452
11/1/2020 0:00	4.338	1.616	11:15:00 AM	11.334	7:30:00 PM	6246.29
11/2/2020 0:00	3.877	2.364	1:45:00 AM	7.935	8:30:00 AM	5582.82
11/3/2020 0:00	4.018	1.77	12:00:00 PM	7.192	9:45:00 PM	5785.54
11/4/2020 0:00	3.118	1.392	3:45:00 AM	9.327	7:45:00 PM	4490.6
11/5/2020 0:00	3.66	1.555	2:15:00 AM	9.957	6:45:00 PM	5270.71
11/6/2020 0:00	3.78	1.728	11:30:00 PM	8.534	7:15:00 PM	5443.43
11/7/2020 0:00	3.65	1.752	2:30:00 AM	8.58	7:00:00 PM	5256.31
11/8/2020 0:00	3.656	1.555	2:30:00 AM	9.654	11:30:00 AM	5265.16
11/9/2020 0:00	3.713	1.588	10:15:00 PM	9.181	9:15:00 AM	5346.74
11/10/2020 0:00	3.624	1.303	3:30:00 AM	8.861	7:00:00 PM	5217.92
11/11/2020 0:00	3.947	2.066	3:00:00 AM	7.699	11:45:00 AM	5683.61
11/12/2020 0:00	3.434	-13.476	9:45:00 AM	8.435	9:00:00 AM	4945.31
11/13/2020 0:00	4.231	-14.158	1:15:00 PM	8.693	8:45:00 AM	6093.1
11/14/2020 0:00	4.523	2.164	5:00:00 AM	9.404	8:30:00 PM	6512.81
11/15/2020 0:00	3.715	-15.595	2:45:00 PM	8.634	9:15:00 PM	5350.13
11/16/2020 0:00	4.033	2.104	4:30:00 AM	7.696	8:15:00 PM	5807.52
11/17/2020 0:00	2.992	1.471	2:30:00 PM	6.47	6:00:00 AM	4308.9
11/18/2020 0:00	3.748	1.843	5:15:00 AM	12.779	9:00:00 PM	5396.96
11/19/2020 0:00	3.429	1.116	7:30:00 AM	8.969	8:45:00 AM	4937.22
11/20/2020 0:00	4.057	1.81	4:30:00 PM	10.672	6:30:00 PM	5841.55
11/21/2020 0:00	3.868	1.69	10:30:00 PM	8.528	4:15:00 PM	5570.24

11/22/2020 0:00	4.267	1.777	6:15:00 AM	11.863	6:00:00 PM	6144.22
11/23/2020 0:00	4.958	2.422	10:00:00 PM	11.883	11:15:00 AM	7140.15
11/24/2020 0:00	3.948	1.606	2:45:00 AM	10.16	7:15:00 PM	5685.3
11/25/2020 0:00	5.12	2.818	1:45:00 AM	11.975	9:15:00 PM	7372.46
11/26/2020 0:00	4.223	2.212	2:30:00 AM	10.36	8:00:00 PM	6081.06
11/27/2020 0:00	4.248	1.67	11:45:00 PM	12.204	2:15:00 PM	6116.79
11/28/2020 0:00	4.615	1.554	3:00:00 AM	10.384	12:00:00 PM	6645.5
11/29/2020 0:00	5.814	2.71	3:30:00 AM	10.57	8:00:00 PM	8372.78
11/30/2020 0:00	6.106	2.643	4:15:00 AM	13.109	10:30:00 PM	8793.05
						5,890
12/1/2020 0:00	5.038	3.059	4:30:00 AM	8.864	8:30:00 PM	7255.35
12/2/2020 0:00	5.557	1.914	12:00:00 AM	22.019	8:45:00 PM	8001.99
12/3/2020 0:00	3.858	1.167	3:00:00 AM	9.247	8:30:00 AM	5556.1
12/4/2020 0:00	3.442	0.776	3:30:00 AM	12.084	8:45:00 PM	4957.02
12/5/2020 0:00	5.218	2.38	6:45:00 PM	19.354	1:00:00 PM	7514.37
12/6/2020 0:00	1.85	-11.69	10:00:00 PM	16.38	1:30:00 PM	2664
12/7/2020 0:00	4.246	-13.999	9:15:00 PM	17.28	9:00:00 PM	6113.67
12/8/2020 0:00	3.681	1.288	4:45:00 PM	14.632	8:30:00 AM	5301.08
12/9/2020 0:00	4.994	3.113	3:30:00 AM	12.715	8:00:00 PM	7190.66
12/10/2020 0:00	5.855	3.899	5:00:00 AM	14.329	9:15:00 PM	8431.28
12/11/2020 0:00	4.907	2.534	8:30:00 AM	7.308	10:30:00 AM	7066.67
12/12/2020 0:00	5.465	2.779	4:30:00 AM	12.05	12:15:00 PM	7870.19
12/13/2020 0:00	5.704	1.99	11:45:00 PM	22.522	12:30:00 PM	8213.05
12/14/2020 0:00	4.48	1.824	1:45:00 AM	18.769	12:00:00 PM	6451
12/15/2020 0:00	3.687	1.656	4:30:00 AM	11.71	10:15:00 PM	5309.93
12/16/2020 0:00	4.267	1.57	2:45:00 AM	11.896	8:30:00 AM	6144.97
12/17/2020 0:00	5.166	2.44	3:30:00 AM	16.559	6:30:00 PM	7438.66
12/18/2020 0:00	4.846	2.472	2:00:00 AM	10.469	11:30:00 AM	6977.8
12/19/2020 0:00	4.666	2.748	12:15:00 AM	13.596	10:00:00 AM	6718.86
12/20/2020 0:00	4.087	1.06	7:30:00 PM	12.185	1:00:00 PM	5885.86
12/21/2020 0:00	2.701	0.625	4:00:00 PM	11.999	9:30:00 AM	3888.79
12/22/2020 0:00	3.973	1.762	4:45:00 AM	10.847	8:00:00 PM	5720.82
12/23/2020 0:00	4.526	2.336	5:45:00 AM	9.505	10:00:00 PM	6517.63
12/24/2020 0:00	7.599	3.678	3:30:00 PM	12.848	12:15:00 PM	10942.1
12/25/2020 0:00	9.353	5.502	6:00:00 AM	15.827	3:15:00 PM	13468.4
12/26/2020 0:00	9.313	2.733	9:30:00 AM	19.939	3:30:00 PM	13410.2
12/27/2020 0:00	7.061	2.691	6:00:00 PM	20.654	2:00:00 PM	10167.6
12/28/2020 0:00	6.239	3.103	9:30:00 PM	18.289	11:45:00 AM	8984.83
12/29/2020 0:00	3.79	1.631	2:45:00 AM	14.018	8:45:00 AM	5457.86
12/30/2020 0:00	4.244	1.876	2:15:00 AM	9.198	12:30:00 AM	6111.48
12/31/2020 0:00	4.312	1.888	4:45:00 AM	16.368	6:15:00 PM	6208.62
						7,159

Site Name	Meter #3 BE-33	Meter #3 BE-33	Meter #3 BE-33				
Isco Quantity	Flow Rate	Flow Rate	Min/Max	Flow Rate	Min/Max	Volume	
Label	Avg Flow Rate	Min Flow Rate	Min/Max	Max Flow Rate	Min/Max	Daily Total	
Units	gpm	gpm	Date/Time	gpm	Date/Time	gal	
Resolution	0.1	0.1	N/A	0.1	N/A	0.1	
Significant Digits	0	0	N/A	0	N/A	0	
2/1/2020 0:00	0	0	12:00:00 AM	0	12:00:00 AM	0	
2/2/2020 0:00	0	0	12:00:00 AM	0	12:00:00 AM	0	
2/3/2020 0:00	0	0	12:00:00 AM	0	12:00:00 AM	0	
2/4/2020 0:00	0	0	12:00:00 AM	0	12:00:00 AM	0	
2/5/2020 0:00	0	0	12:00:00 AM	0	12:00:00 AM	0	
2/6/2020 0:00	0	0	12:00:00 AM	0	12:00:00 AM	0	
2/7/2020 0:00	0.003	0	12:00:00 AM	0.187	2:15:00 PM	4.644	
2/8/2020 0:00	0	0	12:00:00 AM	0	12:00:00 AM	0	
2/9/2020 0:00	0	0	12:00:00 AM	0	12:00:00 AM	0	
2/10/2020 0:00	0	0	12:00:00 AM	0	12:00:00 AM	0	
2/11/2020 0:00	0	0	12:00:00 AM	0	12:00:00 AM	0	
2/12/2020 0:00	0	0	12:00:00 AM	0	12:00:00 AM	0	
2/13/2020 0:00	0	0	12:00:00 AM	0	12:00:00 AM	0	
2/14/2020 0:00	0	0	12:00:00 AM	0	12:00:00 AM	0	
2/15/2020 0:00	5.597	0	3:00:00 AM	17.273	12:30:00 PM	8060.17	
2/16/2020 0:00	2.504	0.388	8:15:00 AM	6.677	12:45:00 PM	3605.55	
2/17/2020 0:00	1.075	0.136	7:15:00 PM	2.66	9:30:00 AM	1548.23	
2/18/2020 0:00	0.373	0.031	12:00:00 AM	0.911	11:00:00 AM	537.54	
2/19/2020 0:00	0.029	0.017	9:30:00 PM	0.057	2:15:00 AM	41.638	
2/20/2020 0:00	0.14	0.028	12:15:00 AM	0.283	6:15:00 PM	201.21	
2/21/2020 0:00	0.158	0.057	8:15:00 AM	0.285	1:30:00 PM	227.196	
2/22/2020 0:00	0.174	0.09	9:15:00 PM	0.309	11:15:00 AM	250.798	
2/23/2020 0:00	0.144	0.058	11:30:00 PM	0.389	10:15:00 AM	207.254	
2/24/2020 0:00	5.874	0	10:45:00 AM	24.969	4:30:00 PM	8458.13	start monitoring flows
2/25/2020 0:00	10.923	1.159	4:00:00 AM	39.358	9:15:00 PM	15729.2	
2/26/2020 0:00	14.199	1.674	4:30:00 AM	33.123	5:45:00 PM	20446.3	
2/27/2020 0:00	12.845	-5.375	4:15:00 PM	44.242	6:30:00 AM	18496.2	
2/28/2020 0:00	13.103	1.02	4:15:00 AM	45.075	8:15:00 AM	18867.9	
2/29/2020 0:00	18.492	1.109	2:15:00 AM	52.106	4:15:00 PM	26628.2	
						20,034	
3/1/2020 0:00	17.992	1.709	4:15:00 AM	34.165	8:15:00 AM	25909.1	
3/2/2020 0:00	14.928	1.402	3:45:00 AM	39.429	8:45:00 AM	21495.6	
3/3/2020 0:00	14.336	1.659	3:00:00 AM	37.909	8:15:00 PM	20644.5	
3/4/2020 0:00	11.76	1.328	4:30:00 AM	41.827	6:45:00 AM	16934.6	
3/5/2020 0:00	10.071	2.06	3:45:00 AM	28.903	9:15:00 PM	14502.9	
3/6/2020 0:00	11.42	2.048	4:00:00 AM	24.176	7:45:00 AM	16444.2	
3/7/2020 0:00	10.152	1.226	5:30:00 AM	31.637	5:30:00 PM	14618.8	
3/8/2020 0:00	9.522	1.357	5:45:00 AM	23.117	9:00:00 PM	13712.3	
3/9/2020 0:00	9.582	1.665	2:45:00 AM	30.561	6:45:00 PM	13797.7	
3/10/2020 0:00	8.431	1.44	3:15:00 AM	21.614	7:15:00 AM	12141.1	
3/11/2020 0:00	8.065	1.083	2:00:00 AM	19.414	6:00:00 PM	11613.8	
3/12/2020 0:00	7.071	0.529	3:45:00 AM	20.609	7:30:00 PM	10182	
3/13/2020 0:00	8.032	0.701	2:45:00 AM	18.498	7:45:00 AM	11566.4	
3/14/2020 0:00	8.333	1.019	4:30:00 AM	19.074	11:00:00 AM	11999.2	
3/15/2020 0:00	10.21	1.423	5:00:00 AM	27.07	7:15:00 PM	14701.7	
3/16/2020 0:00	13.13	1.559	2:45:00 AM	33.359	9:30:00 AM	18907.8	
3/17/2020 0:00	13.856	2.383	3:15:00 AM	34.392	11:45:00 AM	19952.8	
3/18/2020 0:00	12.068	2.73	4:45:00 AM	25.201	8:00:00 PM	17377.9	
3/19/2020 0:00	13.966	5.618	11:30:00 PM	30.797	2:45:00 PM	20110.6	
3/20/2020 0:00	12.886	1.822	3:00:00 AM	31.595	6:30:00 PM	18555.7	
3/21/2020 0:00	12.057	2.57	4:15:00 AM	25.267	12:00:00 PM	17361.9	
3/22/2020 0:00	9.053	1.263	3:45:00 AM	19.847	6:00:00 PM	13036.3	
3/23/2020 0:00	11.809	1.372	3:45:00 AM	22.12	7:15:00 PM	17005.1	
3/24/2020 0:00	10.055	1.438	3:15:00 AM	20.113	7:00:00 PM	14478.9	
3/25/2020 0:00	11.274	1.651	3:00:00 AM	22.166	5:45:00 PM	16234.1	
3/26/2020 0:00	10.914	1.085	4:15:00 AM	19.82	7:45:00 PM	15715.9	
3/27/2020 0:00	10.643	1.71	5:00:00 AM	21.919	12:15:00 PM	15325.8	
3/28/2020 0:00	11.012	1.498	5:15:00 AM	25.616	3:15:00 PM	15857	
3/29/2020 0:00	11.27	3.046	4:30:00 AM	31.246	12:15:00 PM	16229.5	
3/30/2020 0:00	11.245	1.439	4:00:00 AM	27.971	6:30:00 PM	16193.4	
3/31/2020 0:00	11.391	3.35	11:45:00 PM	24.158	11:00:00 AM	16403.3	
						16,097	
4/1/2020 0:00	11.845	1.803	4:00:00 AM	24.253	6:15:00 PM	17056.8	
4/2/2020 0:00	11.363	2.441	3:30:00 AM	22.266	8:15:00 AM	16362.5	
4/3/2020 0:00	10.48	2.059	6:00:00 AM	21.642	8:30:00 AM	15091.1	

4/4/2020 0:00	9.969	1.38	5:00:00 AM	25.965	6:45:00 PM	14354.9
4/5/2020 0:00	12.442	1.216	4:00:00 AM	27.853	8:15:00 PM	17916.7
4/6/2020 0:00	13.752	3.187	2:45:00 AM	35.914	7:00:00 AM	19803.5
4/7/2020 0:00	14.861	3.101	3:30:00 AM	37.986	9:45:00 AM	21399.2
4/8/2020 0:00	14.553	3.437	5:15:00 AM	25.182	11:30:00 PM	20956.2
4/9/2020 0:00	13.837	4.56	1:30:00 AM	28.068	12:15:00 PM	19926
4/10/2020 0:00	12.986	3.756	4:30:00 AM	22.164	6:30:00 PM	18699.7
4/11/2020 0:00	14.387	1.883	5:00:00 AM	35.594	8:00:00 PM	20717.6
4/12/2020 0:00	13.18	-4.172	1:30:00 AM	29.835	12:00:00 PM	18978.9
4/13/2020 0:00	13.786	3.887	5:45:00 AM	23.876	11:30:00 AM	19852.1
4/14/2020 0:00	14.999	4.175	2:45:00 AM	27.353	1:00:00 PM	21599.1
4/15/2020 0:00	15.602	3.953	5:15:00 AM	29.678	9:30:00 PM	22467.1
4/16/2020 0:00	13.375	3.292	4:30:00 AM	27.686	11:00:00 AM	19260.1
4/17/2020 0:00	11.87	3.313	5:00:00 AM	30.097	10:45:00 PM	17092.4
4/18/2020 0:00	12.739	2.866	5:00:00 AM	34.977	12:00:00 PM	18344.7
4/19/2020 0:00	13.078	3.964	4:30:00 AM	31.664	8:15:00 PM	18832.8
4/20/2020 0:00	12.406	3.745	6:45:00 AM	27.346	9:45:00 PM	17865.2
4/21/2020 0:00	13.663	3.643	4:30:00 AM	29.716	2:15:00 PM	19674.6
4/22/2020 0:00	13.499	-6.894	10:30:00 AM	23.506	8:15:00 PM	19438.2
4/23/2020 0:00	14.476	3.516	4:00:00 AM	37.815	1:45:00 PM	20845.2
4/24/2020 0:00	18.775	3.819	6:15:00 AM	40.907	4:30:00 PM	27035.4
4/25/2020 0:00	14.552	6.171	1:00:00 AM	30.924	7:15:00 PM	20955.4
4/26/2020 0:00	15.082	-23.172	5:30:00 PM	30.464	8:30:00 PM	21718.7
4/27/2020 0:00	17.627	4.604	4:45:00 AM	41.053	11:15:00 AM	25382.4
4/28/2020 0:00	17.713	7.685	4:15:00 AM	38.108	1:30:00 PM	25506.7
4/29/2020 0:00	13.831	-20.925	8:15:00 PM	32.22	6:45:00 PM	19916.8
4/30/2020 0:00	14.342	2.949	4:15:00 AM	30.341	12:30:00 PM	20651.8
						19,923
5/1/2020 0:00	13.949	3.866	3:30:00 AM	32.09	6:30:00 PM	20086.3
5/2/2020 0:00	14.547	3.379	5:00:00 AM	24.507	1:45:00 PM	20947.3
5/3/2020 0:00	14.194	2.536	4:00:00 AM	27.619	9:00:00 PM	20439
5/4/2020 0:00	13.777	3.376	5:00:00 AM	25.24	6:30:00 PM	19838.7
5/5/2020 0:00	12.409	3.131	4:45:00 AM	28.204	7:00:00 PM	17869.1
5/6/2020 0:00	12.732	3.412	4:30:00 AM	24.653	6:45:00 PM	18333.4
5/7/2020 0:00	12.375	3.793	5:00:00 AM	26.002	7:15:00 PM	17819.9
5/8/2020 0:00	14.192	2.478	3:45:00 AM	27.439	11:30:00 AM	20437.1
5/9/2020 0:00	17.488	3.721	4:00:00 AM	33.381	8:00:00 PM	25182.2
5/10/2020 0:00	18.866	4.851	1:30:00 AM	34.423	11:45:00 AM	27167.3
5/11/2020 0:00	14.987	4.1	5:00:00 AM	28.862	7:45:00 AM	21581.1
5/12/2020 0:00	13.181	2.942	4:45:00 AM	25.649	8:00:00 AM	18980
5/13/2020 0:00	12.404	-3.444	11:45:00 PM	27.739	10:00:00 PM	17861.3
5/14/2020 0:00	11.756	2.739	3:15:00 AM	25.594	7:00:00 PM	16928
5/15/2020 0:00	12.752	3.286	4:15:00 AM	25.928	10:30:00 PM	18362.5
5/16/2020 0:00	12.753	2.781	5:15:00 AM	26.633	6:00:00 PM	18364.2
5/17/2020 0:00	12.609	4.417	4:30:00 AM	25.676	1:00:00 PM	18157.5
5/18/2020 0:00	13.741	4.465	5:30:00 AM	24.362	7:30:00 PM	19787
5/19/2020 0:00	13.314	4.163	4:45:00 AM	29.369	7:45:00 PM	19172.7
5/20/2020 0:00	14.443	6.25	1:15:00 AM	24.332	1:30:00 PM	20797.7
5/21/2020 0:00	11.62	4.258	4:15:00 AM	23.599	8:30:00 AM	16732.9
5/22/2020 0:00	9.835	3.635	5:30:00 AM	21.249	7:45:00 AM	14163
5/23/2020 0:00	12.219	2.272	6:15:00 AM	28.727	10:15:00 AM	17595.7
5/24/2020 0:00	12.04	2.789	5:45:00 AM	24.102	12:15:00 PM	17336.9
5/25/2020 0:00	13.1	3.656	6:30:00 AM	30.854	7:00:00 AM	18864.2
5/26/2020 0:00	13.074	4.32	6:15:00 AM	29.221	6:30:00 PM	18826.1
5/27/2020 0:00	14.487	4.653	4:00:00 AM	39.159	9:00:00 PM	20861.6
5/28/2020 0:00	13.672	4.744	3:30:00 AM	28.429	12:00:00 PM	19687.4
5/29/2020 0:00	12.696	2.12	4:30:00 AM	24.13	7:45:00 PM	18281.5
5/30/2020 0:00	14.819	3.317	4:30:00 AM	28.436	1:30:00 PM	21339.9
5/31/2020 0:00	14.415	3.339	4:15:00 AM	27.954	8:00:00 PM	20757.9
						19,437
6/1/2020 0:00	13.124	2.728	3:45:00 AM	32.351	9:00:00 AM	18898.5
6/2/2020 0:00	12.746	3.734	4:15:00 AM	24.459	8:15:00 PM	18353.6
6/3/2020 0:00	12.417	3.54	6:45:00 AM	32.133	8:00:00 AM	17881
6/4/2020 0:00	11.133	3.633	2:15:00 AM	28.885	4:00:00 PM	16031.8
6/5/2020 0:00	12.444	4.012	4:30:00 AM	26.232	3:15:00 PM	17918.9
6/6/2020 0:00	13.809	3.046	5:15:00 AM	26.099	9:45:00 AM	19884.8
6/7/2020 0:00	13.441	4.904	12:00:00 AM	27.808	9:45:00 AM	19354.6
6/8/2020 0:00	12.135	1.528	4:00:00 AM	27.652	8:30:00 PM	17474.5
6/9/2020 0:00	18.509	4.312	5:15:00 AM	33.327	6:15:00 PM	26653.3
6/10/2020 0:00	18.973	6.741	2:45:00 AM	33.92	7:30:00 PM	27321.2
6/11/2020 0:00	16.234	5.997	3:45:00 AM	29.011	6:15:00 PM	23377.4
6/12/2020 0:00	16.822	6.964	2:30:00 AM	32.463	9:00:00 AM	24223.4
6/13/2020 0:00	14.952	5.257	4:30:00 AM	28.309	8:30:00 PM	21531.4

6/14/2020 0:00	14.472	4.51	4:00:00 AM	28.761	9:30:00 PM	20839.7
6/15/2020 0:00	12.788	3.335	5:30:00 AM	24.195	9:00:00 AM	18414.6
6/16/2020 0:00	12.904	-4.004	1:00:00 AM	27.397	8:45:00 PM	18582.1
6/17/2020 0:00	13.163	3.8	4:45:00 AM	22.558	9:30:00 AM	18954.4
6/18/2020 0:00	12.658	4.747	4:45:00 AM	25.669	9:30:00 PM	18227
6/19/2020 0:00	11.909	-14.041	12:00:00 PM	24.409	9:45:00 AM	17149
6/20/2020 0:00	14.532	-6.704	11:45:00 PM	35.44	5:30:00 PM	20925.8
6/21/2020 0:00	13.897	2.872	5:00:00 AM	32.047	9:00:00 PM	20012.3
6/22/2020 0:00	14.703	3.431	4:45:00 AM	29.649	7:30:00 AM	21172
6/23/2020 0:00	15.043	5.081	6:15:00 AM	36.32	9:15:00 PM	21661.9
6/24/2020 0:00	14.877	3.427	4:00:00 AM	30.664	9:15:00 PM	21422.4
6/25/2020 0:00	14.923	7.296	2:15:00 AM	31.865	1:45:00 PM	21489.3
6/26/2020 0:00	14.77	5.397	5:45:00 AM	33.698	6:15:00 PM	21269.5
6/27/2020 0:00	17.575	5.162	3:30:00 AM	40.926	3:15:00 PM	25307.9
6/28/2020 0:00	16.149	3.071	6:15:00 AM	38.502	8:45:00 PM	23254.3
6/29/2020 0:00	11.348	4.849	3:30:00 AM	19.446	7:15:00 AM	16341
6/30/2020 0:00	13.209	3.132	2:30:00 AM	37.466	7:45:00 PM	19021.4
						20,432
7/1/2020 0:00	13.105	3.613	3:45:00 AM	25.524	7:45:00 PM	18871.4
7/2/2020 0:00	13.6	4.826	1:15:00 AM	26.285	1:00:00 PM	19583.8
7/3/2020 0:00	13.862	4.145	5:00:00 AM	29.551	10:00:00 PM	19961.6
7/4/2020 0:00	13.274	3.855	4:30:00 AM	24.284	2:45:00 PM	19115.3
7/5/2020 0:00	12.751	3.354	4:45:00 AM	21.446	8:45:00 AM	18361.9
7/6/2020 0:00	11.071	2.565	3:15:00 AM	22.552	8:15:00 AM	15942.7
7/7/2020 0:00	13.024	3.25	3:45:00 AM	30.762	8:45:00 PM	18753.9
7/8/2020 0:00	9.554	1.277	3:15:00 AM	23.65	10:45:00 PM	13758.4
7/9/2020 0:00	10.5	2.646	3:45:00 AM	22.558	11:30:00 AM	15119.5
7/10/2020 0:00	11.853	2.921	4:30:00 AM	24.24	7:00:00 PM	17067.9
7/11/2020 0:00	11.71	3.661	5:45:00 AM	19.676	1:00:00 PM	16862
7/12/2020 0:00	12.618	-9.603	8:45:00 AM	23.1	1:00:00 PM	18169.8
7/13/2020 0:00	14.015	5.587	4:45:00 AM	27.048	9:15:00 AM	20182
7/14/2020 0:00	9.696	-21.607	5:00:00 PM	24.519	9:30:00 PM	13962.7
7/15/2020 0:00	12.549	4.121	2:30:00 AM	21.212	11:15:00 PM	18071.2
7/16/2020 0:00	11.56	3.672	1:30:00 AM	23.037	11:15:00 AM	16646.5
7/17/2020 0:00	11.336	3.332	2:30:00 AM	21.701	8:15:00 AM	16324.5
7/18/2020 0:00	10.423	-11.502	11:45:00 AM	19.203	10:45:00 AM	15008.7
7/19/2020 0:00	9.999	1.675	5:30:00 AM	20.195	9:15:00 PM	14399.1
7/20/2020 0:00	6.456	-22.731	9:00:00 AM	21.03	8:00:00 AM	9296.62
7/21/2020 0:00	11.327	3.635	6:15:00 AM	27.938	9:30:00 PM	16310.4
7/22/2020 0:00	12.062	2.548	4:00:00 AM	25.171	10:30:00 AM	17369.1
7/23/2020 0:00	11.587	3.623	3:15:00 AM	18.354	8:15:00 AM	16684.8
7/24/2020 0:00	11.9	4.458	4:00:00 AM	20.368	9:45:00 AM	17135.9
7/25/2020 0:00	11.048	3.605	5:45:00 AM	18.549	8:30:00 PM	15908.8
7/26/2020 0:00	11.677	4.144	4:00:00 AM	18.858	11:45:00 AM	16814.3
7/27/2020 0:00	10.71	3.056	2:15:00 AM	19.094	9:45:00 AM	15421.9
7/28/2020 0:00	9.996	1.777	3:15:00 AM	17.982	8:00:00 PM	14393.6
7/29/2020 0:00	10.976	2.847	5:45:00 AM	20.829	9:15:00 PM	15804.8
7/30/2020 0:00	11.887	4.539	5:15:00 AM	21.51	9:30:00 AM	17117.4
7/31/2020 0:00	10.558	2.826	4:45:00 AM	19.05	12:45:00 PM	15203.5
						16,569
8/1/2020 0:00	10.306	3.092	3:45:00 AM	18.326	3:45:00 PM	14840.3
8/2/2020 0:00	8.277	2.244	5:45:00 AM	10.897	8:15:00 AM	11918.6
8/3/2020 0:00	8.973	8.973	12:00:00 AM	8.973	12:00:00 AM	12921.5
8/4/2020 0:00	8.973	8.973	12:00:00 AM	8.973	12:00:00 AM	12921.5
8/5/2020 0:00	8.973	8.973	12:00:00 AM	8.973	12:00:00 AM	12921.5
8/6/2020 0:00	8.973	8.973	12:00:00 AM	8.973	12:00:00 AM	12921.5
8/7/2020 0:00	8.973	8.973	12:00:00 AM	8.973	12:00:00 AM	12921.5
8/8/2020 0:00	8.973	8.973	12:00:00 AM	8.973	12:00:00 AM	12921.5
8/9/2020 0:00	8.973	8.973	12:00:00 AM	8.973	12:00:00 AM	12921.5
8/10/2020 0:00	8.973	8.973	12:00:00 AM	8.973	12:00:00 AM	12921.5
8/11/2020 0:00	8.973	8.973	12:00:00 AM	8.973	12:00:00 AM	12921.5
8/12/2020 0:00	12.661	8.555	1:30:00 PM	34.998	8:15:00 PM	18231.3
8/13/2020 0:00	14.861	3.902	5:15:00 AM	33.044	1:30:00 PM	21400.4
8/14/2020 0:00	15.082	4.213	4:00:00 AM	32.98	10:30:00 AM	21717.5
8/15/2020 0:00	16.932	6.311	11:45:00 PM	40.835	12:30:00 PM	24382.7
8/16/2020 0:00	15.233	3.254	4:45:00 AM	35.962	2:45:00 PM	21935.1
8/17/2020 0:00	17.336	9.243	11:30:00 AM	34.753	6:30:00 PM	24963.2
8/18/2020 0:00	13.385	3.362	4:45:00 AM	29.232	9:45:00 PM	19274.1
8/19/2020 0:00	11.856	3.115	4:30:00 AM	20.525	8:45:00 AM	17072.9
8/20/2020 0:00	11.603	2.404	5:00:00 AM	22.599	8:30:00 AM	16707.9
8/21/2020 0:00	10.149	2.136	4:15:00 AM	23.135	12:45:00 PM	14615
8/22/2020 0:00	10.759	-13.174	9:15:00 AM	21.632	12:00:00 PM	15492.5
8/23/2020 0:00	13.214	3.459	3:45:00 AM	26.238	9:30:00 PM	19028.2

8/24/2020 0:00	11.636	3.81	5:00:00 PM	26.359	12:15:00 PM	16756.6
8/25/2020 0:00	9.74	1.99	2:00:00 AM	25.599	7:45:00 PM	14025.2
8/26/2020 0:00	11.683	2.064	4:30:00 AM	30.232	9:15:00 PM	16823.3
8/27/2020 0:00	17.08	7.269	1:45:00 AM	41.694	8:30:00 AM	24595.8
8/28/2020 0:00	14.037	5.744	3:00:00 AM	27.979	8:45:00 PM	20212.8
8/29/2020 0:00	16.891	5.105	2:00:00 AM	39.212	12:00:00 PM	24323.7
8/30/2020 0:00	13.585	5.53	3:30:00 AM	25.167	9:45:00 PM	19562.4
8/31/2020 0:00	14.138	4.537	4:45:00 AM	32.375	9:00:00 AM	20358.7
						17,243
9/1/2020 0:00	10.948	3.108	6:15:00 AM	23.324	8:15:00 PM	15765.3
9/2/2020 0:00	11.058	2.332	5:00:00 AM	19.66	8:30:00 AM	15923.1
9/3/2020 0:00	11.173	3.462	5:00:00 AM	19.464	8:30:00 PM	16088.6
9/4/2020 0:00	9.333	-17.809	11:45:00 AM	19.498	8:30:00 AM	13439.5
9/5/2020 0:00	9.557	2.79	3:45:00 AM	20.398	9:00:00 AM	13762.6
9/6/2020 0:00	9.839	1.9	5:30:00 AM	18.688	11:00:00 AM	14167.4
9/7/2020 0:00	12.432	3.389	6:30:00 AM	30.474	7:00:00 PM	17901.5
9/8/2020 0:00	12.718	2.408	4:30:00 AM	29.337	8:00:00 AM	18313.4
9/9/2020 0:00	12.595	3.913	3:30:00 AM	32.194	10:15:00 AM	18136.8
9/10/2020 0:00	13.621	3.904	4:45:00 AM	27.072	8:45:00 AM	19613.8
9/11/2020 0:00	12.477	4.83	5:15:00 AM	23.764	6:00:00 PM	17966.5
9/12/2020 0:00	12.185	2.924	4:00:00 AM	22.314	9:30:00 AM	17546.8
9/13/2020 0:00	13.597	-20.454	2:45:00 PM	38.879	8:00:00 PM	19579.5
9/14/2020 0:00	16.658	4.413	4:30:00 AM	34.12	7:15:00 PM	23987.9
9/15/2020 0:00	14.557	4.902	4:00:00 AM	27.097	6:00:00 PM	20962.4
9/16/2020 0:00	14.444	3.86	4:00:00 AM	31.945	11:15:00 AM	20799.4
9/17/2020 0:00	14.395	4.728	4:15:00 AM	27.001	12:00:00 AM	20729.1
9/18/2020 0:00	17.307	8.76	4:45:00 PM	31.27	9:30:00 AM	24922.4
9/19/2020 0:00	15.101	3.653	5:45:00 AM	32.396	11:45:00 AM	21745.6
9/20/2020 0:00	12.758	2.687	5:30:00 AM	34.198	12:00:00 PM	18371.5
9/21/2020 0:00	15.627	-33.706	7:45:00 PM	38.792	10:15:00 PM	22503.5
9/22/2020 0:00	15.291	3.387	4:00:00 AM	34.144	7:30:00 AM	22019.3
9/23/2020 0:00	16.652	3.807	2:45:00 AM	41.247	11:45:00 AM	23979.1
9/24/2020 0:00	17.718	3.608	3:30:00 AM	42.905	2:45:00 PM	25514.3
9/25/2020 0:00	17.139	2.965	4:45:00 AM	31.483	11:15:00 AM	24680.7
9/26/2020 0:00	16.374	4.959	6:00:00 AM	30.866	9:30:00 AM	23578.6
9/27/2020 0:00	14.154	4.15	6:30:00 AM	30.371	11:30:00 AM	20381.8
9/28/2020 0:00	11.754	3.001	4:45:00 AM	20.119	2:00:00 PM	16926.3
9/29/2020 0:00	12.313	3.365	4:15:00 AM	27.147	8:00:00 PM	17731.4
9/30/2020 0:00	10.177	3.945	4:30:00 AM	21.897	7:30:00 PM	14655.6
						19,390
10/1/2020 0:00	12.23	4.647	4:45:00 AM	25.182	10:30:00 AM	17611.3
10/2/2020 0:00	12.19	3.882	5:30:00 AM	21.084	7:15:00 AM	17553
10/3/2020 0:00	12.905	4.066	4:15:00 AM	33.118	10:45:00 AM	18583
10/4/2020 0:00	15.988	4.09	3:45:00 AM	32.2	7:30:00 PM	23023
10/5/2020 0:00	16.725	5.931	3:15:00 AM	38.52	7:45:00 PM	24083.9
10/6/2020 0:00	14.549	7.028	10:45:00 PM	26.024	11:15:00 AM	20950.3
10/7/2020 0:00	12.299	3.992	5:00:00 AM	25.115	7:45:00 AM	17710.9
10/8/2020 0:00	13.37	3.438	2:45:00 AM	25.856	9:00:00 AM	19253.3
10/9/2020 0:00	13.653	6.565	4:15:00 AM	23.453	8:30:00 AM	19661
10/10/2020 0:00	13.661	3.523	4:45:00 AM	24.644	3:45:00 PM	19672.3
10/11/2020 0:00	14.347	5.217	5:15:00 AM	26.966	10:00:00 AM	20659.9
10/12/2020 0:00	16.179	5.509	4:45:00 AM	30.196	2:15:00 PM	23298
10/13/2020 0:00	12.704	5.42	4:30:00 AM	21.813	6:00:00 PM	18293.9
10/14/2020 0:00	9.771	2.188	5:00:00 AM	25.102	7:15:00 PM	14070.2
10/15/2020 0:00	12.175	4.631	4:15:00 AM	23.872	8:00:00 AM	17532.5
10/16/2020 0:00	8.676	-16.982	8:15:00 AM	21.476	10:15:00 AM	12494.1
10/17/2020 0:00	10.37	1.593	4:15:00 AM	21.263	10:00:00 PM	14933
10/18/2020 0:00	12.147	3.57	4:30:00 AM	25.649	8:00:00 PM	17492.3
10/19/2020 0:00	9.938	3.37	4:00:00 AM	19.922	10:30:00 AM	14310.3
10/20/2020 0:00	11.39	3.064	3:30:00 AM	27.769	8:45:00 AM	16401.1
10/21/2020 0:00	12.269	3.338	5:15:00 AM	25.107	5:45:00 PM	17666.8
10/22/2020 0:00	13.252	4.92	6:00:00 AM	24.592	7:45:00 AM	19083.1
10/23/2020 0:00	10.663	3.701	4:15:00 AM	22.813	8:15:00 AM	15355.2
10/24/2020 0:00	11.746	3.089	4:00:00 AM	25.405	11:45:00 AM	16914.3
10/25/2020 0:00	10.432	-21.773	7:00:00 PM	27.697	10:00:00 PM	15022.5
10/26/2020 0:00	12.991	-11.572	2:30:00 PM	24.796	10:15:00 AM	18707.3
10/27/2020 0:00	9.564	1.93	4:15:00 AM	24.797	9:30:00 AM	13771.8
10/28/2020 0:00	11.529	1.787	3:30:00 AM	21.544	8:15:00 AM	16602.3
10/29/2020 0:00	14.92	4.35	2:45:00 AM	35.844	8:45:00 AM	21484.3
10/30/2020 0:00	13.819	4.213	4:30:00 AM	25.376	8:15:00 AM	19899.9
10/31/2020 0:00	12.332	5.082	5:00:00 AM	31.455	2:15:00 PM	17757.4
						18,060
11/1/2020 0:00	13.173	2.985	5:15:00 AM	26.254	11:15:00 AM	18968.7

11/2/2020 0:00	12.476	3.88	3:00:00 AM	37.9	10:00:00 PM	17965.5
11/3/2020 0:00	13.137	4.216	1:30:00 AM	37.757	7:15:00 AM	18916.8
11/4/2020 0:00	10.905	4.153	3:30:00 AM	20.322	8:45:00 AM	15703.3
11/5/2020 0:00	11.309	3.198	5:45:00 AM	21.543	8:30:00 AM	16285
11/6/2020 0:00	10.878	3.222	6:30:00 AM	19.129	10:15:00 AM	15664.1
11/7/2020 0:00	11.733	2.891	6:15:00 AM	22.767	9:15:00 PM	16896
11/8/2020 0:00	13.591	4.83	4:15:00 AM	28.847	4:45:00 PM	19571.5
11/9/2020 0:00	12.15	3.342	4:30:00 AM	27.66	8:45:00 AM	17496.6
11/10/2020 0:00	15.124	3.554	5:15:00 AM	30.372	9:30:00 AM	21778.9
11/11/2020 0:00	17.514	4.788	5:15:00 AM	34.051	9:15:00 PM	25220.4
11/12/2020 0:00	18.584	5.07	5:45:00 AM	48.347	11:45:00 AM	26760.5
11/13/2020 0:00	18.653	8.451	6:00:00 AM	43.267	12:45:00 PM	26860.9
11/14/2020 0:00	22.932	7.468	5:45:00 AM	57.373	5:45:00 PM	33022
11/15/2020 0:00	23.703	8.97	8:15:00 AM	47.909	7:00:00 PM	34132.3
11/16/2020 0:00	25.233	10.616	5:00:00 AM	52.003	9:45:00 PM	36335.9
11/17/2020 0:00	22.433	-3.02	5:30:00 PM	44.39	1:00:00 PM	32303.2
11/18/2020 0:00	18.651	-7.62	2:15:00 AM	33.429	5:15:00 PM	26857.7
11/19/2020 0:00	19.645	6.37	3:30:00 AM	41.976	6:30:00 PM	28288.5
11/20/2020 0:00	19.825	4.579	7:15:00 AM	41.361	3:30:00 PM	28548.2
11/21/2020 0:00	16.346	5.202	2:00:00 AM	46.907	10:45:00 AM	23538.9
11/22/2020 0:00	19.321	8.615	7:30:00 AM	31.565	10:30:00 PM	27822.8
11/23/2020 0:00	19.06	7.875	4:30:00 PM	42.021	7:15:00 AM	27446.7
11/24/2020 0:00	16.617	5.718	2:45:00 AM	30.502	3:00:00 PM	23928.2
11/25/2020 0:00	16.389	4.559	4:45:00 AM	35.002	8:45:00 AM	23600.2
11/26/2020 0:00	16.491	5.933	4:30:00 AM	42.79	12:45:00 PM	23746.6
11/27/2020 0:00	16.237	5.309	2:30:00 AM	31.302	6:30:00 PM	23381
11/28/2020 0:00	15.57	7.517	3:00:00 AM	28.56	12:45:00 PM	22420.4
11/29/2020 0:00	12.895	4.838	2:45:00 AM	30.021	8:30:00 PM	18568.6
11/30/2020 0:00	12.638	4.621	3:30:00 AM	22.999	10:00:00 AM	18198.3
						23,674
12/1/2020 0:00	13.049	4.791	5:30:00 AM	25.524	8:45:00 AM	18790
12/2/2020 0:00	14.302	5.411	12:30:00 AM	25.212	3:00:00 PM	20594.2
12/3/2020 0:00	12.306	-18.308	9:00:00 PM	28.435	8:00:00 PM	17721.3
12/4/2020 0:00	14.035	5.575	4:00:00 AM	25.102	10:45:00 AM	20210.6
12/5/2020 0:00	13.171	5.729	3:15:00 AM	21.591	11:15:00 AM	18966.6
12/6/2020 0:00	12.335	4.947	5:45:00 AM	25.256	8:30:00 PM	17762.8
12/7/2020 0:00	12.777	-6.687	11:45:00 AM	25.859	8:00:00 AM	18399
12/8/2020 0:00	13.312	5.07	4:45:00 AM	28.507	2:15:00 PM	19169.4
12/9/2020 0:00	13.082	5.254	2:30:00 AM	26.08	7:00:00 AM	18838
12/10/2020 0:00	12.821	3.226	4:45:00 AM	29.527	8:30:00 AM	18461.7
12/11/2020 0:00	13.345	5.758	11:30:00 AM	27.724	8:00:00 AM	19217.5
12/12/2020 0:00	14.965	5.494	5:15:00 AM	35.932	11:30:00 AM	21549
12/13/2020 0:00	14.125	5.511	12:00:00 AM	27.154	10:15:00 AM	20339.3
12/14/2020 0:00	12.292	5.226	12:00:00 AM	38.513	4:45:00 PM	17700.3
12/15/2020 0:00	12.483	6.065	5:15:00 AM	31.514	6:30:00 PM	17975.7
12/16/2020 0:00	16.723	5.917	5:45:00 AM	39.31	8:30:00 PM	24080.8
12/17/2020 0:00	19.011	-5.752	11:45:00 PM	40	11:00:00 AM	27376.2
12/18/2020 0:00	11.511	3.141	6:15:00 AM	24.235	10:45:00 AM	16575.4
12/19/2020 0:00	17.412	2.787	8:15:00 AM	39.148	11:00:00 AM	25073.1
12/20/2020 0:00	15.779	7.08	12:00:00 AM	32.745	3:15:00 PM	22722.1
12/21/2020 0:00	14.927	5.166	4:30:00 AM	25.689	7:30:00 PM	21494.8
12/22/2020 0:00	18.934	6.91	12:15:00 AM	32.848	7:00:00 AM	27264.3
12/23/2020 0:00	18.954	7.037	4:15:00 AM	40.266	8:00:00 PM	27293.6
12/24/2020 0:00	27.448	4.096	7:30:00 AM	56.503	11:15:00 AM	39524.9
12/25/2020 0:00	28.438	6.682	6:15:00 AM	54.804	10:00:00 AM	40950.7
12/26/2020 0:00	21.101	9.749	7:45:00 AM	42.695	8:45:00 PM	30386.1
12/27/2020 0:00	24.822	8.673	4:45:00 AM	47.552	4:30:00 PM	35743.9
12/28/2020 0:00	24.533	9.713	1:15:00 AM	47.689	5:00:00 PM	35327.3
12/29/2020 0:00	19.249	8.103	1:00:00 AM	32.59	11:45:00 AM	27718.1
12/30/2020 0:00	17.656	7.406	5:00:00 AM	28.358	1:00:00 PM	25425.1
12/31/2020 0:00	18.276	6.637	8:00:00 AM	41.798	11:00:00 AM	26318
						23,838

Site Name	Meter #3 NC-108	Meter #3 NC-108	Meter #3 NC-108			
Isco Quantity	Flow Rate	Flow Rate	Min/Max	Flow Rate	Min/Max	Volume
Label	Avg Flow Rate	Min Flow Rate	Min/Max	Max Flow Rate	Min/Max	Daily Total
Units	gpm	gpm	Date/Time	gpm	Date/Time	gal
Resolution	0.1	0.1	N/A	0.1	N/A	0.1
Significant Digits	0	0	N/A	0	N/A	0
2/1/2019 0:00	87.156	61.962	4:15:00 AM	146.635	8:00:00 AM	125504
2/2/2019 0:00	89.636	54.519	6:30:00 AM	149.776	12:15:00 PM	129075
2/3/2019 0:00	89.802	50.248	6:15:00 AM	149.071	12:15:00 PM	129315
2/4/2019 0:00	85.362	50.677	3:30:00 AM	145.274	8:30:00 AM	122922
2/5/2019 0:00	79.872	44.393	5:00:00 AM	139.588	8:45:00 AM	115016
2/6/2019 0:00	85.02	38.186	5:00:00 AM	130.906	8:30:00 AM	122429
2/7/2019 0:00	96.433	53.074	4:15:00 AM	178.535	8:45:00 AM	138863
2/8/2019 0:00	91.992	54.51	5:30:00 AM	176.189	8:45:00 AM	132469
2/9/2019 0:00	95.694	52.004	6:45:00 AM	152.002	12:45:00 PM	137800
2/10/2019 0:00	104.032	57.736	7:45:00 AM	180.087	11:15:00 AM	149805
2/11/2019 0:00	98.502	57.833	5:30:00 AM	166.37	9:45:00 AM	141843
2/12/2019 0:00	102.091	47.913	5:00:00 AM	143.383	2:15:00 PM	147011
2/13/2019 0:00	113.342	71.774	4:00:00 AM	183.867	8:30:00 AM	163212
2/14/2019 0:00	103.937	58.295	4:30:00 AM	167.2	8:45:00 AM	149670
2/15/2019 0:00	102.105	57.273	5:45:00 AM	159.397	9:00:00 AM	147032
2/16/2019 0:00	95.772	49.326	5:15:00 AM	148.935	12:45:00 PM	137912
2/17/2019 0:00	94.974	50.698	5:00:00 AM	163.849	11:15:00 AM	136762
2/18/2019 0:00	97.046	49.922	4:45:00 AM	148.777	11:00:00 AM	139746
2/19/2019 0:00	90.491	47.684	5:00:00 AM	152.193	8:00:00 AM	130308
2/20/2019 0:00	96.376	47.934	5:30:00 AM	165.359	8:00:00 PM	138782
2/21/2019 0:00	106.111	55.024	6:15:00 AM	185.711	9:00:00 AM	152799
2/22/2019 0:00	94.386	51.797	6:00:00 AM	171.652	9:15:00 AM	135915
2/23/2019 0:00	97.987	47.642	6:30:00 AM	145.803	11:15:00 AM	141102
2/24/2019 0:00	123.21	61.485	3:45:00 AM	196.036	12:30:00 PM	177423
2/25/2019 0:00	99.89	57.038	4:30:00 AM	157.726	8:15:00 AM	143841
2/26/2019 0:00	88.671	47.681	3:45:00 AM	154.072	8:45:00 AM	127687
2/27/2019 0:00	87.915	45.149	4:15:00 AM	136.738	8:15:00 AM	126598
2/28/2019 0:00	89.065	52.076	5:30:00 AM	142.028	9:15:00 AM	128253
						138,182
3/1/2019 0:00	84.627	47.381	2:30:00 AM	133.959	9:30:00 AM	121864
3/2/2019 0:00	99.109	55.732	6:00:00 AM	137.877	3:00:00 PM	142717
3/3/2019 0:00	104.409	49.766	6:30:00 AM	152.271	1:15:00 PM	150349
3/4/2019 0:00	109.079	54.251	5:00:00 AM	158.732	9:15:00 AM	157074
3/5/2019 0:00	105.931	66.607	5:45:00 AM	169.325	8:45:00 AM	152541
3/6/2019 0:00	98.756	55.362	3:00:00 AM	144.345	9:00:00 AM	142209
3/7/2019 0:00	98.815	50.883	5:15:00 AM	160.881	9:15:00 AM	142294
3/8/2019 0:00	106.241	54.731	6:30:00 AM	160.392	8:15:00 AM	152987
3/9/2019 0:00	121.107	64.585	6:30:00 AM	179.89	12:00:00 PM	174394
3/10/2019 0:00	146.479	76.098	2:45:00 AM	213.659	10:45:00 AM	210930
3/11/2019 0:00	122.474	69.433	3:15:00 AM	212.832	8:30:00 AM	176362
3/12/2019 0:00	115.637	63.135	3:00:00 AM	176.068	8:15:00 AM	166518
3/13/2019 0:00	111.536	64.674	4:15:00 AM	172.001	8:30:00 PM	160612
3/14/2019 0:00	104.075	39.165	4:45:00 AM	185.914	8:15:00 AM	149867

3/15/2019 0:00	94.78	57.202	3:15:00 AM	145.096	7:30:00 AM	136483
3/16/2019 0:00	86.612	50.652	5:30:00 AM	141.568	11:30:00 AM	124722
3/17/2019 0:00	82.774	45.821	3:15:00 AM	136.547	8:45:00 PM	119195
3/18/2019 0:00	78.667	44.784	5:00:00 AM	134.83	8:15:00 AM	113280
3/19/2019 0:00	80.631	46.777	5:30:00 AM	143.663	7:45:00 AM	116109
3/20/2019 0:00	93.641	43.974	2:30:00 AM	165.998	8:30:00 AM	134844
3/21/2019 0:00	102.126	49.962	5:00:00 AM	163.71	9:00:00 PM	147061
3/22/2019 0:00	127.042	77.546	1:15:00 AM	188.155	7:15:00 AM	182941
3/23/2019 0:00	112.484	64.396	6:15:00 AM	179.532	12:00:00 PM	161977
3/24/2019 0:00	114.441	62.644	4:45:00 AM	179.869	12:15:00 PM	164795
3/25/2019 0:00	107.392	65.442	2:45:00 AM	186.019	3:15:00 PM	154645
3/26/2019 0:00	102.756	60.952	4:00:00 AM	178.363	8:15:00 AM	147969
3/27/2019 0:00	90.435	57.781	3:30:00 AM	165.909	8:00:00 AM	130227
3/28/2019 0:00	85.752	50.557	2:45:00 AM	140.663	8:15:00 PM	123483
3/29/2019 0:00	81.789	48.605	2:15:00 AM	120.896	7:15:00 AM	117776
3/30/2019 0:00	87.352	48.31	3:30:00 AM	144.405	11:30:00 AM	125787
3/31/2019 0:00	90.02	46.767	4:30:00 AM	140.582	4:00:00 PM	129629
						146,182

Site Name	Meter #3 NC-121	Meter #3 NC-121	Meter #3 NC-121			
Isco Quantity	Flow Rate	Flow Rate	Min/Max	Flow Rate	Min/Max	Volume
Label	Avg Flow Rate	Min Flow Rate	Min/Max	Max Flow Rate	Min/Max	Daily Total
Units	gpm	gpm	Date/Time	gpm	Date/Time	gal
Resolution	0.1	0.1	N/A	0.1	N/A	0
Significant Digits	0	0	N/A	0	N/A	-
5/17/2019 0:00	18.592	4.279	11:45:00 PM	48.691	9:45:00 PM	26772.4
5/18/2019 0:00	24.38	2.666	5:45:00 AM	73.948	11:15:00 AM	35106.6
5/19/2019 0:00	54.517	7.507	4:00:00 AM	111.195	7:30:00 PM	78504.4
5/20/2019 0:00	62.885	18.682	3:45:00 AM	133.083	8:45:00 AM	90555
5/21/2019 0:00	61.796	20.404	2:15:00 AM	127.981	7:45:00 AM	88985.9
5/22/2019 0:00	56.358	14.394	4:15:00 AM	132.571	7:00:00 AM	81154.9
5/23/2019 0:00	61.711	11.554	3:30:00 AM	122.979	7:30:00 AM	88863.6
5/24/2019 0:00	54.649	11.993	4:15:00 AM	126.703	8:45:00 AM	78694.8
5/25/2019 0:00	47.716	9.462	5:15:00 AM	109.702	10:30:00 AM	68711.3
5/26/2019 0:00	40.355	4.953	4:30:00 AM	88.89	9:45:00 PM	58111.1
5/27/2019 0:00	47.344	10.563	4:00:00 AM	95.644	9:30:00 PM	68175.4
5/28/2019 0:00	45.888	7.432	4:30:00 AM	128.833	8:45:00 AM	66079.3
5/29/2019 0:00	53.398	12.601	3:15:00 AM	137.564	6:30:00 PM	76893
5/30/2019 0:00	63.863	22.204	4:45:00 AM	120.613	8:15:00 AM	91962.6
5/31/2019 0:00	72.93	33.543	4:00:00 AM	128.91	8:30:00 AM	105018
						73,573
6/1/2019 0:00	57.756	9.991	3:15:00 AM	107.339	10:15:00 AM	83169
6/2/2019 0:00	64.279	15.619	5:15:00 AM	120.244	8:45:00 PM	92561.1
6/3/2019 0:00	52.314	14.515	3:15:00 AM	119.413	8:15:00 AM	75332.9
6/4/2019 0:00	52.51	12.602	4:30:00 AM	107.46	7:00:00 AM	75614.6
6/5/2019 0:00	62.281	8.283	4:15:00 AM	139.619	8:15:00 PM	89685
6/6/2019 0:00	76.101	36.996	4:00:00 PM	151.161	7:30:00 AM	109586
6/7/2019 0:00	61.346	13.919	4:15:00 AM	115.103	7:30:00 AM	88337.7
6/8/2019 0:00	62.763	12.872	5:45:00 AM	138.119	9:45:00 AM	90378.2
6/9/2019 0:00	51.083	10.757	6:30:00 AM	137.384	10:30:00 AM	73559.7
6/10/2019 0:00	52.513	6.039	4:00:00 AM	108.795	8:30:00 AM	75618.7
6/11/2019 0:00	45.757	14.264	4:15:00 AM	95.011	9:15:00 AM	65889.8
6/12/2019 0:00	36.714	7.947	4:45:00 AM	90.805	8:00:00 AM	52867.8
6/13/2019 0:00	62.748	9.373	3:15:00 AM	124.737	9:15:00 PM	90356.8
6/14/2019 0:00	51.386	22.589	4:30:00 AM	106.888	7:45:00 AM	73995.1
6/15/2019 0:00	55.616	11.719	6:00:00 AM	102.842	2:30:00 PM	80087.5
6/16/2019 0:00	76.977	18.284	5:00:00 AM	137.582	11:00:00 AM	110847
6/17/2019 0:00	74.859	33.68	3:00:00 AM	140.223	7:30:00 AM	107797
6/18/2019 0:00	72.518	20.284	3:15:00 AM	132.985	8:15:00 AM	104426
6/19/2019 0:00	79.693	26.86	3:45:00 AM	157.405	8:30:00 AM	114758
6/20/2019 0:00	81.188	25.545	2:30:00 AM	144.332	8:00:00 AM	116911
6/21/2019 0:00	74.096	22.33	5:00:00 AM	142.152	12:15:00 PM	106698
6/22/2019 0:00	67.584	30.388	4:45:00 AM	121.873	9:15:00 AM	97321.1
6/23/2019 0:00	63.298	18.665	5:15:00 AM	111.054	10:45:00 AM	91149
6/24/2019 0:00	61.546	15.231	3:30:00 AM	123.162	8:45:00 AM	88626.6
6/25/2019 0:00	57.203	13.349	4:15:00 AM	106.233	10:15:00 PM	82372
6/26/2019 0:00	55.313	14.119	4:15:00 AM	98.592	8:45:00 AM	79650.5
6/27/2019 0:00	50.473	12.805	3:45:00 AM	116.591	8:30:00 AM	72681.4
6/28/2019 0:00	48.031	9.104	5:00:00 AM	92.6	8:45:00 PM	69165.2
6/29/2019 0:00	51.754	11.607	6:00:00 AM	99.962	11:45:00 AM	74526.5

6/30/2019 0:00	48.925	6.776	6:15:00 AM	105.799	9:00:00 PM	69718.6
						86,790
7/1/2019 0:00	55.534	19.379	3:30:00 AM	99.777	8:30:00 AM	79968.3
7/2/2019 0:00	52.125	6.263	4:15:00 AM	99.773	10:45:00 AM	75059.6
7/3/2019 0:00	47.249	16.284	4:00:00 AM	89.614	8:45:00 AM	68039
7/4/2019 0:00	52.302	16.712	6:00:00 AM	104.332	9:30:00 AM	75315.1
7/5/2019 0:00	47.445	13.742	4:15:00 AM	104.548	10:15:00 AM	68321.5
7/6/2019 0:00	43.118	6.304	6:15:00 AM	71.894	11:45:00 AM	62090.3
7/7/2019 0:00	45.036	10.557	3:30:00 AM	90.847	8:15:00 PM	64852
7/8/2019 0:00	59.226	15.447	5:00:00 AM	110.368	8:15:00 AM	85285.3
7/9/2019 0:00	53.469	13.341	4:30:00 AM	104.67	7:00:00 PM	76995.9
7/10/2019 0:00	46.629	9.553	3:30:00 AM	108.283	8:45:00 AM	67146.4
7/11/2019 0:00	61.458	8.358	3:30:00 AM	187.948	8:30:00 PM	88500.2
7/12/2019 0:00	54.936	24.082	2:30:00 AM	116.722	8:30:00 AM	79107.2
7/13/2019 0:00	41.378	7.359	5:15:00 AM	101.756	12:00:00 PM	59584.8
7/14/2019 0:00	32.482	7.862	4:15:00 AM	135.326	8:45:00 PM	46774.2
7/15/2019 0:00	36.539	7.175	4:00:00 AM	95.281	10:30:00 PM	52615.7
7/16/2019 0:00	38.745	8.783	4:30:00 AM	97.613	8:15:00 AM	55793
7/17/2019 0:00	54.903	7.202	4:15:00 AM	130.221	9:00:00 PM	79061
7/18/2019 0:00	70.403	19.269	3:00:00 AM	124.575	8:30:00 AM	101381
7/19/2019 0:00	67.812	15.703	11:45:00 PM	152.561	6:15:00 PM	97649.1
7/20/2019 0:00	52.778	4.428	5:45:00 AM	128.19	10:30:00 AM	76000.5
7/21/2019 0:00	72.57	17.278	7:00:00 AM	126.017	9:00:00 PM	104501
7/22/2019 0:00	90.645	21.316	3:15:00 AM	157.431	9:00:00 PM	130529
7/23/2019 0:00	95.342	43.417	2:45:00 AM	164.23	9:15:00 AM	137292
7/24/2019 0:00	86.424	35.764	3:45:00 AM	195.943	7:15:00 AM	124450
7/25/2019 0:00	68.932	15.363	4:00:00 AM	132.521	8:15:00 AM	99262.1
7/26/2019 0:00	65.364	8.938	3:00:00 AM	128.041	8:45:00 AM	94124.6
7/27/2019 0:00	70.927	12.052	4:00:00 AM	127.184	10:45:00 AM	102135
7/28/2019 0:00	75.767	8.688	5:00:00 AM	150.059	12:45:00 PM	109104
7/29/2019 0:00	78.736	12.381	4:30:00 AM	198.865	9:30:00 PM	113380
7/30/2019 0:00	90.038	43.511	2:45:00 AM	179.129	9:45:00 PM	129654
7/31/2019 0:00	69.192	8.328	4:00:00 AM	158.557	7:45:00 AM	99636.5
						87,213
8/1/2019 0:00	66.506	7.636	2:45:00 AM	151.675	9:30:00 PM	95768.3
8/2/2019 0:00	64.893	8.739	5:00:00 AM	122.802	9:00:00 AM	93446.3
8/3/2019 0:00	43.355	8.152	6:00:00 AM	99.36	9:45:00 AM	62431.5
8/4/2019 0:00	54.549	11.417	5:30:00 AM	127.276	9:45:00 PM	78550
8/5/2019 0:00	89.941	27.593	2:45:00 AM	152.896	9:30:00 AM	129515
8/6/2019 0:00	78.792	30.575	3:15:00 AM	157.168	7:00:00 AM	113461
8/7/2019 0:00	80.508	28.951	4:30:00 AM	143.184	6:30:00 PM	115932
8/8/2019 0:00	79.885	24.22	3:30:00 AM	148.38	8:45:00 AM	115034
8/9/2019 0:00	89.254	33.927	5:30:00 AM	144.22	10:15:00 PM	128525
8/10/2019 0:00	91.477	48.269	5:00:00 AM	176.047	9:45:00 AM	131727
8/11/2019 0:00	98.627	39.229	12:00:00 AM	196.443	8:30:00 PM	142023
8/12/2019 0:00	66.397	30.993	4:30:00 AM	146.83	8:00:00 PM	95611.8
8/13/2019 0:00	53.498	19.73	4:45:00 AM	98.226	8:30:00 AM	77036.4
8/14/2019 0:00	60.092	13.741	4:30:00 AM	148.822	9:00:00 PM	86533.2
8/15/2019 0:00	39.08	8.234	5:30:00 AM	117.376	8:30:00 AM	56275.8
8/16/2019 0:00	61.605	12.832	6:15:00 AM	138.23	9:00:00 PM	88711.6

8/17/2019 0:00	76.454	30.417	2:15:00 AM	129.16	9:00:00 PM	110094
8/18/2019 0:00	92.857	24.32	2:45:00 AM	155.758	11:45:00 AM	133715
8/19/2019 0:00	57.72	18.717	4:00:00 PM	154.811	8:00:00 AM	83117.5
8/20/2019 0:00	43.157	9.052	4:30:00 AM	88.716	9:00:00 PM	62145.6
8/21/2019 0:00	39.563	10.866	4:30:00 AM	77.427	9:15:00 AM	56970.3
8/22/2019 0:00	42.789	17.377	5:30:00 AM	115.284	9:45:00 PM	61615.5
8/23/2019 0:00	52.883	13.953	7:00:00 PM	103.621	9:00:00 AM	76152
8/24/2019 0:00	49.131	15.006	4:45:00 AM	124.846	10:15:00 PM	70748.8
8/25/2019 0:00	50.902	22.504	3:45:00 AM	107.964	9:45:00 AM	73298.8
8/26/2019 0:00	45.577	13.673	5:15:00 AM	99.749	9:15:00 AM	65630.7
8/27/2019 0:00	54.065	4.259	4:15:00 AM	109.248	12:30:00 PM	77852.9
8/28/2019 0:00	43.878	7.688	3:45:00 AM	90.074	8:30:00 PM	63183.6
8/29/2019 0:00	42.645	12.288	5:00:00 AM	87.672	8:30:00 PM	61409.2
8/30/2019 0:00	37.11	4.389	3:45:00 AM	90.403	8:00:00 AM	53438
8/31/2019 0:00	37.269	4.007	4:30:00 AM	84.454	12:00:00 PM	53667.3
						87,537
9/1/2019 0:00	35.418	5.674	2:45:00 AM	94.209	10:45:00 PM	51001.9
9/2/2019 0:00	41.313	6.324	5:00:00 AM	131.237	10:15:00 AM	59490.8
9/3/2019 0:00	39.821	5.117	2:15:00 AM	92.852	9:00:00 PM	57342
9/4/2019 0:00	44.702	5.643	3:45:00 AM	95.622	7:45:00 PM	64370.4
9/5/2019 0:00	30.072	4.093	5:30:00 AM	145.674	9:45:00 PM	43303.2
9/6/2019 0:00	30.353	4.378	4:00:00 AM	110.108	7:00:00 AM	43708.7
9/7/2019 0:00	39.4	5.8	6:00:00 AM	156.028	11:00:00 AM	56735.4
9/8/2019 0:00	55.22	6.162	4:30:00 AM	111.576	7:30:00 PM	79517.5
9/9/2019 0:00	51.019	6.897	3:30:00 AM	117.12	8:45:00 AM	73467.1
9/10/2019 0:00	44.516	5.251	3:15:00 AM	109.236	9:15:00 PM	64103.7
9/11/2019 0:00	41.628	12.331	1:15:00 AM	100.733	7:30:00 AM	59944.2
9/12/2019 0:00	41.215	12.42	12:30:00 AM	110.932	7:30:00 PM	59349.7
9/13/2019 0:00	35.319	4.153	2:00:00 AM	102.426	7:45:00 AM	50859.2
9/14/2019 0:00	40.127	5.385	12:15:00 AM	77.028	5:15:00 PM	57782.3
9/15/2019 0:00	65.42	3.253	4:15:00 AM	165.911	9:15:00 PM	94204.2
9/16/2019 0:00	57.379	23.712	1:30:00 PM	116.945	7:00:00 AM	82625.5
9/17/2019 0:00	61.899	19.671	3:15:00 AM	144.709	8:45:00 PM	89135
9/18/2019 0:00	61.342	25.907	4:30:00 AM	144.802	7:15:00 AM	88331.8
9/19/2019 0:00	42.221	12.015	3:00:00 PM	93.436	8:30:00 AM	60798
9/20/2019 0:00	41.651	13.035	3:45:00 AM	77.667	9:15:00 PM	59978
9/21/2019 0:00	50.292	6.135	6:00:00 AM	94.795	10:45:00 AM	72420.1
9/22/2019 0:00	49.76	17.434	2:00:00 AM	94.66	10:30:00 AM	71653.7
9/23/2019 0:00	46.09	20.07	1:45:00 AM	164.966	8:45:00 AM	66368.9
9/24/2019 0:00	31.881	3.766	4:00:00 AM	80.239	8:30:00 AM	45908.6
9/25/2019 0:00	29.199	3.935	2:45:00 AM	88.034	7:00:00 AM	42046.1
9/26/2019 0:00	24.177	4.332	2:30:00 AM	55.903	9:00:00 AM	34814.7
9/27/2019 0:00	29.066	5.864	4:30:00 AM	69.644	7:45:00 AM	41855.6
9/28/2019 0:00	28.949	3.061	3:15:00 AM	63.906	9:00:00 AM	41686.7
9/29/2019 0:00	29.931	2.696	5:45:00 AM	65.979	8:15:00 AM	43100.3
9/30/2019 0:00	30.219	7.982	5:00:00 AM	82.237	9:15:00 AM	43516
						59,981
10/1/2019 0:00	38.089	8.84	3:30:00 AM	99.277	8:45:00 AM	54848.9
10/2/2019 0:00	26.475	9.178	1:30:00 AM	50.485	10:00:00 PM	38123.8
10/3/2019 0:00	22.58	7.444	3:00:00 AM	72.941	7:45:00 AM	32514.6

10/4/2019 0:00	26.81	8.257	4:30:00 AM	96.062	8:00:00 AM	38606.5
10/5/2019 0:00	25.695	7.531	4:00:00 AM	47.192	10:45:00 AM	37000.2
10/6/2019 0:00	29.749	11.024	3:15:00 AM	53.648	10:00:00 AM	42838.3
10/7/2019 0:00	33.867	9.292	3:15:00 AM	58.358	6:45:00 AM	48767.8
10/8/2019 0:00	30.736	11.914	2:15:00 AM	60.44	8:00:00 AM	44259.3
10/9/2019 0:00	33.361	15.595	3:45:00 AM	55.261	8:15:00 PM	48039.3
10/10/2019 0:00	18.755	5.301	1:45:00 AM	53.312	7:45:00 AM	27007
10/11/2019 0:00	16.947	4.683	3:15:00 AM	40.309	8:15:00 AM	24404.1
10/12/2019 0:00	25.801	4.94	4:15:00 AM	48.286	11:45:00 AM	32896.3
						42,778
11/1/2019 0:00	25.166	25.166	12:00:00 AM	25.166	12:00:00 AM	36238.9
11/2/2019 0:00	25.166	25.166	12:00:00 AM	25.166	12:00:00 AM	36238.9
11/3/2019 0:00	25.166	25.166	12:00:00 AM	25.166	12:00:00 AM	36238.9
11/4/2019 0:00	25.166	25.166	12:00:00 AM	25.166	12:00:00 AM	36238.9
11/5/2019 0:00	25.166	25.166	12:00:00 AM	25.166	12:00:00 AM	36238.9
11/6/2019 0:00	25.822	13.01	4:30:00 PM	41.516	6:15:00 PM	37183.3
11/7/2019 0:00	30.351	7.666	3:30:00 AM	90.459	8:15:00 PM	43705.5
11/8/2019 0:00	36.387	16.587	2:00:00 AM	97.04	8:00:00 AM	52397.7
11/9/2019 0:00	59.857	18.807	1:45:00 AM	126.351	1:00:00 PM	86193.9
11/10/2019 0:00	27.05	6.37	4:30:00 AM	77.41	10:30:00 AM	38951.7
11/11/2019 0:00	49.379	5.344	4:00:00 AM	130.142	8:30:00 PM	71105.3
11/12/2019 0:00	76.714	7.159	3:45:00 AM	141.139	7:45:00 AM	110468
11/13/2019 0:00	66.735	10.323	3:30:00 AM	147.547	7:30:00 AM	96097.7
11/14/2019 0:00	75.285	10.148	3:45:00 AM	139.414	7:45:00 AM	108411
11/15/2019 0:00	50.342	15.312	5:00:00 AM	141.339	7:15:00 AM	72491.8
11/16/2019 0:00	70.317	7.369	3:45:00 AM	135.519	8:45:00 AM	101256
11/17/2019 0:00	79.657	10.064	6:00:00 AM	139.291	12:15:00 PM	114706
11/18/2019 0:00	58.4	7.702	4:30:00 AM	153.497	8:45:00 AM	84095.9
11/19/2019 0:00	37.991	7.459	3:30:00 AM	123.604	7:15:00 AM	54707.5
11/20/2019 0:00	22.918	3.847	2:45:00 AM	66.68	6:30:00 AM	33002.5
11/21/2019 0:00	16.282	4.508	2:45:00 AM	52.576	7:00:00 AM	23446.3
11/22/2019 0:00	22.81	3.626	4:45:00 AM	60.165	8:30:00 AM	32846.6
11/23/2019 0:00	33.263	5.69	6:30:00 AM	89.818	11:45:00 AM	47898.1
11/24/2019 0:00	37.139	11.509	3:30:00 AM	82.164	10:30:00 AM	53480.1
11/25/2019 0:00	37.891	7.521	4:45:00 AM	94.166	7:45:00 AM	54562.9
11/26/2019 0:00	30.716	6.669	3:15:00 AM	88.993	7:15:00 AM	44231.3
11/27/2019 0:00	43.789	10.7	3:45:00 AM	92.627	10:30:00 AM	63055.8
11/28/2019 0:00	51.681	11.935	3:15:00 AM	116.647	12:00:00 PM	74420.6
11/29/2019 0:00	41.682	10.839	3:30:00 AM	106.269	9:00:00 AM	60022
11/30/2019 0:00	47.99	17.978	4:45:00 AM	100.291	10:30:00 AM	69106.3
						60,301
12/1/2019 0:00	37.423	10.311	4:30:00 AM	107.803	11:45:00 AM	53889.6
12/2/2019 0:00	39.226	15.385	3:15:00 AM	70.624	7:45:00 AM	56486
12/3/2019 0:00	33.164	10.436	2:15:00 AM	72.952	8:00:00 AM	47755.8
12/4/2019 0:00	35.817	8.145	4:15:00 AM	94.658	7:30:00 AM	51576.2
12/5/2019 0:00	42.945	9.715	11:45:00 PM	106.55	7:45:00 AM	61840.2
12/6/2019 0:00	45.675	9.949	4:45:00 AM	101.691	7:15:00 AM	65772.5
12/7/2019 0:00	47.488	8.233	4:30:00 AM	104.033	1:00:00 PM	68383.1
12/8/2019 0:00	56.101	9.99	5:00:00 AM	110.734	9:00:00 AM	80785.5
12/9/2019 0:00	58.773	7.43	4:15:00 AM	127.822	8:15:00 PM	84632.6

12/10/2019 0:00	64.808	28.58	3:15:00 AM	113.573	4:00:00 PM	93323.4
12/11/2019 0:00	50.049	15.348	3:00:00 AM	95.279	7:00:00 AM	72070.2
12/12/2019 0:00	48.673	18.285	5:00:00 AM	107.465	9:45:00 PM	70089.7
12/13/2019 0:00	36.175	12.417	4:15:00 AM	121.581	7:45:00 AM	52092.4
12/14/2019 0:00	47.122	17.134	4:00:00 AM	90.338	10:15:00 AM	67855.2
12/15/2019 0:00	37.426	10.703	5:00:00 AM	96.922	1:00:00 PM	53893.8
12/16/2019 0:00	39.294	13.611	2:45:00 AM	95.748	8:30:00 AM	56583.7
12/17/2019 0:00	62.442	13.911	2:30:00 AM	111.209	7:45:00 AM	89916.3
12/18/2019 0:00	49.462	17.328	1:45:00 AM	121.512	7:45:00 AM	71224.6
12/19/2019 0:00	59.567	16.932	3:15:00 AM	166.27	7:45:00 AM	85776.6
12/20/2019 0:00	44.553	13.972	2:30:00 AM	128.266	8:30:00 AM	64156.9
12/21/2019 0:00	47.358	13.617	2:30:00 AM	105.784	6:45:00 PM	68194.9
12/22/2019 0:00	47.24	7.01	4:30:00 AM	102.61	10:45:00 AM	68025.6
12/23/2019 0:00	48.605	8.031	2:15:00 AM	102.407	9:15:00 AM	69991
12/24/2019 0:00	61.29	6.673	5:00:00 AM	129.868	10:45:00 AM	88257
12/25/2019 0:00	43.827	8.273	5:45:00 AM	87.303	4:45:00 PM	63111.5
12/26/2019 0:00	45.425	6.638	4:00:00 AM	106.524	9:30:00 PM	65412.7
12/27/2019 0:00	56.396	21.852	5:45:00 AM	114.333	11:45:00 AM	81209.9
12/28/2019 0:00	56.755	7.559	4:45:00 AM	133.898	11:15:00 AM	81727.1
12/29/2019 0:00	49.52	6.703	3:45:00 AM	129.188	1:00:00 PM	71308.4
12/30/2019 0:00	66.506	9.856	4:15:00 AM	135.267	11:15:00 AM	95768.5
12/31/2019 0:00	64.717	26.569	4:45:00 AM	127.114	1:00:00 PM	93192
						70,784

Site Name	Meter #2 FV-39	Meter #2 FV-39	Meter #2 FV-39			
Isco Quantity	Flow Rate	Flow Rate	Min/Max	Flow Rate	Min/Max	Volume
Label	Avg Flow Rate	Min Flow Rate	Min/Max	Max Flow Rate	Min/Max	Daily Total
Units	gpm	gpm	Date/Time	gpm	Date/Time	gal
Resolution	0.1	0.1	N/A	0.1	N/A	0
Significant Digits	0	0	N/A	0	N/A	-
2/1/2019 0:00	34.194	4.145	4:15:00 AM	225.766	7:30:00 AM	49239
2/2/2019 0:00	36.279	6.516	2:30:00 AM	109.416	10:45:00 AM	52242.5
2/3/2019 0:00	30.518	-12.918	9:30:00 AM	78.905	12:15:00 PM	43945.7
2/4/2019 0:00	25.566	4.25	4:30:00 AM	86.614	7:00:00 AM	36814.4
2/5/2019 0:00	28.938	5.204	5:15:00 AM	91.173	7:00:00 AM	41670.6
2/6/2019 0:00	28.453	5.076	4:00:00 AM	97.042	7:00:00 AM	40972.3
2/7/2019 0:00	31.591	3.574	3:45:00 AM	100.056	10:00:00 PM	45490.8
2/8/2019 0:00	28.935	5.447	3:00:00 AM	96.167	7:30:00 AM	41666
2/9/2019 0:00	34.137	5.511	1:15:00 AM	88.96	11:15:00 AM	49156.7
2/10/2019 0:00	39.504	4.694	5:00:00 AM	120.824	2:45:00 PM	56886.5
2/11/2019 0:00	33.923	6.518	2:30:00 AM	96.679	8:15:00 AM	48849.8
2/12/2019 0:00	30.45	3.106	3:45:00 AM	84.049	6:30:00 PM	43847.8
2/13/2019 0:00	37.161	7.052	4:15:00 AM	96.801	7:15:00 AM	53512
2/14/2019 0:00	29.338	5.709	2:45:00 PM	109.845	7:15:00 AM	42246.6
2/15/2019 0:00	30.498	5.223	3:00:00 AM	97.273	10:00:00 AM	43916.5
2/16/2019 0:00	29.667	3.994	5:45:00 AM	99.801	2:15:00 PM	42721.1
2/17/2019 0:00	33.586	4.298	5:15:00 AM	100.605	10:45:00 AM	48364.4
2/18/2019 0:00	35.579	4.85	3:00:00 AM	91.848	11:45:00 AM	51233.8
2/19/2019 0:00	27.252	4.506	4:00:00 AM	93.815	8:15:00 AM	39243.6
2/20/2019 0:00	32.108	5.283	1:30:00 AM	87.627	12:30:00 PM	46236.1
2/21/2019 0:00	38.666	5.786	1:15:00 AM	153.796	7:30:00 AM	55678.8
2/22/2019 0:00	27.949	5.401	5:00:00 AM	104.477	7:45:00 AM	40246.1
2/23/2019 0:00	34.054	4.203	5:30:00 AM	93.041	9:15:00 AM	49038.3
2/24/2019 0:00	48.521	5.77	2:45:00 AM	108.48	11:45:00 AM	69870.1
2/25/2019 0:00	32.927	5.57	2:45:00 AM	112.569	8:15:00 AM	47414.8
2/26/2019 0:00	26.334	4.85	2:00:00 AM	98.84	7:30:00 AM	37921.6
2/27/2019 0:00	31.245	5.645	4:45:00 AM	111.707	7:00:00 AM	44992.3
2/28/2019 0:00	32.612	5.647	4:30:00 AM	93.896	7:45:00 AM	46961.3
						46,799
3/1/2019 0:00	33.162	4.598	2:30:00 AM	102.105	9:00:00 AM	47752.8
3/2/2019 0:00	37.524	6.475	11:45:00 PM	94.411	8:45:00 AM	54034.5
3/3/2019 0:00	41.695	4.165	5:30:00 AM	112.429	12:00:00 PM	60040.7
3/4/2019 0:00	40.443	5.143	4:45:00 AM	112.839	8:45:00 AM	58237.3
3/5/2019 0:00	31.284	4.786	4:30:00 AM	111.101	7:30:00 AM	45049.2
3/6/2019 0:00	19.822	2.777	5:00:00 AM	67.798	7:30:00 AM	28544
3/7/2019 0:00	22.605	4.024	3:15:00 AM	81.886	8:00:00 AM	32551.2
3/8/2019 0:00	27.448	3.375	2:30:00 AM	99.866	8:15:00 AM	39525.2
3/9/2019 0:00	37.06	4.381	3:00:00 AM	99.826	10:30:00 AM	53366.9
3/10/2019 0:00	54.851	7.09	2:00:00 AM	125.144	9:30:00 AM	78985.8
3/11/2019 0:00	32.725	8.286	2:15:00 AM	80.817	7:00:00 AM	47123.5
3/12/2019 0:00	34.925	6.712	4:30:00 AM	93.321	7:15:00 PM	50292.7
3/13/2019 0:00	36.873	5.48	4:45:00 AM	111.961	6:15:00 AM	53097.7

3/14/2019 0:00	29.296	5.296	2:30:00 AM	102.884	6:30:00 AM	42186.2
3/15/2019 0:00	26.704	5.32	4:30:00 AM	91.487	8:45:00 AM	38453.4
3/16/2019 0:00	33.621	3.706	2:00:00 AM	96.957	8:45:00 AM	48413.9
3/17/2019 0:00	41.975	4.005	4:00:00 AM	119.457	8:15:00 AM	60443.7
3/18/2019 0:00	31.221	5.871	12:00:00 AM	98.914	6:30:00 AM	44959
3/19/2019 0:00	33.96	5.097	1:30:00 AM	96.87	7:00:00 PM	48902.1
3/20/2019 0:00	29.1	5.032	4:15:00 AM	90.363	6:45:00 AM	41904.6
3/21/2019 0:00	37.802	6.348	4:45:00 AM	91.204	6:30:00 AM	54434.9
3/22/2019 0:00	45.245	7.614	1:15:00 AM	107.696	8:30:00 AM	65153.4
3/23/2019 0:00	34.508	4.612	5:15:00 AM	89.065	10:45:00 AM	49691.8
3/24/2019 0:00	42.784	4.823	1:00:00 AM	113.233	8:00:00 PM	61609.2
3/25/2019 0:00	31.96	4.461	4:15:00 AM	119.201	2:15:00 PM	46021.8
3/26/2019 0:00	34.064	3.788	2:30:00 AM	108.605	6:30:00 AM	49052.1
3/27/2019 0:00	31.865	4.776	3:15:00 AM	111.233	6:30:00 AM	45885.8
3/28/2019 0:00	27.691	4.693	10:45:00 PM	60.672	7:30:00 AM	39874.6
3/29/2019 0:00	38.166	4.257	12:30:00 AM	96.237	6:15:00 PM	54959.5
3/30/2019 0:00	34.952	2.928	3:00:00 AM	103.023	9:00:00 AM	50330.7
3/31/2019 0:00	34.206	2.702	3:15:00 AM	96.491	10:15:00 AM	49257
						49,682
4/1/2019 0:00	29.145	3.504	4:00:00 AM	83.747	8:15:00 AM	41969.3
4/2/2019 0:00	30.901	3.22	1:00:00 AM	96.602	6:00:00 AM	44497
4/3/2019 0:00	33.259	3.4	2:30:00 AM	96.403	5:45:00 AM	47892.4
4/4/2019 0:00	27.906	5.198	2:00:00 AM	96.818	7:15:00 AM	40184.3
4/5/2019 0:00	29.485	4.209	4:30:00 AM	111.343	6:45:00 AM	42458.7
4/6/2019 0:00	33.577	5.323	2:45:00 AM	107.605	9:00:00 AM	48351
4/7/2019 0:00	40.826	4.922	3:45:00 AM	103.792	9:00:00 AM	58790
4/8/2019 0:00	34.614	3.59	4:00:00 AM	115.398	6:15:00 AM	49844.6
4/9/2019 0:00	25.279	3.164	2:00:00 AM	85.743	6:45:00 AM	36401.7
4/10/2019 0:00	16.816	3.348	2:15:00 AM	65.594	7:00:00 AM	24214.4
4/11/2019 0:00	15.406	4.097	1:45:00 AM	59.407	7:30:00 PM	22183.9
4/12/2019 0:00	17.926	3.85	1:00:00 AM	64.536	6:15:00 AM	25813.4
4/13/2019 0:00	23.751	5.238	2:45:00 AM	86.087	8:45:00 AM	34201.5
4/14/2019 0:00	35.378	3.338	4:30:00 AM	101.537	7:45:00 PM	50944.2
4/15/2019 0:00	30.556	4.124	3:00:00 AM	94.375	5:45:00 AM	44000.1
4/16/2019 0:00	29.012	3.549	1:45:00 AM	89.413	8:30:00 PM	41777.5
4/17/2019 0:00	28.317	4.937	1:30:00 AM	88.653	6:00:00 AM	40776.8
4/18/2019 0:00	29.667	3.016	4:15:00 AM	70.806	7:00:00 PM	42720.5
4/19/2019 0:00	33.298	5.317	5:00:00 AM	91.204	7:00:00 AM	47949.1
4/20/2019 0:00	42.127	6.236	5:00:00 AM	91.632	9:00:00 AM	60663.3
4/21/2019 0:00	28.175	5.457	4:00:00 AM	98.797	8:45:00 AM	40571.6
4/22/2019 0:00	28.682	3.973	3:45:00 AM	101.032	8:00:00 AM	41301.6
4/23/2019 0:00	28.175	3.566	4:00:00 AM	93.412	7:15:00 AM	40571.6
4/24/2019 0:00	24.021	4.211	2:45:00 AM	100.298	7:15:00 AM	34590.1
4/25/2019 0:00	25.977	3.369	2:15:00 AM	112.887	6:15:00 AM	37407.6
4/26/2019 0:00	38.614	5.43	2:00:00 AM	102.598	7:15:00 AM	55603.6
4/27/2019 0:00	37.268	6.209	4:30:00 AM	95.346	10:00:00 AM	53665.6
4/28/2019 0:00	38.445	4.273	4:30:00 AM	100.327	9:00:00 AM	55360.4
4/29/2019 0:00	32.369	4.331	1:30:00 AM	104.009	9:00:00 AM	46611.4
4/30/2019 0:00	34.775	3.857	1:00:00 AM	105.038	6:30:00 AM	50076.3

						43,380
5/1/2019 0:00	27.158	4.173	4:45:00 AM	94.131	8:45:00 PM	39106.8
5/2/2019 0:00	29.501	1.786	4:00:00 AM	118.468	6:45:00 AM	42481.6
5/3/2019 0:00	29.896	4.587	2:45:00 AM	82.216	6:15:00 AM	43050.5
5/4/2019 0:00	37.81	3.84	4:30:00 AM	102.796	10:45:00 AM	54446.5
5/5/2019 0:00	46.883	4.577	2:15:00 AM	124.148	5:30:00 PM	67511.9
5/6/2019 0:00	40.971	2.945	2:45:00 AM	107.495	6:30:00 AM	58998
5/7/2019 0:00	33.272	4.841	4:00:00 AM	104.304	7:15:00 AM	47911
5/8/2019 0:00	33.969	4.1	3:00:00 AM	102.955	6:00:00 AM	48914.9
5/9/2019 0:00	31.657	4.766	12:15:00 AM	100.537	6:15:00 AM	45585.5
5/10/2019 0:00	34.406	6.262	3:15:00 AM	101.312	7:15:00 AM	49544.6
5/11/2019 0:00	35.548	4.053	4:00:00 AM	91.396	8:00:00 AM	51189.1
5/12/2019 0:00	49.459	4.722	4:15:00 AM	127.522	2:30:00 PM	71220.4
5/13/2019 0:00	55.254	6.529	2:15:00 AM	123.129	6:45:00 PM	79565.5
5/14/2019 0:00	47.946	7.317	2:00:00 AM	124.215	6:30:00 AM	69042.7
5/15/2019 0:00	35.66	6.208	1:15:00 AM	113.575	6:30:00 AM	51350.3
5/16/2019 0:00	38.937	5.8	3:45:00 AM	111.274	6:45:00 AM	56069.9
5/17/2019 0:00	37.838	6.536	2:30:00 AM	101.176	7:15:00 AM	54487.2
5/18/2019 0:00	31.496	5.066	3:45:00 AM	85.652	7:00:00 AM	45354.7
5/19/2019 0:00	39.94	5.464	2:00:00 AM	98.554	8:30:00 AM	57513.5
5/20/2019 0:00	33.511	4.949	1:00:00 AM	99.619	6:45:00 AM	48255.6
5/21/2019 0:00	30.903	4.856	3:00:00 AM	92.675	7:15:00 AM	44500.4
5/22/2019 0:00	29.326	4.439	3:30:00 AM	92.475	8:30:00 PM	42229
5/23/2019 0:00	28.144	4.975	4:00:00 AM	97.22	8:45:00 AM	40528
5/24/2019 0:00	33.149	4.297	2:45:00 AM	104.441	6:45:00 AM	47734
5/25/2019 0:00	22.404	2.33	3:00:00 AM	75.538	11:45:00 AM	32261.3
5/26/2019 0:00	26.658	3.899	4:45:00 AM	74.547	3:45:00 PM	38387.8
5/27/2019 0:00	35.087	3.689	5:45:00 AM	90.299	6:45:00 PM	50524.8
5/28/2019 0:00	32.876	2.639	4:30:00 AM	96.089	7:00:00 AM	47341.2
5/29/2019 0:00	38.652	4.256	3:30:00 AM	178.892	6:00:00 PM	55658.5
5/30/2019 0:00	37.391	5.472	4:00:00 AM	117.722	4:45:00 PM	53842.4
5/31/2019 0:00	39.321	6.746	12:45:00 AM	96.258	6:45:00 AM	56622.4
						51,330
6/1/2019 0:00	38.159	5.517	3:15:00 AM	104.205	11:15:00 AM	54948.8
6/2/2019 0:00	42.758	3.69	3:15:00 AM	93.417	4:30:00 PM	61571.8
6/3/2019 0:00	31.517	5.207	3:30:00 AM	95.267	6:30:00 AM	45385.1
6/4/2019 0:00	31.979	4.32	2:00:00 AM	100.637	7:30:00 AM	46049.4
6/5/2019 0:00	34.032	4.072	2:30:00 AM	91.396	7:30:00 AM	49006.4
6/6/2019 0:00	36.265	5.603	3:45:00 AM	90.865	6:15:00 AM	52222.3
6/7/2019 0:00	28.354	3.333	3:45:00 AM	96.891	8:30:00 AM	40829.8
6/8/2019 0:00	25.525	3.7	4:00:00 AM	78.565	9:30:00 AM	36756.4
6/9/2019 0:00	31.418	3.284	2:45:00 AM	81.014	7:30:00 PM	45241.6
6/10/2019 0:00	31.466	3.392	3:00:00 AM	83.699	7:30:00 PM	45311.2
6/11/2019 0:00	22.723	3.54	1:15:00 AM	85.456	7:15:00 PM	32720.6
6/12/2019 0:00	28.415	4.427	3:00:00 AM	84.141	7:30:00 AM	40917.5
6/13/2019 0:00	39.813	4.606	3:15:00 AM	122.728	7:45:00 AM	57330.5
6/14/2019 0:00	36.902	6.468	12:30:00 AM	116.192	1:45:00 AM	53139
6/15/2019 0:00	37.652	4.378	5:15:00 AM	97.23	2:45:00 PM	54219.5

6/16/2019 0:00	31.336	5.639	1:30:00 AM	101.791	7:00:00 PM	45123.6
6/17/2019 0:00	32.266	6.109	3:30:00 AM	87.235	6:00:00 AM	46462.7
6/18/2019 0:00	29.614	5.691	3:15:00 AM	97.513	6:15:00 AM	42644.4
6/19/2019 0:00	35.672	6.621	1:15:00 AM	98.302	8:30:00 PM	51367.3
6/20/2019 0:00	37.071	5.077	3:30:00 AM	100.289	6:45:00 AM	53381.7
6/21/2019 0:00	34.01	5.867	1:15:00 AM	100.12	6:30:00 AM	48974
6/22/2019 0:00	24.959	5.099	5:00:00 AM	97.981	9:00:00 AM	35941.2
6/23/2019 0:00	33.117	4.267	3:30:00 AM	101.268	11:30:00 AM	47687.9
6/24/2019 0:00	27.98	3.498	12:45:00 AM	91.089	6:30:00 AM	40290.8
6/25/2019 0:00	32.152	5.063	2:30:00 AM	84.241	10:45:00 AM	46298.3
6/26/2019 0:00	31.056	4.618	4:00:00 AM	82.991	6:45:00 AM	44720.6
6/27/2019 0:00	33.598	5.33	3:45:00 AM	95.177	6:15:00 AM	48381.3
6/28/2019 0:00	30.299	4.205	3:00:00 AM	85.658	7:00:00 AM	43630.2
6/29/2019 0:00	29.941	3.686	3:45:00 AM	79.613	9:30:00 AM	43114.7
6/30/2019 0:00	32.464	3.635	5:00:00 AM	81.641	8:45:00 PM	46260.8
						46,664
7/1/2019 0:00	26.314	4.429	2:00:00 PM	71.723	8:00:00 AM	37892.3
7/2/2019 0:00	27.124	3.502	4:00:00 AM	82.848	6:30:00 AM	39058.7
7/3/2019 0:00	27.541	4.993	3:30:00 AM	74.629	6:45:00 AM	39659
7/4/2019 0:00	25.379	4.415	3:30:00 AM	61.388	5:45:00 PM	36546.3
7/5/2019 0:00	21.896	5.698	4:00:00 AM	60.005	10:45:00 AM	31530.1
7/6/2019 0:00	22.874	4.957	3:30:00 AM	65.406	12:30:00 PM	32938.2
7/7/2019 0:00	27.572	5.437	12:30:00 AM	75.621	7:45:00 PM	39703.1
7/8/2019 0:00	22.557	3.993	2:15:00 AM	67.538	8:00:00 AM	32482.1
7/9/2019 0:00	26.377	5.797	3:30:00 AM	78.998	8:30:00 AM	37982.5
7/10/2019 0:00	30.249	2.354	1:30:00 AM	92.3	7:30:00 PM	43558.4
7/11/2019 0:00	39.996	4.456	2:30:00 AM	192.718	7:00:00 PM	57594
7/12/2019 0:00	27.771	5.337	2:00:00 AM	94.308	7:00:00 AM	39990.4
7/13/2019 0:00	27.179	4.037	3:30:00 AM	108.456	9:45:00 AM	39138.4
7/14/2019 0:00	34.542	5.201	2:00:00 AM	83.905	6:45:00 PM	49739.8
7/15/2019 0:00	28.319	4.614	3:00:00 AM	89.12	8:45:00 AM	40779.4
7/16/2019 0:00	24.506	3.548	3:15:00 AM	93.133	8:30:00 AM	35288.9
7/17/2019 0:00	28.945	3.379	4:15:00 AM	76.455	7:15:00 AM	41680.2
7/18/2019 0:00	25.457	4.481	4:00:00 AM	86.195	7:30:00 AM	36657.5
7/19/2019 0:00	23.119	3.513	4:00:00 AM	70.112	7:45:00 AM	33290.7
7/20/2019 0:00	24.302	4.58	3:00:00 PM	73.796	1:30:00 PM	34994.2
7/21/2019 0:00	31.614	4.845	2:30:00 AM	88.001	5:15:00 PM	45524.3
7/22/2019 0:00	29.466	5.086	4:00:00 AM	95.219	8:15:00 PM	42430.9
7/23/2019 0:00	36.66	7.506	2:30:00 PM	123.436	6:15:00 AM	52790.4
7/24/2019 0:00	30.076	5.074	2:15:00 AM	97.135	6:15:00 AM	43308.7
7/25/2019 0:00	21.877	2.218	4:45:00 AM	88.51	6:30:00 AM	31503.3
7/26/2019 0:00	23.869	4.451	1:45:00 AM	67.43	7:15:00 AM	34371.1
7/27/2019 0:00	21.54	5.617	4:00:00 AM	69.549	5:00:00 PM	31017.4
7/28/2019 0:00	31.649	3.149	5:00:00 AM	79.744	4:00:00 PM	45574.1
7/29/2019 0:00	26.412	4.017	3:15:00 AM	74.351	6:30:00 AM	38033.5
7/30/2019 0:00	20.379	2.835	3:45:00 AM	82.196	8:00:00 AM	29345.3
7/31/2019 0:00	28.498	4.687	3:30:00 AM	105.601	2:00:00 PM	41036.5
						39,208

8/1/2019 0:00	19.519	4.213	3:45:00 AM	70.361	7:30:00 AM	28107.3
8/2/2019 0:00	18.258	3.128	3:30:00 AM	88.089	9:45:00 AM	26291.9
8/3/2019 0:00	25.586	4.342	5:15:00 AM	101.37	9:00:00 AM	36844.2
8/4/2019 0:00	31.262	4.231	3:45:00 AM	88.291	2:00:00 PM	45016.9
8/5/2019 0:00	22.308	4.543	4:00:00 AM	79.275	6:15:00 AM	32122.8
8/6/2019 0:00	29.619	4.181	2:15:00 AM	86.067	7:00:00 PM	42651.5
8/7/2019 0:00	35.915	3.507	1:00:00 AM	87.598	7:45:00 PM	51717.4
8/8/2019 0:00	28.974	5.393	3:00:00 AM	96.184	9:15:00 AM	41722
8/9/2019 0:00	27.835	2.634	2:30:00 AM	77.642	7:30:00 AM	40083.1
8/10/2019 0:00	23.947	3.52	4:30:00 AM	77.589	10:15:00 AM	34484.2
8/11/2019 0:00	32.311	3.46	3:30:00 AM	95.386	12:00:00 PM	46528.3
8/12/2019 0:00	25.097	4.034	1:15:00 AM	79.146	7:30:00 AM	36140.3
8/13/2019 0:00	28.797	5.246	12:45:00 AM	80.352	6:30:00 AM	41467.2
8/14/2019 0:00	29.812	3.523	1:15:00 AM	64.734	7:30:00 PM	42929.1
8/15/2019 0:00	26.187	2.209	2:15:00 AM	67.928	6:45:00 AM	37709.7
8/16/2019 0:00	24.603	2.914	3:30:00 AM	72.135	12:30:00 PM	35427.7
8/17/2019 0:00	22.34	2.135	5:00:00 AM	63.792	12:00:00 PM	32169.4
8/18/2019 0:00	30.48	4.082	2:15:00 AM	72.528	8:00:00 PM	43891.2
8/19/2019 0:00	25.257	2.766	4:00:00 AM	78.879	8:45:00 PM	36370.3
8/20/2019 0:00	24.771	1.461	2:15:00 AM	89.635	7:15:00 AM	35669.5
8/21/2019 0:00	24.449	3.924	4:15:00 AM	69.294	8:45:00 PM	35206.1
8/22/2019 0:00	22.948	1.154	1:00:00 AM	68.495	8:00:00 AM	33044.7
8/23/2019 0:00	24.601	3.35	1:45:00 AM	67.319	8:00:00 AM	35425.5
8/24/2019 0:00	20.234	2.359	6:15:00 AM	72.353	9:15:00 AM	29137.5
8/25/2019 0:00	24.878	2.009	2:00:00 AM	74.688	8:30:00 PM	35825
8/26/2019 0:00	18.518	2.003	3:45:00 AM	75.64	8:15:00 PM	26665.3
8/27/2019 0:00	21.508	1.843	4:15:00 AM	79.529	6:45:00 AM	30971.3
8/28/2019 0:00	18.552	3.172	12:15:00 AM	86.326	7:15:00 AM	26714.2
8/29/2019 0:00	21.805	3.525	2:15:00 AM	88.586	8:45:00 PM	31399.6
8/30/2019 0:00	18.02	2.441	3:30:00 AM	65.576	10:00:00 AM	25949.3
8/31/2019 0:00	19.44	1.628	2:00:00 AM	65.971	11:00:00 AM	27993.3
						35,667
9/1/2019 0:00	20.468	0.911	5:00:00 AM	67.83	9:15:00 AM	29474.2
9/2/2019 0:00	31.524	2.185	12:45:00 AM	94.602	2:30:00 PM	45394
9/3/2019 0:00	29.63	3.162	3:15:00 AM	95.505	6:30:00 AM	42667.9
9/4/2019 0:00	24.853	1.728	2:15:00 AM	116.374	6:15:00 AM	35788.4
9/5/2019 0:00	28.973	2.642	12:15:00 AM	88.014	9:00:00 PM	41721.2
9/6/2019 0:00	19.702	2.084	1:45:00 AM	55.842	6:00:00 AM	28370.9
9/7/2019 0:00	19.838	1.761	5:15:00 AM	65.356	9:30:00 AM	28566.1
9/8/2019 0:00	31.694	1.291	2:15:00 AM	95.471	6:30:00 PM	45639.9
9/9/2019 0:00	21.721	1.661	1:15:00 AM	80.897	6:00:00 AM	31278.5
9/10/2019 0:00	22.283	2.164	3:15:00 AM	79.523	6:45:00 PM	32087.5
9/11/2019 0:00	23.99	3.032	3:45:00 AM	91.485	6:15:00 AM	34545
9/12/2019 0:00	27.375	2.843	3:45:00 AM	86.882	6:15:00 AM	39419.5
9/13/2019 0:00	26.367	1.897	3:45:00 AM	92.459	6:45:00 AM	37968.3
9/14/2019 0:00	23.657	1.957	4:00:00 AM	80.11	10:15:00 AM	34065.7
9/15/2019 0:00	30.383	2.106	5:45:00 AM	100.607	7:45:00 PM	43751.7
9/16/2019 0:00	24.736	1.524	4:00:00 AM	79.35	7:45:00 AM	35619.9
9/17/2019 0:00	24.467	2.328	2:00:00 AM	83.238	7:30:00 PM	35232.2

9/18/2019 0:00	21.838	2.121	11:30:00 PM	76.209	7:00:00 AM	31447.4
9/19/2019 0:00	20.913	1.147	3:15:00 AM	70.007	9:00:00 PM	30114.8
9/20/2019 0:00	19.53	2.233	12:45:00 AM	98.276	7:00:00 AM	28123.7
9/21/2019 0:00	21.106	1.716	3:30:00 AM	80.12	8:15:00 AM	30393.3
9/22/2019 0:00	28.782	1.339	3:45:00 AM	81.009	6:30:00 PM	41446.2
9/23/2019 0:00	25.003	1.966	3:45:00 AM	84.556	7:00:00 AM	36004.3
9/24/2019 0:00	23.086	2.366	2:30:00 AM	91.928	6:00:00 AM	33244.2
9/25/2019 0:00	20.444	2.159	3:30:00 AM	80.654	6:45:00 AM	29439.6
9/26/2019 0:00	19.282	1.664	3:15:00 AM	80.86	6:00:00 AM	27766.5
9/27/2019 0:00	16.855	1.28	4:15:00 AM	66.753	6:30:00 AM	24270.8
9/28/2019 0:00	23.41	0.781	5:00:00 AM	94.583	9:15:00 AM	33710.9
9/29/2019 0:00	16.072	-18.787	9:30:00 PM	55	10:15:00 AM	23143.8
9/30/2019 0:00	2.274	-33.578	7:15:00 PM	32.803	8:00:00 AM	3274.73
						33,127
10/1/2019 0:00	-4.438	-43.535	8:45:00 PM	19.672	9:45:00 AM	-6390.73
10/2/2019 0:00	15.616	-31.956	5:30:00 AM	72.176	7:15:00 PM	22486.6
10/3/2019 0:00	22.75	2.158	4:45:00 AM	78.753	5:45:00 AM	32759.4
10/4/2019 0:00	18.706	1.123	4:00:00 AM	93.973	7:30:00 AM	26936.3
10/5/2019 0:00	19.02	1.712	1:00:00 AM	80.711	10:30:00 AM	27388.2
10/6/2019 0:00	28.449	2.357	4:00:00 AM	81.06	9:30:00 AM	40967.2
10/7/2019 0:00	26.742	1.212	1:45:00 AM	104.378	6:30:00 AM	38507.8
10/8/2019 0:00	20.04	2.472	3:30:00 AM	74.846	7:00:00 AM	28856.9
10/9/2019 0:00	23.723	2.064	4:45:00 AM	78.662	6:15:00 AM	34161.2
10/10/2019 0:00	25.731	1.994	4:15:00 AM	80.037	8:30:00 PM	37052.3
10/11/2019 0:00	21.329	2.793	1:15:00 AM	106.641	6:15:00 AM	30713.6
10/12/2019 0:00	23.936	1.495	1:45:00 AM	85.004	10:15:00 AM	34467.3
10/13/2019 0:00	23.251	1.558	4:30:00 AM	85.845	9:45:00 AM	33481
10/14/2019 0:00	22.846	3.219	1:45:00 AM	66.871	8:00:00 PM	32898.9
10/15/2019 0:00	17.987	2.351	3:00:00 AM	62.28	7:00:00 AM	25901
10/16/2019 0:00	27.937	2.617	12:30:00 AM	109.163	6:30:00 PM	40228.7
10/17/2019 0:00	25.31	3.425	4:00:00 AM	102.817	6:15:00 AM	36447.1
10/18/2019 0:00	19.003	2.01	4:45:00 AM	61.98	6:30:00 AM	27364.8
10/19/2019 0:00	26.857	2.839	2:30:00 AM	75.261	8:00:00 AM	38674.6
10/20/2019 0:00	30.202	2.541	4:15:00 AM	89.563	6:30:00 PM	43491.5
10/21/2019 0:00	27.419	3.413	3:15:00 AM	95.972	7:15:00 AM	39482.6
10/22/2019 0:00	23.16	5.171	2:00:00 AM	95.834	7:15:00 AM	33350.6
10/23/2019 0:00	19.98	4.02	4:00:00 AM	84.625	6:00:00 AM	28770.6
10/24/2019 0:00	16.378	2.098	1:15:00 AM	46.587	7:15:00 PM	23583.7
10/25/2019 0:00	20.103	2.873	4:15:00 AM	72.217	8:30:00 AM	28947.9
10/26/2019 0:00	21.428	2.309	2:30:00 AM	91.359	8:30:00 AM	30857
10/27/2019 0:00	39.713	2.003	2:00:00 AM	115.192	11:45:00 AM	57186.1
10/28/2019 0:00	25.364	2.429	12:00:00 AM	80.85	7:30:00 PM	36524.3
10/29/2019 0:00	26.829	1.752	2:00:00 AM	83.862	6:45:00 AM	38633.6
10/30/2019 0:00	23.219	3.003	12:30:00 AM	75.345	6:30:00 PM	33435
10/31/2019 0:00	26.649	4.865	3:30:00 AM	93.444	6:30:00 AM	38374
						34,064
11/1/2019 0:00	23.847	4.085	2:45:00 AM	79.161	7:45:00 AM	34339.3
11/2/2019 0:00	30.426	3.512	5:00:00 AM	92.399	10:00:00 AM	43813.6

11/3/2019 0:00	22.751	3.214	4:45:00 AM	70.677	8:45:00 AM	32761.9
11/4/2019 0:00	19.241	2.606	5:15:00 AM	64.618	7:15:00 AM	27706.8
11/5/2019 0:00	21.688	2.664	3:00:00 AM	98.967	7:45:00 AM	31231.3
11/6/2019 0:00	23.161	2.706	4:15:00 AM	91.212	8:15:00 AM	33351.6
11/7/2019 0:00	27.723	3.013	4:30:00 AM	118.016	7:00:00 AM	39920.8
11/8/2019 0:00	21.396	1.963	4:30:00 AM	69.985	8:00:00 AM	30810.4
11/9/2019 0:00	27.037	2.01	6:00:00 AM	99.67	11:45:00 AM	38933.5
11/10/2019 0:00	34.44	3.222	6:45:00 AM	94.731	9:15:00 AM	49593.3
11/11/2019 0:00	32.524	2.268	5:00:00 AM	87.498	8:00:00 PM	46834.5
11/12/2019 0:00	28.279	3.35	2:45:00 AM	106.367	7:30:00 AM	40722.4
11/13/2019 0:00	25.2	2.756	3:45:00 AM	96.406	8:00:00 AM	36288.2
11/14/2019 0:00	22.988	2.122	3:15:00 AM	89.159	7:30:00 AM	33102.2
11/15/2019 0:00	21.156	2.231	4:00:00 AM	95.791	7:00:00 AM	30464.7
11/16/2019 0:00	23.154	2.725	5:45:00 AM	80.077	10:45:00 AM	33341.3
11/17/2019 0:00	32.26	3.106	5:30:00 AM	78.228	11:45:00 AM	46453.9
11/18/2019 0:00	21.34	2.542	3:15:00 AM	93.062	8:15:00 AM	30729
11/19/2019 0:00	22.913	1.46	4:15:00 AM	86.955	7:15:00 AM	32994.1
11/20/2019 0:00	19.11	2.575	2:00:00 AM	94.548	8:15:00 AM	27518.1
11/21/2019 0:00	26.358	2.718	4:45:00 AM	95.313	8:30:00 AM	37955.2
11/22/2019 0:00	24.535	2.354	5:00:00 AM	89.831	8:30:00 AM	35330.2
11/23/2019 0:00	30.704	1.799	6:30:00 AM	99.961	9:15:00 AM	44214.2
11/24/2019 0:00	41.113	5.422	5:30:00 AM	97.898	11:15:00 AM	59202.8
11/25/2019 0:00	31.18	3.892	3:45:00 AM	100.765	10:30:00 AM	44899.4
11/26/2019 0:00	17.152	4.208	12:15:00 PM	57.392	11:30:00 PM	24698.9
11/27/2019 0:00	39.106	3.22	6:00:00 AM	99.364	7:30:00 PM	56312.9
11/28/2019 0:00	42.085	3.768	5:00:00 AM	120.638	12:15:00 PM	60601.7
11/29/2019 0:00	37.37	3.406	6:00:00 AM	119.726	1:30:00 PM	53813.2
11/30/2019 0:00	41.019	4.823	6:30:00 AM	121.336	11:30:00 AM	59067.6
						39,900
12/1/2019 0:00	44.868	2.813	4:00:00 AM	106.644	8:30:00 PM	64609.9
12/2/2019 0:00	35.926	4.144	5:15:00 AM	100.214	8:45:00 AM	51732.9
12/3/2019 0:00	31.76	6.418	2:15:00 AM	104.759	6:45:00 AM	45733.9
12/4/2019 0:00	32.053	4.205	5:00:00 AM	113.411	8:00:00 AM	46156.2
12/5/2019 0:00	27.523	4.862	4:00:00 AM	98.819	7:45:00 AM	39632.9
12/6/2019 0:00	25.114	2.512	5:00:00 AM	70.731	7:45:00 AM	36164.2
12/7/2019 0:00	28.845	2.578	6:30:00 AM	105.367	11:45:00 AM	41537
12/8/2019 0:00	36.917	3.386	5:00:00 AM	110.609	11:00:00 AM	53160.1
12/9/2019 0:00	41.373	4.623	4:15:00 AM	114.134	7:15:00 PM	59576.6
12/10/2019 0:00	33.496	5.758	2:00:00 AM	127.038	7:00:00 AM	48233.7
12/11/2019 0:00	25.804	5.193	4:45:00 AM	102.203	8:15:00 PM	37157.3
12/12/2019 0:00	27.701	4.669	3:00:00 AM	81.111	7:00:00 AM	39889
12/13/2019 0:00	36.725	5.298	2:30:00 AM	90.346	7:15:00 AM	52884.2
12/14/2019 0:00	49.773	7.222	4:45:00 AM	123.044	10:45:00 AM	71673.1
12/15/2019 0:00	43.697	3.904	3:15:00 AM	102.37	1:30:00 PM	62923.9
12/16/2019 0:00	37.118	5.931	5:45:00 AM	108.763	7:00:00 AM	53450.6
12/17/2019 0:00	51.393	10.796	3:45:00 AM	127.935	7:30:00 AM	74005.6
12/18/2019 0:00	43.97	6.579	4:45:00 AM	103.328	7:30:00 AM	63316.6
12/19/2019 0:00	39.102	7.536	4:45:00 AM	97.83	7:15:00 AM	56306.8
12/20/2019 0:00	36.687	5.579	5:00:00 AM	90.169	7:30:00 AM	52829
12/21/2019 0:00	42.03	4.826	4:45:00 AM	108.001	10:45:00 AM	60523.7

12/22/2019 0:00	41.849	4.376	5:45:00 AM	124.21	12:00:00 PM	60262.4
12/23/2019 0:00	44.921	5.962	1:45:00 AM	109.842	10:30:00 AM	64686.4
12/24/2019 0:00	41.36	4.365	6:45:00 AM	117.63	11:45:00 AM	59558.8
12/25/2019 0:00	44.783	4.578	6:30:00 AM	112.292	1:00:00 PM	64487.1
12/26/2019 0:00	38.778	3.566	3:30:00 AM	100.436	10:15:00 AM	55839.8
12/27/2019 0:00	38.42	3.125	6:00:00 AM	114.445	11:30:00 AM	55325
12/28/2019 0:00	37.121	3.389	4:30:00 AM	99.919	10:45:00 AM	53454.1
12/29/2019 0:00	39.456	4.111	5:45:00 AM	86.23	11:30:00 AM	56817.3
12/30/2019 0:00	43.19	3.574	4:00:00 AM	102.349	11:15:00 AM	62193
12/31/2019 0:00	32.899	5.125	4:30:00 AM	95.52	12:30:00 PM	47374.6
						54,564

Site Name	Meter #1 FV-1	Meter #1 FV-1	Meter #1 FV-1			
Isco Quantity	Flow Rate	Flow Rate	Min/Max	Flow Rate	Min/Max	Volume
Label	Avg Flow Rate	Min Flow Rate	Min/Max	Max Flow Rate	Min/Max	Daily Total
Units	gpm	gpm	Date/Time	gpm	Date/Time	gal
Resolution	0.1	0.1	N/A	0.1	N/A	0
Significant Digits	0	0	N/A	0	N/A	-
2/1/2019 0:00	4.415	0.501	5:15:00 AM	14.395	8:15:00 AM	6357.4
2/2/2019 0:00	5.313	0.585	2:30:00 AM	16.282	12:30:00 PM	7650.17
2/3/2019 0:00	5.333	0.579	8:00:00 AM	14.399	12:00:00 PM	7679.77
2/4/2019 0:00	4.708	0.379	3:00:00 AM	24.611	8:15:00 AM	6780.03
2/5/2019 0:00	3.537	0.309	1:15:00 AM	15.711	8:15:00 AM	5093.17
2/6/2019 0:00	3.442	0.12	5:30:00 AM	13.304	9:15:00 PM	4956.94
2/7/2019 0:00	4.482	0.397	5:15:00 AM	15.815	8:15:00 AM	6454.07
2/8/2019 0:00	4.919	0.647	2:30:00 AM	16.677	8:00:00 AM	7083.13
2/9/2019 0:00	5.228	0.425	5:00:00 AM	16.139	9:45:00 AM	7527.71
2/10/2019 0:00	5.299	0.924	3:45:00 AM	16.136	7:45:00 PM	7631.14
2/11/2019 0:00	4.959	0.864	3:15:00 AM	14.203	10:45:00 PM	7140.55
2/12/2019 0:00	5.151	0.431	2:30:00 AM	15.169	3:30:00 PM	7416.86
2/13/2019 0:00	4.459	0.458	3:45:00 PM	12.263	8:15:00 AM	6420.3
2/14/2019 0:00	3.909	0.549	2:00:00 AM	13.037	8:00:00 AM	5629.33
2/15/2019 0:00	4.313	0.718	2:30:00 AM	13.306	10:00:00 PM	6211.28
2/16/2019 0:00	3.624	0.382	5:45:00 AM	12.618	1:30:00 PM	5218.57
2/17/2019 0:00	4.776	0.558	4:15:00 AM	13.51	11:00:00 AM	6877.15
2/18/2019 0:00	4.727	0.556	3:45:00 AM	14.146	11:15:00 AM	6806.67
2/19/2019 0:00	4.466	0.41	4:15:00 AM	16.204	9:45:00 PM	6430.98
2/20/2019 0:00	6.974	0.719	3:00:00 AM	16.496	8:15:00 PM	10042.6
2/21/2019 0:00	3.65	0.372	2:30:00 AM	11.951	7:15:00 AM	5256.55
2/22/2019 0:00	3.96	-4.928	2:00:00 PM	13.462	8:30:00 AM	5703.08
2/23/2019 0:00	4.151	0.476	3:30:00 AM	13.479	10:15:00 AM	5977.42
2/24/2019 0:00	5.396	0.647	1:30:00 AM	18.698	8:45:00 PM	7770.65
2/25/2019 0:00	3.787	-3.961	5:00:00 PM	18.456	8:00:00 AM	5453
2/26/2019 0:00	6.546	0.251	2:15:00 AM	34.352	9:45:00 PM	9425.88
2/27/2019 0:00	8.319	0.888	2:45:00 AM	26.071	11:15:00 PM	11979.3
2/28/2019 0:00	7.68	0.913	5:45:00 AM	32.077	10:15:00 PM	11059.1
						7,073
3/1/2019 0:00	7.913	0.835	2:45:00 AM	30.363	11:15:00 AM	11395.4
3/2/2019 0:00	9.699	1.257	5:15:00 AM	38.456	3:45:00 PM	13966
3/3/2019 0:00	9.695	1.486	3:30:00 AM	46.791	8:30:00 PM	13960.9
3/4/2019 0:00	7.746	1.215	3:30:00 AM	19.73	10:15:00 AM	11154.3
3/5/2019 0:00	6.605	0.479	5:30:00 AM	35.892	1:30:00 PM	9511.47
3/6/2019 0:00	6.506	-9.211	11:15:00 PM	20.563	9:15:00 PM	9368.94
3/7/2019 0:00	6.411	-16.124	12:00:00 AM	20.092	8:30:00 AM	9232.27
3/8/2019 0:00	7.106	0.408	5:45:00 AM	28.289	8:45:00 PM	10232.8
3/9/2019 0:00	7.783	0.757	3:30:00 AM	35.998	12:45:00 PM	11207.5
3/10/2019 0:00	10.22	0.871	4:00:00 AM	34.038	11:45:00 AM	14716.7
3/11/2019 0:00	9.073	0.299	2:45:00 AM	38.472	8:00:00 AM	13064.7

3/12/2019 0:00	9.017	2.192	3:30:00 AM	24.941	1:45:00 PM	12985.2
3/13/2019 0:00	8.672	2.077	3:00:00 AM	30.15	12:00:00 PM	12487.8
3/14/2019 0:00	9.146	1.229	6:00:00 AM	35.917	8:30:00 AM	13170.8
3/15/2019 0:00	9.222	1.838	5:15:00 AM	37.193	6:45:00 AM	13279.6
3/16/2019 0:00	7.568	1.244	1:15:00 AM	30.946	8:15:00 AM	10898
3/17/2019 0:00	10.123	0.358	6:30:00 AM	32.618	12:15:00 PM	14577.6
3/18/2019 0:00	10.159	1.517	12:15:00 AM	27.566	7:00:00 PM	14629.4
3/19/2019 0:00	9.875	1.276	5:00:00 AM	32.782	7:45:00 AM	14220.4
3/20/2019 0:00	11.126	2.164	3:15:00 AM	24.977	7:15:00 AM	16021.8
3/21/2019 0:00	11.316	2.862	2:15:00 PM	32.163	9:00:00 AM	16294.7
3/22/2019 0:00	12.215	3.708	12:45:00 AM	33	8:15:00 PM	17589
3/23/2019 0:00	8.597	1.961	11:15:00 PM	22.936	11:00:00 AM	12380
3/24/2019 0:00	7.98	0.028	12:15:00 AM	23.295	12:45:00 PM	11491.8
3/25/2019 0:00	7.438	1.661	12:45:00 AM	26.008	8:45:00 PM	10710.3
3/26/2019 0:00	7.234	0.734	11:30:00 PM	34.374	7:45:00 AM	10417.3
3/27/2019 0:00	6.238	0.964	2:00:00 AM	24.325	5:15:00 PM	8982.51
3/28/2019 0:00	6.006	0.859	3:00:00 AM	18.115	8:45:00 PM	8649.2
3/29/2019 0:00	7.125	1.683	3:00:00 AM	26.722	7:00:00 AM	10260.2
3/30/2019 0:00	7.926	0.65	1:45:00 AM	22.951	1:45:00 PM	11412.9
3/31/2019 0:00	9.987	1.545	6:45:00 AM	38.589	11:15:00 AM	14381.1
						12,344
4/1/2019 0:00	6.436	0.574	1:00:00 AM	21.504	6:15:00 AM	9267.95
4/2/2019 0:00	5.409	0.966	5:15:00 AM	13.22	7:45:00 AM	7789.26
4/3/2019 0:00	4.732	0.356	3:00:00 AM	13.494	2:30:00 PM	6813.55
4/4/2019 0:00	5.181	0.446	1:15:00 PM	15.215	9:30:00 PM	7460.27
4/5/2019 0:00	6.899	0.969	4:30:00 AM	22.566	9:45:00 AM	9934.71
4/6/2019 0:00	8.463	2.003	6:00:00 AM	23.67	9:00:00 AM	12186.5
4/7/2019 0:00	10.159	2.001	1:45:00 AM	34.341	11:00:00 AM	14629.7
4/8/2019 0:00	9.288	2.627	2:45:00 PM	29.31	7:00:00 AM	13375.2
4/9/2019 0:00	8.968	2.422	2:15:00 PM	25.636	12:45:00 PM	12914
4/10/2019 0:00	9.757	2.56	4:00:00 AM	27.283	7:45:00 PM	14049.8
4/11/2019 0:00	11.402	2.079	1:15:00 AM	32.211	10:00:00 AM	16418.5
4/12/2019 0:00	9.81	2.098	4:45:00 AM	22.307	1:00:00 PM	14126.4
4/13/2019 0:00	11.354	1.638	4:30:00 AM	24.185	4:30:00 PM	16350
4/14/2019 0:00	9.405	2.19	6:30:00 AM	19.519	10:45:00 AM	13543.4
4/15/2019 0:00	9.174	2.1	4:00:00 AM	22.519	12:15:00 PM	13210.9
4/16/2019 0:00	7.662	2.298	1:15:00 AM	24.946	8:45:00 PM	11033.7
4/17/2019 0:00	6.841	0.58	4:30:00 AM	21.475	8:45:00 PM	9850.39
4/18/2019 0:00	8.542	2.348	1:15:00 AM	29.206	8:45:00 AM	12300
4/19/2019 0:00	8.89	0.592	4:15:00 AM	66.325	3:30:00 PM	12801.5
4/20/2019 0:00	9.564	2.449	5:30:00 AM	27.18	8:00:00 AM	13772.2
4/21/2019 0:00	8.551	2.6	1:45:00 AM	30.72	7:30:00 PM	12312.9
4/22/2019 0:00	6.589	1.871	4:15:00 AM	21.031	8:15:00 PM	9488.55
4/23/2019 0:00	11.885	0.786	4:00:00 AM	43.913	8:15:00 PM	17114.7
4/24/2019 0:00	8.597	2.688	4:30:00 PM	28.365	7:45:00 AM	12380.1
4/25/2019 0:00	9.529	-20.068	7:45:00 PM	33.109	9:45:00 AM	13722.1
4/26/2019 0:00	8.083	-13.612	5:15:00 PM	30.2	7:45:00 AM	11640.2

4/27/2019 0:00	7.605	1.013	1:30:00 AM	23.468	1:45:00 PM	10951.2
4/28/2019 0:00	8.981	-20.34	2:45:00 PM	24.595	8:45:00 AM	12932.7
4/29/2019 0:00	8.75	0.995	4:15:00 AM	33.622	8:30:00 PM	12600.5
4/30/2019 0:00	7.355	-7.801	6:30:00 PM	23.4	8:45:00 PM	10591.3
						12,185
5/1/2019 0:00	8.648	-17.011	9:30:00 AM	43.869	10:00:00 PM	12453.6
5/2/2019 0:00	8.487	2.128	5:30:00 AM	18.581	1:30:00 PM	12221.6
5/3/2019 0:00	8.599	3.924	5:00:00 PM	19.456	9:15:00 AM	12383
5/4/2019 0:00	9.659	3.462	5:15:00 AM	29.139	9:15:00 AM	13908.2
5/5/2019 0:00	9.895	1.935	3:00:00 AM	31.73	12:00:00 PM	14249.4
5/6/2019 0:00	10.295	3.627	4:00:00 AM	36.418	10:30:00 AM	14825.1
5/7/2019 0:00	10.308	2.462	4:45:00 AM	25.492	10:00:00 PM	14844.1
5/8/2019 0:00	9.272	2.401	3:45:00 AM	28.619	7:15:00 AM	13352.3
5/9/2019 0:00	9.095	3.167	12:30:00 AM	28.944	9:15:00 PM	13097
5/10/2019 0:00	7.92	2.11	4:30:00 AM	24.208	10:30:00 PM	11405.3
5/11/2019 0:00	8.548	-20.063	6:30:00 PM	39.972	11:15:00 AM	12309.3
5/12/2019 0:00	10.927	2.478	4:45:00 AM	31.238	12:00:00 PM	15734.5
5/13/2019 0:00	9.484	1.865	4:00:00 AM	36.383	9:30:00 PM	13656.8
5/14/2019 0:00	10.026	1.247	4:45:00 AM	40.038	8:45:00 AM	14437.8
5/15/2019 0:00	9.792	1.802	2:30:00 AM	40.609	7:30:00 AM	14100.6
5/16/2019 0:00	9.942	0.842	5:30:00 AM	29.629	7:45:00 AM	14315.9
5/17/2019 0:00	9.716	2.896	3:00:00 AM	32.358	8:45:00 AM	13991.6
5/18/2019 0:00	9.521	2.889	1:00:00 AM	27.824	8:15:00 PM	13709.9
5/19/2019 0:00	9.093	2.156	6:30:00 AM	28.522	9:15:00 PM	13094.6
5/20/2019 0:00	9.508	-4.809	3:15:00 PM	31.213	9:00:00 AM	13691.3
5/21/2019 0:00	8.724	1.638	10:00:00 PM	30.982	7:00:00 AM	12562
5/22/2019 0:00	6.577	0.845	5:30:00 AM	30.477	8:15:00 PM	9470.56
5/23/2019 0:00	8.373	2.619	11:30:00 PM	28.567	8:45:00 AM	12056.6
5/24/2019 0:00	6.9	2.2	2:15:00 PM	15.856	7:45:00 PM	9935.89
5/25/2019 0:00	7.124	0.679	3:30:00 AM	27.758	9:30:00 PM	10258.7
5/26/2019 0:00	10.007	2.626	3:15:00 AM	33.932	3:45:00 PM	14410.5
5/27/2019 0:00	12.191	2.179	6:30:00 AM	27.359	10:15:00 AM	17554.9
5/28/2019 0:00	11.829	2.825	2:15:00 AM	27.646	9:45:00 PM	17033.1
5/29/2019 0:00	12.027	3.677	12:30:00 AM	33.062	9:30:00 AM	17319.2
5/30/2019 0:00	12.807	2.248	2:15:00 AM	32.504	7:30:00 AM	18442.3
5/31/2019 0:00	9.951	4.59	12:00:00 AM	27.104	8:00:00 AM	14329.6
						13,715
6/1/2019 0:00	10.637	1.757	2:15:00 AM	34.286	10:00:00 AM	15317.3
6/2/2019 0:00	9.285	2.181	4:15:00 AM	28.187	5:30:00 PM	13370.2
6/3/2019 0:00	10.117	1.984	5:00:00 AM	25.923	7:30:00 AM	14567.8
6/4/2019 0:00	8.365	2.366	4:15:00 AM	23.154	6:15:00 AM	12045.8
6/5/2019 0:00	7.022	1.625	5:15:00 AM	24.025	8:15:00 PM	10112
6/6/2019 0:00	7.736	2.188	3:45:00 AM	31.395	9:45:00 AM	11140
6/7/2019 0:00	8.336	2.008	3:30:00 AM	28.669	10:30:00 AM	12003.4
6/8/2019 0:00	6.936	-20.991	12:15:00 PM	40.842	9:45:00 AM	9988.25
6/9/2019 0:00	7.548	1.609	5:30:00 AM	19.978	9:45:00 AM	10868.8

6/10/2019 0:00	7.487	1.695	4:15:00 AM	20.863	9:30:00 AM	10781.6
6/11/2019 0:00	9.293	4.532	12:45:00 PM	24.003	9:15:00 PM	13382.4
6/12/2019 0:00	8.674	3.535	4:00:00 AM	44.361	7:30:00 AM	12490.9
6/13/2019 0:00	8.642	-5.092	5:30:00 PM	30.15	8:30:00 PM	12445
6/14/2019 0:00	10.277	2.959	2:45:00 AM	44.195	11:00:00 AM	14798.2
6/15/2019 0:00	9.87	1.262	6:00:00 AM	26.847	8:00:00 AM	14213.1
6/16/2019 0:00	6.16	1.1	6:15:00 AM	21.083	9:45:00 AM	8870.44
6/17/2019 0:00	4.709	0.436	5:30:00 AM	15.247	9:45:00 AM	6781.46
6/18/2019 0:00	4.741	0.602	5:30:00 AM	10.829	7:00:00 AM	6826.96
6/19/2019 0:00	6.552	1.01	1:15:00 AM	20.253	7:30:00 PM	9434.69
6/20/2019 0:00	8.1	1.828	1:00:00 AM	21.121	10:30:00 AM	11664.6
6/21/2019 0:00	8.502	1.948	3:15:00 AM	31.221	8:45:00 AM	12242.8
6/22/2019 0:00	7.039	1.859	5:00:00 AM	18.392	3:15:00 PM	10136.6
6/23/2019 0:00	6.756	1.738	4:45:00 AM	25.713	5:45:00 PM	9728.63
6/24/2019 0:00	9.177	1.916	3:45:00 AM	33.318	7:30:00 AM	13215.3
6/25/2019 0:00	8.654	1.997	4:15:00 AM	29.88	8:30:00 AM	12462.4
6/26/2019 0:00	8.976	2.78	5:45:00 PM	29.904	9:00:00 AM	12925.9
6/27/2019 0:00	8.662	1.392	4:00:00 AM	23.585	7:15:00 AM	12473.8
6/28/2019 0:00	7.794	2.007	5:15:00 AM	21.431	10:30:00 PM	11223.8
6/29/2019 0:00	9.927	2.44	4:00:00 AM	24.747	2:45:00 PM	14294.4
6/30/2019 0:00	9.376	1.895	4:00:00 AM	25.11	2:15:00 PM	13360.5
						11,772
7/1/2019 0:00	7.659	1.94	3:30:00 AM	18.59	8:30:00 PM	11028.8
7/2/2019 0:00	6.828	0.975	1:30:00 AM	14.709	7:00:00 PM	9832.26
7/3/2019 0:00	6.979	1.063	2:45:00 AM	16.219	11:00:00 AM	10049.8
7/4/2019 0:00	6.504	1.298	4:15:00 AM	13.333	10:30:00 AM	9365.85
7/5/2019 0:00	4.491	1.355	5:00:00 AM	10.971	9:30:00 AM	6467.65
7/6/2019 0:00	5.391	1.228	2:15:00 AM	13.718	1:30:00 PM	7763.36
7/7/2019 0:00	5.255	0.967	4:30:00 AM	11.346	9:15:00 AM	7567.18
7/8/2019 0:00	4.378	1.325	4:45:00 AM	10.429	7:45:00 AM	6305.02
7/9/2019 0:00	3.926	-7.764	10:00:00 AM	8.963	8:45:00 PM	5654
7/10/2019 0:00	4.807	1.011	4:15:00 AM	9.415	6:30:00 PM	6921.5
7/11/2019 0:00	4.813	1.254	4:30:00 AM	11.796	7:15:00 PM	6931.19
7/12/2019 0:00	4.696	1.742	5:15:00 AM	11.092	8:00:00 AM	6761.99
7/13/2019 0:00	5.062	1.274	1:15:00 AM	12.286	2:45:00 PM	7289.01
7/14/2019 0:00	5.375	1.713	4:15:00 AM	15	7:15:00 PM	7739.38
7/15/2019 0:00	5.679	1.766	3:30:00 AM	11.331	9:30:00 PM	8178.18
7/16/2019 0:00	5.77	2.519	1:30:00 AM	14.068	7:45:00 AM	8309.02
7/17/2019 0:00	7.654	-13.887	11:15:00 PM	26.112	9:15:00 AM	11021.4
7/18/2019 0:00	7.718	3.052	2:45:00 AM	15.666	8:30:00 PM	11113.5
7/19/2019 0:00	8.353	3.166	4:30:00 AM	20.005	7:30:00 AM	12028
7/20/2019 0:00	7.276	0.472	6:00:00 AM	18.474	1:30:00 PM	10477.3
7/21/2019 0:00	8.987	1.446	4:30:00 AM	24.375	8:00:00 PM	12940.7
7/22/2019 0:00	8.083	1.333	4:30:00 AM	23.466	8:45:00 AM	11639.5
7/23/2019 0:00	6.977	0.492	2:00:00 AM	20.584	7:45:00 AM	10046.7
7/24/2019 0:00	8.214	0.825	4:15:00 AM	29.404	9:15:00 AM	11827.8
7/25/2019 0:00	7.731	0.641	1:45:00 AM	32.406	7:30:00 AM	11132.7

7/26/2019 0:00	7.714	1.549	11:15:00 PM	20.826	10:45:00 AM	11108.2
7/27/2019 0:00	7.643	0.439	6:45:00 AM	31.14	11:15:00 AM	11006
7/28/2019 0:00	9.548	1.135	4:00:00 AM	30.01	8:15:00 PM	13748.6
7/29/2019 0:00	8.043	0.944	4:30:00 AM	27.467	11:00:00 PM	11581.6
7/30/2019 0:00	6.607	0.875	3:45:00 AM	24.987	7:45:00 AM	9513.99
7/31/2019 0:00	7.525	0.515	1:15:00 AM	20.197	3:30:00 PM	10836.2
						9,555
8/1/2019 0:00	9.023	2.798	4:00:00 AM	29.357	8:30:00 PM	12993
8/2/2019 0:00	10.333	3.484	5:00:00 AM	36.534	9:30:00 AM	14879.2
8/3/2019 0:00	9.383	2.663	3:00:00 AM	40.432	9:30:00 AM	13511.5
8/4/2019 0:00	8.45	2.663	12:00:00 AM	37.193	12:15:00 PM	12167.8
8/5/2019 0:00	8.246	1.08	2:15:00 AM	44.09	7:30:00 AM	11874.8
8/6/2019 0:00	7.345	2.706	12:00:00 AM	31.799	8:15:00 PM	10577
8/7/2019 0:00	5.944	1.235	12:00:00 AM	33.944	9:30:00 AM	8558.93
8/8/2019 0:00	5.068	0.684	2:15:00 AM	20.703	7:00:00 AM	7298.37
8/9/2019 0:00	6.831	1.042	5:15:00 AM	23.424	9:30:00 PM	9836.4
8/10/2019 0:00	6.656	0.926	1:45:00 AM	33.512	12:15:00 PM	9585.31
8/11/2019 0:00	6.996	1.285	3:00:00 AM	33.635	7:45:00 PM	10074.4
8/12/2019 0:00	8.084	0.767	4:00:00 AM	30.698	7:30:00 AM	11641.1
8/13/2019 0:00	9.936	0.834	4:30:00 AM	33.416	7:45:00 PM	14307.2
8/14/2019 0:00	9.184	-9.35	10:30:00 PM	27.705	8:00:00 AM	13224.4
8/15/2019 0:00	11.301	4.325	6:45:00 PM	31.832	8:30:00 AM	16273.4
8/16/2019 0:00	11.609	3.87	1:45:00 AM	45.352	7:30:00 AM	16717.3
8/17/2019 0:00	9.647	2.632	5:00:00 PM	41.142	12:15:00 PM	13892.1
8/18/2019 0:00	9.8	2.795	6:00:00 AM	38.128	3:30:00 PM	14112.6
8/19/2019 0:00	9.451	-16.46	11:45:00 PM	46.999	7:30:00 AM	13609.8
8/20/2019 0:00	11.237	3.483	3:30:00 AM	41.866	7:30:00 AM	16181
8/21/2019 0:00	10.094	2.857	2:00:00 AM	40.061	9:00:00 AM	14535.9
8/22/2019 0:00	7.584	1.926	1:15:00 AM	23.092	9:00:00 PM	10921.4
8/23/2019 0:00	10.179	2.397	2:15:00 AM	29.042	5:30:00 PM	14657.2
8/24/2019 0:00	10.898	2.24	4:30:00 AM	37.783	9:30:00 AM	15692.5
8/25/2019 0:00	12.227	5.171	5:45:00 AM	35.245	8:00:00 PM	17606.5
8/26/2019 0:00	9.966	3.662	5:30:00 AM	34.832	11:45:00 AM	14350.3
8/27/2019 0:00	8.557	1.922	4:00:00 AM	24.75	7:30:00 AM	12322.6
8/28/2019 0:00	11.168	2.89	5:00:00 AM	31.02	10:30:00 AM	16081.3
8/29/2019 0:00	12.731	4.079	4:45:00 AM	29.303	8:15:00 AM	18332
8/30/2019 0:00	10.857	3.743	5:30:00 AM	28.563	7:15:00 AM	15634.2
8/31/2019 0:00	5.744	1.08	1:30:00 AM	10.443	9:45:00 AM	8270.98
						13,217
9/1/2019 0:00	9.005	1.705	4:15:00 AM	17.535	8:15:00 PM	12966.8
9/2/2019 0:00	13.471	2.266	6:00:00 AM	26.955	11:00:00 AM	19397.8
9/3/2019 0:00	10.207	3.037	1:30:00 AM	27.792	7:30:00 AM	14698.4
9/4/2019 0:00	12.101	2.413	5:00:00 AM	28.86	7:45:00 PM	17425.8
9/5/2019 0:00	14.285	4.064	4:30:00 AM	31.061	7:15:00 AM	20570.6
9/6/2019 0:00	12.266	2.997	3:30:00 PM	32.48	9:00:00 PM	17662.4
9/7/2019 0:00	10.348	5.755	3:15:00 AM	18.276	7:30:00 PM	14901.7

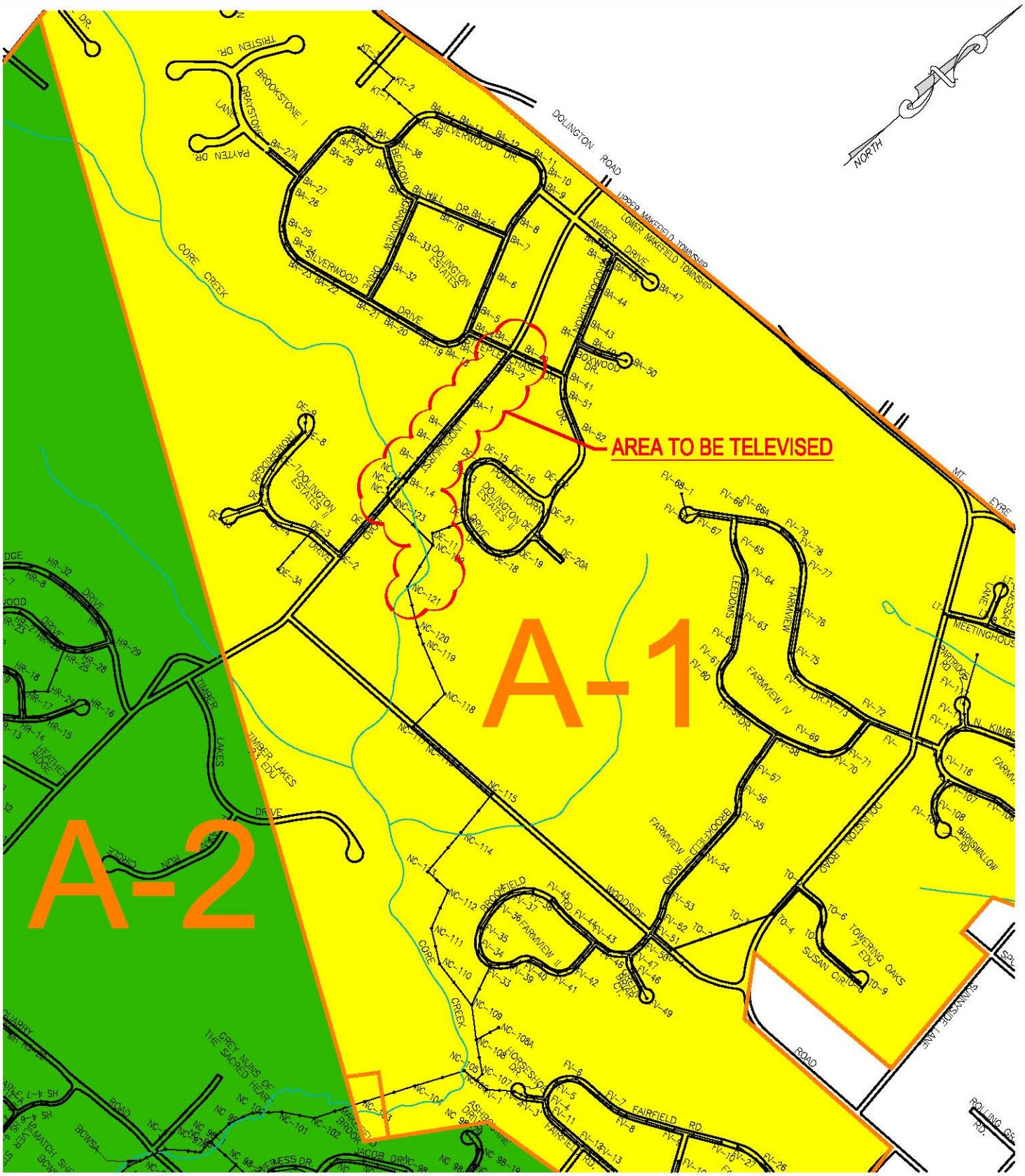
9/8/2019 0:00	8.41	1.028	5:00:00 AM	16.472	8:45:00 AM	12110.5
9/9/2019 0:00	8.233	4.464	4:45:00 PM	14.528	11:00:00 AM	11854.8
9/10/2019 0:00	7.396	2.599	4:30:00 AM	18.92	7:00:00 AM	10649.9
9/11/2019 0:00	6.213	1.707	4:30:00 AM	17.314	7:30:00 AM	8946.71
9/12/2019 0:00	5.51	0.837	4:00:00 AM	14.281	8:45:00 PM	7934.56
9/13/2019 0:00	5.245	0.97	4:15:00 AM	15.509	7:30:00 AM	7553.23
9/14/2019 0:00	5.628	1.112	4:15:00 AM	11.707	6:45:00 PM	8104.06
9/15/2019 0:00	5.594	0.899	4:15:00 AM	12.273	8:45:00 AM	8055.37
9/16/2019 0:00	5.757	0.558	3:45:00 AM	11.892	8:30:00 PM	8290.06
9/17/2019 0:00	6.491	1.541	3:15:00 AM	16.492	8:15:00 PM	9347.04
9/18/2019 0:00	7.876	1.009	3:00:00 AM	27.457	8:30:00 AM	11341.2
9/19/2019 0:00	9.324	2.279	4:45:00 AM	19.938	7:15:00 AM	13426.7
9/20/2019 0:00	9.295	2.52	2:15:00 AM	20.6	7:00:00 AM	13385.4
9/21/2019 0:00	9.786	2.561	5:15:00 AM	24.418	9:15:00 AM	14092.4
9/22/2019 0:00	9.383	2.815	5:00:00 AM	31.62	7:30:00 PM	13511.7
9/23/2019 0:00	10.579	2.347	4:15:00 AM	26.579	7:15:00 AM	15233.9
9/24/2019 0:00	7.913	2.567	2:00:00 AM	23.061	9:30:00 PM	11395.1
9/25/2019 0:00	7.974	-19.686	6:30:00 PM	30.829	8:45:00 AM	11482.5
9/26/2019 0:00	7.532	-15.308	12:45:00 PM	30.988	7:00:00 AM	10846.2
9/27/2019 0:00	5.427	1.34	4:00:00 AM	9.601	6:30:00 AM	7815.1
9/28/2019 0:00	6.671	0.784	5:00:00 AM	12.795	11:00:00 AM	9606.45
9/29/2019 0:00	5.807	1.024	4:30:00 AM	12.996	8:30:00 AM	8361.73
9/30/2019 0:00	7.839	0.922	2:45:00 AM	29.262	12:00:00 PM	11287.8
						12,076
10/1/2019 0:00	7.07	-6.372	10:00:00 AM	28.415	8:15:00 AM	10181.2
10/2/2019 0:00	7.899	0.916	3:15:00 AM	23.488	8:30:00 AM	11373.9
10/3/2019 0:00	8.558	3.256	3:15:00 AM	26.081	8:30:00 AM	12323.8
10/4/2019 0:00	7.196	1.654	5:15:00 AM	22.3	8:15:00 PM	10362.2
10/5/2019 0:00	6.948	1.318	6:00:00 AM	19.829	11:45:00 AM	10005
10/6/2019 0:00	8.415	1.093	3:00:00 AM	28.934	8:15:00 PM	12117
10/7/2019 0:00	8.583	2.567	5:00:00 AM	28.497	7:15:00 AM	12359.2
10/8/2019 0:00	8.497	3.232	4:00:00 AM	37.62	7:45:00 AM	12236.3
10/9/2019 0:00	8.009	2.298	4:15:00 AM	22.125	10:15:00 AM	11533.1
10/10/2019 0:00	8.222	2.672	2:00:00 AM	22.005	8:45:00 AM	11840.3
10/11/2019 0:00	6.667	1.873	3:00:00 AM	16.881	8:30:00 PM	9600.61
10/12/2019 0:00	7.855	0.817	4:30:00 AM	36.134	9:30:00 AM	11311
10/13/2019 0:00	8.373	1.478	4:45:00 AM	29.804	9:30:00 AM	12057
10/14/2019 0:00	7.576	1.917	5:00:00 AM	20.017	8:00:00 AM	10909.1
10/15/2019 0:00	7.202	2.115	12:00:00 AM	32.948	7:30:00 AM	10371.5
10/16/2019 0:00	7.531	2.035	3:00:00 AM	22.23	1:30:00 PM	10845
10/17/2019 0:00	9.277	1.767	3:45:00 AM	35.942	8:30:00 AM	13358.3
10/18/2019 0:00	7.583	2.557	1:15:00 PM	19.6	11:30:00 AM	10920.2
10/19/2019 0:00	7.016	1.342	4:00:00 AM	22.803	8:45:00 AM	10102.4
10/20/2019 0:00	9.326	1.635	3:45:00 AM	24.378	11:45:00 AM	13429.8
10/21/2019 0:00	8.69	2.236	2:45:00 AM	26.53	11:30:00 PM	12513.3
10/22/2019 0:00	6.25	2.1	4:15:00 AM	13.813	7:30:00 PM	8999.39
10/23/2019 0:00	6.729	1.132	4:15:00 AM	15.858	11:30:00 AM	9689.89

10/24/2019 0:00	10.546	1.006	5:15:00 AM	46.253	9:15:00 PM	15186
10/25/2019 0:00	9.615	3.482	2:45:00 AM	31.276	6:30:00 AM	13846
10/26/2019 0:00	6.725	1.595	2:30:00 AM	22.132	9:30:00 AM	9683.94
10/27/2019 0:00	8.614	0.744	3:30:00 AM	56.234	2:45:00 PM	12404.7
10/28/2019 0:00	7.093	2.1	3:00:00 AM	18.243	8:45:00 PM	10213.3
10/29/2019 0:00	7.213	1.343	2:15:00 PM	21.984	8:15:00 AM	10386.8
10/30/2019 0:00	8.084	2.728	1:00:00 PM	30.242	8:45:00 PM	11640.9
10/31/2019 0:00	7.353	1.62	3:45:00 AM	23.411	8:15:00 AM	10588.4
						11,368
11/1/2019 0:00	7.367	3.051	6:15:00 PM	35.459	7:45:00 AM	10609.1
11/2/2019 0:00	7.92	1.206	5:00:00 AM	25.41	11:45:00 AM	11404.8
11/3/2019 0:00	9.598	1.463	7:45:00 AM	35.223	8:00:00 PM	13821.2
11/4/2019 0:00	8.087	1.571	5:45:00 AM	38.896	9:00:00 AM	11645.1
11/5/2019 0:00	5.903	1.32	3:30:00 AM	13.073	8:30:00 AM	8500.49
11/6/2019 0:00	5.61	0.842	4:15:00 AM	11.906	6:30:00 AM	8078.52
11/7/2019 0:00	6.286	1.333	2:45:00 AM	17.642	9:15:00 PM	9052.49
11/8/2019 0:00	8.166	2.46	5:00:00 AM	20.005	8:30:00 PM	11759.2
11/9/2019 0:00	7.918	1.496	6:30:00 AM	17.721	11:15:00 AM	11401.4
11/10/2019 0:00	8.192	2.24	5:15:00 AM	19.242	11:45:00 AM	11796.1
11/11/2019 0:00	9.427	2.207	1:30:00 AM	21.746	7:45:00 AM	13574.6
11/12/2019 0:00	8.591	2.875	2:30:00 AM	15.845	10:45:00 PM	12370.7
11/13/2019 0:00	8.67	1.891	3:30:00 AM	32.377	12:15:00 PM	12485.1
11/14/2019 0:00	8.706	1.768	3:30:00 AM	23.622	9:30:00 AM	12536.9
11/15/2019 0:00	9.614	2.587	1:15:00 AM	45.344	7:45:00 AM	13844.3
11/16/2019 0:00	8.447	2.866	1:15:00 AM	31.324	5:30:00 PM	12163.2
11/17/2019 0:00	8.914	0.876	4:00:00 AM	30.178	9:45:00 PM	12835.4
11/18/2019 0:00	9.589	1.105	1:30:00 AM	39.865	7:15:00 AM	13807.7
11/19/2019 0:00	8.986	1.704	2:00:00 AM	48.721	9:15:00 AM	12939.3
11/20/2019 0:00	13.207	1.055	1:45:00 AM	33.431	9:30:00 PM	19018.8
11/21/2019 0:00	15.217	3.958	12:00:00 AM	40.845	7:15:00 AM	21912.6
11/22/2019 0:00	11.985	-5.146	2:45:00 PM	29.617	7:00:00 AM	17257.8
11/23/2019 0:00	13.787	1.559	4:00:00 AM	36.883	12:00:00 PM	19852.7
11/24/2019 0:00	14.604	2.132	2:00:00 AM	40.436	12:00:00 PM	21029.9
11/25/2019 0:00	14.12	3.716	5:15:00 AM	36.285	9:15:00 AM	20332.4
11/26/2019 0:00	13.43	2.481	3:15:00 AM	31.472	9:15:00 PM	19338.8
11/27/2019 0:00	16.183	4.452	3:30:00 AM	37.211	11:15:00 AM	23304.1
11/28/2019 0:00	15.474	2.122	3:15:00 AM	33.324	3:15:00 PM	22282.9
11/29/2019 0:00	16.452	3.492	5:15:00 AM	33.699	10:00:00 AM	23691
11/30/2019 0:00	14.657	3.899	5:45:00 AM	28.508	10:45:00 AM	21105.5
						15,125
12/1/2019 0:00	16.277	3.315	1:00:00 AM	35.103	7:45:00 PM	23438.3
12/2/2019 0:00	13.963	5.012	5:15:00 AM	28.631	8:30:00 PM	20107.2
12/3/2019 0:00	9.242	4.531	11:00:00 PM	26.567	8:30:00 PM	13308.4
12/4/2019 0:00	7.41	3.124	5:00:00 PM	15.991	7:45:00 AM	10670.4
12/5/2019 0:00	7.822	1.597	1:15:00 AM	29.527	7:00:00 AM	11264.1
12/6/2019 0:00	7.655	2.289	5:00:00 AM	35.375	7:15:00 AM	11023.1
12/7/2019 0:00	7.214	1.355	11:30:00 PM	31.388	10:00:00 AM	10388.2

12/8/2019 0:00	7.771	0.674	3:15:00 AM	27.378	8:45:00 PM	11190.7
12/9/2019 0:00	8.724	2.058	2:30:00 AM	27.587	8:00:00 AM	12562.8
12/10/2019 0:00	6.367	1.413	1:30:00 AM	32.146	8:45:00 AM	9168.72
12/11/2019 0:00	6.941	0.892	3:00:00 AM	32.393	8:00:00 PM	9994.58
12/12/2019 0:00	10.626	1.063	5:15:00 AM	35.161	7:45:00 AM	15302
12/13/2019 0:00	9.848	2.847	3:15:00 PM	33.944	7:00:00 AM	14181
12/14/2019 0:00	10.111	2.105	6:15:00 AM	33.563	11:00:00 AM	14560.5
12/15/2019 0:00	9.074	1.398	4:00:00 AM	35.943	11:45:00 AM	13066.4
12/16/2019 0:00	8.029	1.774	4:30:00 AM	32.495	8:00:00 AM	11562.2
12/17/2019 0:00	7.447	1.957	1:00:00 AM	19.338	8:15:00 PM	10723.6
12/18/2019 0:00	9.03	1.786	5:30:00 AM	27.627	7:45:00 PM	13002.8
12/19/2019 0:00	9.777	1.557	4:45:00 AM	27.204	12:45:00 PM	14078.7
12/20/2019 0:00	10.662	2.787	5:15:00 PM	37.55	9:00:00 PM	15353.5
12/21/2019 0:00	11.003	1.553	2:00:00 AM	42.362	4:45:00 PM	15843.9
12/22/2019 0:00	9.621	-18.613	7:15:00 PM	36.112	11:30:00 AM	13854.1
12/23/2019 0:00	10.036	2.335	1:45:00 AM	28.374	10:15:00 AM	14452.3
12/24/2019 0:00	11.822	1.755	6:00:00 AM	33.599	11:15:00 AM	17023.1
12/25/2019 0:00	14.8	4.242	6:00:00 AM	42.81	9:00:00 AM	21311.3
12/26/2019 0:00	10.322	-17.143	7:45:00 PM	21.607	12:00:00 PM	14863.4
12/27/2019 0:00	9.477	2.284	11:30:00 PM	29.334	11:00:00 AM	13646.3
12/28/2019 0:00	6.335	0.505	3:00:00 AM	17.128	7:45:00 PM	9122.35
12/29/2019 0:00	8.872	1.822	2:45:00 AM	33.629	4:00:00 PM	12775.7
12/30/2019 0:00	9.5	1.516	3:45:00 AM	26.503	7:15:00 PM	13680.2
12/31/2019 0:00	13.466	5.731	4:45:00 AM	30.077	9:15:00 AM	19390.3
						13,900

APPENDIX D

TELEVISING LOCATION EXHIBIT



SANITARY SEWER TELEVISING PLAN
FOR
LOWER MAKEFIELD TOWNSHIP

Project Engr.	Scale	Job No.	Date	Drawing No.
FEE	AS NOTED	068-024	09/27/19	1 of 1

Ebert Engineering, Inc.
Water and Wastewater Engineering
PO Box 540
4397 Skippack Pike
Skippack, PA 19474
Phone (610) 584 6701
Fax (610) 584 6704
E-mail febert@ebertengineering.com

APPENDIX E

LATERAL INSPECTIONS

STATUS OF SANITARY SEWER LATERAL VIDEO INSPECTIONS
LOWER MAKEFIELD TOWNSHIP, BUCKS COUNTY
LAST UPDATED 2/22/2021

No.	Address	Date Inspected	Date Reviewed	Review No.	Status
		Completed March 2021			
1	228 Emerald Drive	1/17/2020	1/31/2020	1	Passed
2	442 Hidden Oaks Drive	1/21/2020	1/29/2020	1	Passed
3	632A Palmer Lane	1/17/2020	1/31/2020	1	Passed
4	1167 Beech Court	1/16/2020	1/31/2020	1	Passed
5	5 Manor Lane	1/28/2020	2/4/2020	1	Passed
6	249 Hoover Way	1/27/2020	2/4/2020	1	Passed
7	177 Haines Way	1/23/2020		1	Passed
8	1056 Garey Drive	1/30/2020	2/5/2020	1	Passed
9	600 Deerbrook Drive	1/29/2020	2/4/2020	1	Passed
10	628B Palmer Lane	1/29/2020	2/13/2020	1	Passed
11	930 Putnam Drive	1/31/2020	2/4/2020	1	Failed
12	13202 Cornerstone Drive	1/21/2020 and 2/10/20	2/10/2020	1	Passed
13	1188 Dickinson Drive	1/28/2020	2/11/2020	1	Failed
13A	1188 Dickinson Drive	2/20/2020	3/2/2020	2	Passed
14	893 Slate Hill Road	1/24/2020	2/11/2020	1	Passed
15	1335 Moon Drive	2/5/2020	2/28/2020	1	Passed
16	4 Vernon Lane	2/6/2020	2/12/2020	1	Passed
17	11 Brook Lane	2/6/2020	2/12/2020	1	Passed
18	207 Clover Hill Court	2/1/2020	2/17/2020	1	Passed
19	63 Manor Lane South	2/3/2020	2/17/2020	1	Passed
20	2402 Sterling Road	2/3/2020	2/14/2020	1	Passed
21	2704 Sterling Road	2/8/2020	2/26/2020	1	Passed
22	1407 Lynnebrook	2/6/2020	2/17/2020	1	Passed
23	2039 E. Wellington	2/7/2020	2/18/2020	1	Passed
24	213 Hyde Park Place	2/11/2020	2/20/2020	1	Passed
25	6808 Spruce Mill Drive	2/6/2020	2/20/2020	1	Failed
25A	6808 Spruce Mill Drive	2/6/2020	3/26/2020	1	Passed
26	1697 Powderhorn	2/4/2020	2/20/2020	1	Passed
27	909 N. Pennsylvania Ave	2/9/2020	2/11/2020	1	Passed
28	9 Spring Lane	2/11/2020	2/20/2020	1	Passed
29	677 B Rose Hollow Drive	2/6/2020	2/25/2020	1	Failed
29A	677 B Rose Hollow Drive	2/6/2020	4/16/2020	1	Passed
30	8408 Spruce Mill Drive	2/11/2020	2/21/2020	1	Passed
31	6 Sutphin Pines	2/13/2020	2/21/2020	1	Passed
32	1727 Renaissance Boulevard	2/18/2020	3/3/2020	1	Passed
33	21 Concord Lane	2/18/2020	3/3/2020	1	Passed
34	907 Overton	2/17/2020	2/25/2020	1	Passed
35	904 Sensor Road	2/17/2020	3/3/2020	1	Passed
36	1265 Harrow Cresent	2/18/2020	3/3/2020	1	Passed
37	217 Arborlea Ave	1/24/2020	2/28/2020	1	Passed
38	1090 Big Oak Road	1/16/2020	3/9/2020	1	Failed
38A	1090 Big Oak Road	2/4/2020	3/10/2020	2	Passed
39	1904 Lynnebrook	2/17/2020	2/27/2020	1	Passed
40	1629 Bluebird Drive	2/14/2020	2/26/2020	1	Passed
41	357 Margery Road	2/13/2020	2/27/2020	1	Passed
42	661 Sutphin Road	2/19/2020	2/24/2020	1	Passed
43	537 Countess Drive	2/20/2020	3/9/2020	1	Passed
44	1308 Yardley Morrisville	2/20/2020	2/28/2020	1	Passed
45	2007 Waterford Road	2/20/2020	2/28/2020	1	Passed
46	14 Glen Drive	2/21/2020	3/9/2020	1	Passed
47	559 Long Acre	2/25/2020	2/25/2020	1	Passed
48	758 Gordon Drive	2/20/2020	3/3/2020	1	Passed
49	1289 Barclay Crescent	2/20/2020	2/27/2020	1	Passed
50	2101 Sterling Road	2/27/2020	2/27/2020	1	Passed
51	22 Olivia Drive	2/24/2020	3/9/2020	1	Failed
51A	22 Olivia Drive	3/3/2020	3/13/2020	2	Passed
52	2404 Lynbrooke	2/27/2020	3/9/2020	1	Passed

STATUS OF SANITARY SEWER LATERAL VIDEO INSPECTIONS
LOWER MAKEFIELD TOWNSHIP, BUCKS COUNTY
LAST UPDATED 2/22/2021

No.	Address	Date Inspected	Date Reviewed	Review No.	Status
53	1204 Birch Ave	2/27/2020	3/9/2020	1	Passed
54	1006 Summit Drive	2/21/2020	3/9/2020	1	Passed
55	1359 Brentwood Road	2/28/2020	3/9/2020	1	Passed
56	1527 Candace Lane	3/2/2020	3/2/2020	1	Passed
57	496 Palmer Farm Drive	3/2/2020	3/10/2020	1	Passed
58	1407 Lynbrooke Drive	2/29/2020	3/10/2020	1	Passed
59	115 Arorlea Ave	3/2/2020	3/12/2020	1	Failed
59A	115 Arorlea Ave	3/2/2020	3/12/2020	1	Passed
60	1502 Hayfield Drive	2/24/2020	3/4/2020	1	Passed
61	7608 Spruce Mill Drive	3/2/2020	3/9/2020	1	Passed
62	3803 Waltham Court	3/3/2020	3/9/2020	1	Passed
63	1032 South Kimbles Road	2/25/2020	3/9/2020	1	Passed
64	240 Emerald Drive	2/25/2020			
65	921 Big Oak Road	3/4/2020	3/13/2020	1	Passed
66	24 Orchard Way	3/8/2020	3/9/2020	1	Passed
67	1272 Harrow Crescent	3/6/2020	3/17/2020	1	Failed
68	5204 Spruce Mill Drive	3/6/2020	3/25/2020	1	Passed
69	1011 North Elbow	3/9/2020	3/24/2020	1	Passed
70	1047 South Kimbles Road	3/4/2020	3/13/2020	1	Passed
71	8801 Spruce Mill Road	3/6/2020	3/25/2020	1	Passed
72	1234 Landmark Road	2/12/2020	3/23/2020	1	Passed
73	8 Rita Road	3/10/2020	3/19/2020	1	Passed
74	1477 Green Meadows Road	3/5/2020	3/18/2020	1	Passed
75	9307 Sheffield Drive	3/10/2020	3/25/2020	1	Passed
76	581 Hearthstone Drive	3/11/2020	3/23/2020	1	Passed
77	1401 Lynbrooke Drive	2/29/2020	3/13/2020	1	Passed
78	1382 Colony Way	2/27/2020	3/12/2020	1	Passed
79	1604 Westover Road	2/26/2020	3/13/2020	1	Passed
80	18 Morningside Drive	1/27/2020	3/27/2020	1	Passed
80A	18 Morningside Drive	1/27/2020	3/31/2020	1	Passed
81	910 Sensor Drive	2/26/2020	3/13/2020	1	Passed
82	207 Elm Ave	2/28/2020	3/18/2020	1	Passed
83	1063 Country Hills Road	3/11/2020	3/23/2020	1	Passed
84	387 Ramsey Road	3/13/2020	4/3/2020	1	Passed
85	582 Cedar Hollow Drive	3/9/2020	3/26/2020	1	Passed
86	233 West Ferry	3/13/2020	3/23/2020	1	Passed
87	363 Sally Drive	3/13/2020	3/23/2020	1	Passed
88	217 Stony Hill Road	3/13/2020	3/23/2020	1	Passed
89	1908 Sterling	3/16/2020	3/18/2020	1	Passed
90	226 Penn Valley Terrace	3/17/2020	4/7/2020	1	Passed
91	1298 East Revere Road	3/17/2020	3/25/2020	1	Passed
92	1940 Knights Circle	3/18/2020	3/23/2020	1	Passed
93	2064 Farmview Drive	3/18/2020	3/25/2020	1	Passed
94	1285 Thames Crescent	3/13/2020	3/23/2020	1	Passed
95	108 Glen Valley Road	3/9/2020	3/19/2020	1	Passed
96	480 Kings Road	3/13/2020	3/27/2020	1	Passed
96A	480 Kings Road	3/13/2020	3/31/2020	1	Passed
97	13 Wilfred Drive	3/20/2020	4/3/2020	1	Passed
98	2056 Silverwood Drive	3/19/2020	3/25/2020	1	Passed
99	1687 Barnswallow Road	3/24/2020	4/6/2020	1	Passed
100	1802 Lynnbrooke	3/19/2020	3/25/2020	1	Passed
101	1012 Yardley Road	2/12/2020	4/7/2020	1	Passed
102	1001 Edgewood Road	3/24/2020	4/1/2020	1	Passed
103	507 Aspen Woods Drive	3/13/2020	5/11/2020	1	Passed
104	520 Franklin Circle	3/4/2020	4/1/2020	1	Passed
105	25 Sandy Drive	3/26/2020	3/27/2020	1	Passed
106	215 Elm Ave	3/23/2020	4/1/2020	1	Passed
106A	215 Elm Ave	4/3/2020	4/5/2020	1	Passed

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107	406 Essex Lane	3/16/2020	4/1/2020	1	Failed
107A	406 Essex Lane	3/22/2020	3/23/2020	2	Passed
108	1075 Victory Drive	3/30/2020	4/15/2020	1	Passed
109	389 Cobble Court	3/20/2020	4/15/2020		Passed
110	8 Moon Circle	4/1/2020	4/15/2020	1	Passed
111	6507 Spruce Mill Drive	3/26/2020	4/7/2020	1	Passed
112	617 Stony Hill Road	4/1/2020	4/8/2020	1	Passed
113	5804 Spruce Mill Drive	4/3/2020	4/6/2020	1	Passed
114	1326 Moon Drive	4/6/2020	5/11/2020	1	Passed
115	1217 Pinegrove Road	4/3/2020	4/8/2020	1	Passed
116	2211 Yardley Morrisville	4/6/2020	4/18/2020	1	Passed
117	1591 Brookfield Road Review No. 1	2/19/2020	4/8/2020	1	Failed
117A	1591 Brookfield Road Review No. 2				
118	712 Big Oak Road Review No. 1	2/27/2020	4/7/2020	1	Passed
118A	712 Big Oak Road Review No. 2	2/27/2020	7/6/2020	1	Passed
119	15 Beechwood Lane	3/11/2020	6/23/2020	1	Passed
120	907 North Pennsylvania Ave	4/7/2020	4/13/2020	1	Passed
121	720 Fox Hollow Drive	3/31/2020	4/13/2020	1	Passed
122	879 Olsen Ave	4/6/2020	4/15/2020	1	Passed
123	681B Rose Hollow Drive	4/6/2020	4/15/2020	1	Passed
124	608 Cedar Hollow Drive	4/14/2020	4/17/2020	1	Passed
125	288 Emerald Drive	4/15/2020	4/17/2020	1	Passed
126	631 Long Acre Lane	3/30/2020	4/21/2020	1	Passed
127	1067 South Kimbles Road	3/4/2020	4/29/2020	1	Passed
128	5008 Spruce Mill Drive	3/6/2020	5/7/2020	1	Passed
129	602 Deerbrook	4/20/2020	5/11/2020	1	Passed
130	621 River Road	4/22/2020	5/1/2020	1	Passed
131	312 Arbolea Road	4/22/2020	4/29/2020	1	Passed
132	6302 Spruce Mill Drive	4/28/2020	5/4/2020	1	Passed
133	196 Wildflower Circle	4/29/2020	5/4/2020	1	Passed
134	310 North Fieldstone Court	5/1/2020	5/8/2020	1	Failed
135	1114 Jack Road	5/8/2020	5/14/2020	1	Passed
136	168 Crestview Way	5/8/2020	5/26/2020	1	Passed
137	365 Ramsey Road	4/21/2020	5/20/2020	1	Passed
138	385 Tall Meadow Lane	5/13/2020	5/13/2020	1	Passed
139	65 Manor Lane South	5/7/2020	5/20/2020	1	Passed
140	1636 Spring Mill Court	5/13/2020	5/14/2020	1	Passed
141	1299 Clearview Drive	5/13/2020	5/14/2020	1	Passed
142	3206 Sterling Road	5/19/2020	6/4/2020	1	Passed
143	20 Glen Drive	5/18/2020	6/3/2020	1	Passed
144	1220 Yardley Morrisville Road	5/15/2020	5/26/2020	1	Passed
145	961 Garey Drive	5/19/2020	5/26/2020	1	Failed
145A	961 Garey Drive - Review 2	6/21/2020	6/23/2020	1	Passed
146	2113 stackhouse	5/11/2020	6/24/2020	1	Passed
147	1 Hillside Lane	5/19/2020	6/3/2020	1	Passed
148	891 Slate Hill Road	5/15/2020	6/10/2020	1	Passed
149	2152 West Wellington Road	5/26/2020	5/28/2020	1	Passed
150	515 Freedom Drive		6/22/2029	1	Failed
150A	515 Freedom Drive Review No. 2	6/17/2020	6/22/2020	1	Passed
151	5302 Spruce Mill Drive	5/27/2020	7/17/2020	1	Passed
152	44 Blackrock Road	5/28/2020	6/3/2020	1	Passed
153	5 Williams Lane Review No. 1	5/29/2020	6/16/2020	1	Failed
154	6 Orchard Way	6/5/2020	6/16/2020	1	Failed
154A	6 Orchard Way - Review 2	6/5/2020	6/24/2020	2	Passed
155	1372 Gates Circle	6/4/2020	7/10/2020	1	Passed
156	515 Freedom Drive Review No. 1	5/28/2020	6/22/2020	1	Failed
157	357 Ramsey Road	6/4/2020	7/1/2020	1	Passed
158	1581 Bud Lane	5/15/2020	6/22/2020	1	Passed

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No.	Address	Date Inspected	Date Reviewed	Review No.	Status
159	942 Weber Drive Review No. 1	6/5/2020	6/22/2020	1	Failed
159A	942 Weber Drive Review No. 2	6/30/2020	7/9/2020	1	Passed
160	4 Keats Road	6/2/2020	6/9/2020	1	Passed
161	566 Keating Drive Review No. 1	6/2/2020	6/9/2020	1	Failed
161A	566 Keating Drive Review No. 2	6/30/2020	7/17/2020	2	Passed
162	108 Glen Valley Road Inspection No. 2	5/18/2020	6/10/2020	1	Failed
163	9308 Sheffield Drive	6/1/2020	6/23/2020	1	Passed
164	514 Franklin Circle	6/1/2020	7/1/2020	1	Failed
165	662A Rose Hollow Drive Review No. 1	6/3/2020	7/1/2020	1	Failed
165A	662A Rose Hollow Drive Review No. 2	7/7/2020	7/14/2020	1	Passed
166	8207 Spruce Mill Drive	6/6/2020	6/29/2020	1	Passed
167	400 Collins Grant Court	6/9/2020	7/1/2020	1	Passed
168	13 Oakdale Boulevard	6/10/2020	6/23/2020	1	Failed
168A	13 Oakdale Boulevard Review No. 2	6/26/2020	7/14/2020	1	Passed
169	1540 Old Farm Court	6/11/2020	7/2/2020	1	Passed
170	619 Chatwuck Lane	4/28/2020	6/15/2020	1	Passed
171	13305 Cornerstone	6/8/2020	6/16/2020	1	Passed
172	1155 Colts Lane	6/13/2020	6/18/2020	1	Passed
173	260 Yellow Spring Court	6/16/2020	6/29/2020	1	Passed
174	13 Scammel Drive	6/16/2020	6/29/2020	1	Passed
175	1276 Belgrave Crescent	6/16/2020	6/30/2020	1	Passed
176	6603 Spruce Mill Drive	6/18/2020	6/18/2020	1	Passed
177	94 Manor Lane	6/17/2020	7/6/2020	1	Passed
178	612 Kings Road	6/12/2020	11/4/2020	1	Passed
179	5 Williams Lane Review No. 2	6/17/2020	6/23/2020	2	Passed
180	1304 Moon Drive	5/26/2020	6/22/2020	1	Passed
181	1441 Windrow Lane	6/17/2020	7/10/2020	1	Passed
182	244 Kennedy Way	6/19/2020	7/1/2020	1	Passed
183	1904 S Crescent Boulevard	6/19/2020	7/10/2020	1	Passed
184	982 Drexel Drive	6/19/2020	7/5/2020	1	Passed
185	29 Sutphin Pines	6/19/2020	7/2/2020	1	Passed
186	1651 Powderhorn Drive Review No. 1	6/17/2020	7/1/2020	1	Failed
186A	1651 Powderhorn Drive Review No. 2	6/17/2020	7/10/2020	2	Passed
187	2601 Sterling Drive	6/20/2020	6/24/2020	1	Passed
188	17 Crown Terrace	6/17/2020	6/25/2020	1	Passed
189	1199 Colts Lane	6/17/2020	7/1/2020	1	Passed
190	110 Ovington Road	6/24/2020	6/29/2020	1	Passed
191	1981 Satter Court	6/24/2020	7/1/2020	1	Passed
192	1355 Brentwood Road	6/22/2020	8/20/2020	1	Passed
193	1719 Jockeys Way	6/22/2020	7/6/2020	1	Passed
194	5604 Spruce Mill Drive	5/29/2020	6/25/2020	1	Passed
195	908 Edgewood Road	6/18/2020	7/1/2020	1	Passed
196	439 Lenape Lane	6/10/2020	7/1/2020	1	Passed
197	909 Sensor Road	6/24/2020	7/6/2020	1	Passed
198	572 South Dove Road	6/25/2020	7/5/2020	1	Passed
199	4 Olivia Drive	6/25/2020	7/1/2020	1	Passed
200	1625 Lakeview Circle	6/22/2020	7/14/2020	1	Passed
201	2903 Brookhaven Drive	6/22/2020	7/1/2020	1	Failed
202	1679 Delaware Rim Road	6/8/2020	6/29/2020	1	Passed
203	569 Hearthstone Drive	6/8/2020	7/1/2020	1	Passed
204	1019 Buckingham Way	6/29/2020	7/2/2020	1	Passed
205	10 Glenolden Road	6/1/2020	7/1/2020	1	Passed
206	369 Ramsey Road	6/29/2020	7/14/2020	1	Passed
207	1537 Brock Creek	7/1/2020	7/17/2020	1	Passed
208	476 Prince William Court	7/2/2020	7/14/2020	1	Passed
209	7701 Spruce Mill Drive	7/6/2020	7/20/2020	1	Passed
210	1107 Randolph Drive	7/7/2020	7/16/2020	1	Passed
211	1233 Bridle Estates Drive	7/7/2020	7/17/2020	1	Passed

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212	347 Richard Road	7/7/2020	7/20/2020	1	Passed
213	610 Deerbrook Drive	7/8/2020	7/14/2020	1	Passed
214	762 Canterbury Drive	6/22/2020	7/16/2020	1	Passed
215	208 S Flint Court Review No. 1	6/22/2020	7/31/2020	1	Failed
215A	208 S Flint Court Review No. 2	10/29/2020	10/29/2020	2	Passed
216	801 River Road	7/7/2020	7/17/2020	1	Passed
217	1042 Randolph Drive	7/9/2020	7/20/2020	1	Passed
218	2316 Weinmann Way	7/6/2020	7/20/2020	1	Passed
219	8 Milton Drive Review No. 1	7/3/2020	8/17/2020	1	Failed
219A	8 Milton Drive Review No. 2	10/23/2020	12/2/2020	2	Passed
220	1613 Lakeview Circle Review No. 1	6/16/2020	7/23/2020	1	Failed
220A	1613 Lakeview Circle Review No. 2	6/16/2020	8/3/2020	1	Passed
221	1207 Linden Avenue	7/19/2020	7/14/2020	1	Passed
222	1284 Thames Crescent	7/13/2020	7/23/2020	1	Passed
223	1274 Lexington Road Review No. 1	7/9/2020	7/24/2020	1	Failed
223A	1274 Lexington Road Review No. 2	7/30/2020	8/19/2020	2	Passed
224	7 East Wilfred Drive	7/8/2020	7/23/2020	1	Passed
225	2304 Brookhaven Road	7/14/2020	7/14/2020	1	Passed
226	1437 Innis Lane	7/14/2020	7/23/2020	1	Passed
227	15 Glenolden Road	7/13/2020	8/5/2020	1	Passed
228	2204 Waterford Road	7/15/2020	7/24/2020	1	Passed
229	65 Bedford Place Review No. 1	7/15/2020	8/3/2020	1	Failed
229A	65 Bedford Place Review No. 2	8/10/2020	8/18/2020	2	Passed
230	629A Rose Hollow	7/9/2020	8/5/2020	1	Failed
231	2111 Stackhouse Drive	7/15/2020	7/20/2020	1	Passed
232	849 Sandy Run Road	7/13/2020	7/24/2020	1	Passed
233	865 Dukes Drive	7/15/2020	7/29/2020	1	Passed
234	6 Noreen Drive	7/15/2020	7/28/2020	1	Passed
235	1728 Clydsdale Circle	7/21/2020	7/29/2020	1	Passed
236	1207 Birch Avenue	7/16/2020	8/3/2020	1	Failed
236A	1207 Birch Avenue	7/16/2020	8/5/2020	2	Passed
237	2406 Lynbrook Drive	7/21/2020	7/27/2020	1	Passed
238	664A Woodward Lane	7/22/2020	8/7/2020	1	Failed
239	1318 Knox Drive	7/7/2020	7/24/2020	1	Passed
240	1508 David Terrace Review No. 1	7/22/2020	8/24/2020	1	Failed
240A	1508 David Terrace Review No. 2	9/11/2020	9/17/2020	2	Passed
241	1089 N Kimbles Road	7/13/2020	7/30/2020	1	Passed
242	230 Crystal Court	7/24/2020	8/3/2020	1	Passed
243	1514 Hayfield Drive	7/24/2020	8/5/2020	1	Passed
244	648 Long Acre Lane	7/26/2020	8/3/2020	1	Passed
245	466 Franklin Circle	7/13/2020	7/28/2020	1	Passed
246	567 Gordon Drive	7/16/2020	8/5/2020	1	Passed
247	616 Larch Court	7/14/2020	7/31/2020	1	Passed
248	12 Patrick Lane	7/23/2020	8/7/2020	1	Passed
249	31 Sutphin Pines	7/29/2020	7/31/2020	1	Passed
250	194 Crestview Way	7/29/2020	8/5/2020	1	Passed
251	481 Prince William Court	7/28/2020	8/5/2020	1	Passed
252	362 Tall Meadow Lane Review No. 1	7/30/2020	8/5/2020	1	Failed
252A	362 Tall Meadow Lane Review No. 2	7/30/2020	9/2/2020	2	Passed
253	1250 Fountain Road	7/17/2020	8/3/2020	1	Passed
254	1415 HeatherCircle	7/31/2020	8/5/2020	1	Passed
255	1412 Lee Circle	7/31/2020	8/5/2020	1	Passed
256	668 Tomlinson Lane Review No. 1	7/31/2020	8/13/2020	1	Failed
256A	668 Tomlinson Lane Review No. 2	8/20/2020	8/25/2020	2	Passed
257	1435 Robinson Place	7/28/2020	8/7/2020	1	Passed
258	1252 Bridle Estates Drive	8/3/2020	8/7/2020	1	Passed
259	1620 Thistlewood Drive	8/3/2020	8/12/2020	1	Failed
260	829 Stark Circle	8/3/2020	8/18/2020	1	Passed

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261	414 Kathryn Court Review No. 1	8/5/2020	8/24/2020	1	Failed
261A	414 Kathryn Court Review No. 2	8/27/2020	8/31/2020	2	Passed
262	109 Dolington Road Review No. 1	8/3/2020	8/12/2020	1	Failed
263	1277 Clearview Drive	8/6/2020	8/14/2020	1	Passed
264	1398 Wayne Circle	8/6/2020	8/20/2020	1	Passed
265	7 Hilltop Road	8/3/2020	8/20/2020	1	Passed
266	701 Jade Road	8/3/2020	8/24/2020	1	Failed
267	33 South Homestead	7/9/2020	8/20/2020	1	Passed
268	1239 Ward Drive	7/23/2020	8/18/2020	1	Passed
269	1209 Long Meadow Lane	8/3/2020	8/24/2020	1	Failed
270	623 Long Acre Lane	8/10/2020	8/12/2020	1	Passed
271	2507 Lynbrooke Drive	8/10/2020	8/25/2020	1	Passed
272	8203 Spruce Mill Drive	8/10/2020	8/25/2020	1	Passed
273	26 Milton Drive	8/5/2020	8/20/2020	1	Passed
274	1305 Moon Drive	8/3/2020	8/20/2020	1	Failed
275	316 West Ferry	8/11/2020	8/25/2020	1	Passed
276	522 Clarendon Road	7/13/2020	8/19/2020	1	Passed
277	1015 Darby Drive	8/11/2020	8/25/2020	1	Passed
278	665A Rose Hollow Drive	8/10/2020	8/25/2020	1	Passed
279	305 Newtown Yardley Road	8/8/2020	8/26/2020	1	Passed
280	842 Dukes Court	8/12/2020	8/26/2020	1	Passed
281	1014 North Elbow Lane	8/13/2020	8/26/2020	1	Passed
282	1015 Buckingham Way	8/11/2020	8/24/2020	1	Passed
283	1504 Esther Lane	8/13/2020	8/25/2020	1	Passed
284	735 River Road	8/12/2020	8/26/2020	1	Passed
285	146 Knights Bridge Drive	8/18/2020	9/1/2020	1	Passed
286	555 Aspen Wood Drive	8/14/2020	8/26/2020	1	Passed
287	1701 Powderhorn Drive	8/17/2020	8/26/2020	1	Passed
288	14 Maplevale Drive	8/13/2020	8/20/2020	1	Passed
289	906 Roeloffs Road	8/18/2020	8/25/2020	1	Passed
290	1515 Derbyshire Road	8/18/2020	8/25/2020	1	Passed
291	1572 Hummingbird Court	8/19/2020	9/9/2020	1	Passed
292	1534 Clark Drive	8/20/2020	8/26/2020	1	Passed
293	363 Richard Road	8/21/2020	8/26/2020	1	Passed
294	8 Oakdale Boulevard	8/21/2020	8/25/2020	1	Passed
295	1013 University Drive	8/24/2020	8/26/2020	1	Passed
296	536 Dellvale Road Review No. 1	8/24/2020	8/27/2020	1	Failed
296A	536 Dellvale Road Review No. 2	9/4/2020	9/14/2020	2	Passed
297	289 South Fieldstone Review No. 1	8/26/2020	8/27/2020	1	Failed
297A	289 South Fieldstone Review No. 2	9/4/2020	9/24/2020	2	Passed
298	46 Sutphin Pines Road Review No. 1	8/24/2020	8/27/2020	1	Failed
298A	46 Sutphin Pines Road Review No. 2	10/9/2020	10/19/2020	1	Passed
299	1109 Glen Oak Drive	8/26/2020	8/26/2020	1	Passed
300	1556 Bramble Court	8/21/2020	8/31/2020	1	Passed
301	6407 Spruce Mill Drive	8/20/2020	8/31/2020	1	Passed
302	4 Beechwood Lane Review No. 1	8/18/2020	9/2/2020	1	Failed
302A	4 Beechwood Lane Review No. 2	9/4/2020	9/8/2020	2	Passed
303	2311 Stackhouse Drive	8/24/2020	9/2/2020	1	Passed
304	214 Roosevelt Drive	8/27/2020	9/1/2020	1	Passed
305	17 Upton Lane	8/27/2020	9/3/2020	1	Passed
306	306 Daleview Drive	8/27/2020	9/3/2020	1	Passed
307	391 N. Flint Court	8/25/2020	9/1/2020	1	Passed
308	947 Roeloffs Road	8/28/2020	9/17/2020	1	Passed
309	643 Washing Crossing Road	9/3/2020	9/8/2020	1	Passed
310	117 Mountain Oaks Road Review No. 1	9/4/3/20	9/10/2020	1	Failed
311	611A Rose Hollow Drive	8/25/2020	9/10/2020	1	Passed
312	369 Sherwood Drive	9/8/2020	9/9/2020	1	Passed
313	15 Edgewood Road Review No. 1	9/8/2020	9/10/2020	1	Failed

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313A	15 Edgewood Road Review No. 2	9/15/2020	9/17/2020	2	Passed
314	620A Rose Hollow Drive	8/28/2020	9/11/2020	1	Passed
315	1941 Satter Court	8/25/2020	9/15/2020	1	Passed
316	11209 Cornerstone Drive	9/3/2020	9/15/2020	1	Passed
317	499 Keating Drive	9/4/2020	9/17/2020	1	Passed
318	649 Palmer Lane	9/11/2020	9/16/2020	1	Passed
319	2056 Farmview Drive	9/11/2020	9/16/2020	1	Passed
320	7 Colonial Ridge Drive	9/11/2020	9/16/2020	1	Passed
321	625A Rose Hollow Drive	9/10/2020	9/17/2020	1	Passed
322	375 Tall Meadow Lane	9/9/2020	9/21/2020	1	Passed
323	59 Glen Drive	9/9/2020	9/21/2020	1	Passed
324	650B Rose Hollow Drive	9/15/2020	9/22/2020	1	Passed
325	62 Manor Lane	9/11/2020	9/16/2020	1	Passed
326	1721 Meetinghouse Road	9/11/2020	9/22/2020	1	Passed
327	3006 Danbury Court	8/21/2020	9/22/2020	1	Passed
328	170 Pinecone Drive	9/16/2020	9/22/2020	1	Passed
329	52 Sutphin Pines	9/15/2020	9/29/2020	1	Passed
330	244 Truman Way	8/28/2020	9/21/2020	1	Passed
331	1906 Makefield Road	9/17/2020	9/30/2020	1	Passed
332	1330 Albright Drive Review No. 1	9/17/2020	9/30/2020	1	Failed
332A	1330 Albright Drive Review No. 2	10/15/2020	10/19/2020	2	Passed
333	102 Tower Circle	9/18/2020	10/1/2020	1	Passed
334	5705 Spruce Mill Drive	9/18/2020	9/29/2020	1	Passed
335	1025 Formall Court	9/18/2020	10/1/2020	1	Passed
336	629 Remington Drive	9/18/2020	10/1/2020	1	Passed
337	1220 Linden Avenue	9/20/2020	10/5/2020	1	Passed
338	1408 Revere Road	9/22/2020	10/5/2020	1	Passed
339	5808 Spruce Mill Drive	6/24/2020	10/12/2020	1	Passed
340	17 Milton Drive	9/24/2020	10/14/2020	1	Passed
341	6 Strafford Place	9/25/2020	9/29/2020	1	Failed
342	318 Tall Meadow Lane	9/25/2020	10/2/2020	1	Passed
343	1416 Hidden Pond Drive	9/9/2020	10/6/2020	1	Passed
344	1547 Stapler Drive	9/25/2020	9/29/2020	1	Passed
345	2065 Farmview Drive	9/25/2020	10/6/2020	1	Passed
346	1660 Hunters Court	9/8/2020	10/5/2020	1	Passed
347	1217 Linden Ave	9/28/2020	10/7/2020	1	Passed
348	507 American Drive	9/24/2020	10/6/2020	1	Passed
349	7101 Sheffield Drive	9/25/2020	10/5/2020	1	Passed
350	919 Hamilton Drive	9/29/2020	10/16/2020	1	Passed
351	915 Moyer Road	9/30/2020	10/7/2020	1	Passed
352	96 Sutphin Pines	9/24/2020	10/13/2020	1	Passed
353	963 Princess Drive	9/28/2020	10/8/2020	1	Passed
354	396 Lenape Lane	9/18/2020	10/7/2020	1	Passed
355	1339 N Bradford Road	9/14/2020	10/14/2020	1	Passed
356	7 Scammel Drive	9/30/2020	10/12/2020	1	Passed
357	245 Aspen Road	10/1/2020	10/12/2020	1	Passed
358	310 Floral Vale Boulevard	9/2/2020	10/12/2020	1	Passed
359	114 Glen Valley Road	9/16/2020	10/8/2020	1	Passed
360	1116 Glen Oak Drive	10/1/2020	10/12/2020	1	Passed
361	1342 Heller Drive	10/1/2020	10/19/2020	1	Passed
362	1382 Revere Road	10/2/2020	10/12/2020	1	Passed
363	53 Noreen Drive	10/5/2020	10/16/2020	1	Passed
364	1292 Heller Drive	10/6/2020	10/12/2020	1	Passed
365	1695 Peyton Drive	10/1/2020	10/12/2020	1	Passed
366	17 Edgemere Drive	9/30/2020	10/13/2020	1	Passed
367	1861 Fieldstone Lane	10/7/2020	10/13/2020	1	Passed
368	276 Hollow Branch Lane	9/21/2020	10/13/2020	1	Passed
369	101 Tower Circle	10/20/2020	10/13/2020	1	Passed

STATUS OF SANITARY SEWER LATERAL VIDEO INSPECTIONS
LOWER MAKEFIELD TOWNSHIP, BUCKS COUNTY
LAST UPDATED 2/22/2021

No.	Address	Date Inspected	Date Reviewed	Review No.	Status
370	6 East School Lane	9/24/2020	10/9/2020	1	Passed
371	188 Fillmore Way	10/2/2020	10/13/2020	1	Passed
372	6 Ivy Lane	10/8/2020	10/14/2020	1	Passed
373	2005 Brookhaven Drive	10/6/2020	10/16/2020	1	Passed
374	1526 Makefield Road	10/8/2020	10/16/2020	1	Passed
375	1185 Long Meadow Lane	10/8/2020	10/16/2020	1	Passed
376	573 Thrush Court	10/8/2020	10/14/2020	1	Passed
377	1328 Moon Drive	10/7/2020	10/19/2020	1	Passed
378	1133 Quarry Commons Drive	10/6/2020	10/22/2020	1	Passed
379	12207 Cornerstone Drive	10/14/2020	10/22/2020	1	Passed
380	10 Crown Terrace	10/2/2020	10/20/2020	1	Passed
381	2602 Sterling Road	10/16/2020	10/22/2020	1	Passed
382	1999 Kirkbride Circle	10/2/2020	10/22/2020	1	Passed
383	250 Wild Orchid Court	10/13/2020	10/20/2020	1	Passed
384	8808 Spruce Mill Drive	10/20/2020	10/22/2020	1	Passed
385	613A Rose Hollow Drive	10/13/2020	10/22/2020	1	Passed
386	613B Rose Hollow Drive	10/13/2020	10/22/2020	1	Passed
387	1508 Yardley Road	10/20/2020	10/22/2020	1	Passed
388	308 Floral Vale Boulevard	10/22/2020	10/26/2020	1	Passed
389	14201 Cornerstone	10/22/2020	11/4/2020	1	Passed
390	243 Emerald Drive	10/26/2020	11/4/2020	1	Passed
391	2607 Brookhaven Drive	10/26/2020	10/29/2020	1	Passed
392	23 Austin Road	10/18/2020	11/3/2020	1	Passed
393	355 Saly Road	10/27/2020	11/9/2020	1	Passed
394	1328 Heller Drive	10/20/2020	11/3/2020	1	Passed
395	2112 Stackhouse Drive	10/29/2020	11/4/2020	1	Passed
396	15 Scammel Drive	10/26/2020	11/9/2020	1	Passed
397	1546 Clark Drive	10/23/2020	11/11/2020	1	Passed
398	3107 Danbury Court	11/2/2020	11/9/2020	1	Passed
399	315 Saly Road	11/2/2020	11/9/2020	1	Passed
400	1226 Greenhill Road	11/2/2020	11/4/2020	1	Passed
401	1006 North Elbow Lane	11/4/2020	11/9/2020	1	Passed
402	224 Arborlea Avenue Review No. 1	11/3/2020	11/17/2020	1	Failed
402A	224 Arborlea Avenue Review No. 2	11/3/2020	11/19/2020	2	Passed
403	649B Rose Hollow Drive	10/28/2020	11/11/2020	1	Passed
404	8707 Spruce Mill Drive	11/3/2020	11/11/2020	1	Passed
405	1386 Beechdrop Court	10/15/2020	11/11/2020	1	Passed
406	341 N. Fieldstone Court	10/30/2020	11/10/2020	1	Failed
407	566 Delvale Road Review No. 1	11/9/2020	11/16/2020	1	Failed
407A	566 Delvale Road Review No. 2	11/20/2020	11/23/2020	2	Passed
408	619 Palmer Lane	11/6/2020	11/19/2020	1	Passed
409	653A Rose Hollow Drive	11/5/2020	11/24/2020	1	Passed
410	487 American Drive	11/3/2020	11/24/2020	1	Passed
411	641 Teich Drive	11/6/2020	11/24/2020	1	Passed
412	73 Glen Drive	11/10/2020	11/24/2020	1	Passed
413	2804 Sterling Road	11/10/2020	11/24/2020	1	Passed
414	1575 Applewood Circle	11/12/2020	11/24/2020	1	Passed
415	20 Springtree Lane	11/13/2020	12/1/2020	1	Passed
416	664 Leslie Lane	11/16/2020	11/23/2020	1	Passed
417	7 Highland Drive	11/18/2020	12/1/2020	1	Passed
418	7605 Spruce Mill Drive	11/18/2020	12/1/2020	1	Passed
419	360 Fieldstone Court Review No. 1	11/18/2020	11/25/2020	1	Failed
419A	360 Fieldstone Court Review No. 2	11/18/2020	12/14/2020	2	Passed
420	13106 Cornerstone	11/16/2020	12/1/2020	1	Passed
421	13 Concord Lane	11/18/2020	12/8/2020	1	Passed
422	2031 Quarry Road	11/12/2020	11/25/2020	N/A	N/A
423	1307 Prospect Farm	11/18/2020	12/8/2020	1	Passed
424	48 Sutphin Road Review No. 1	11/5/2020	11/25/2020	1	Failed

STATUS OF SANITARY SEWER LATERAL VIDEO INSPECTIONS
LOWER MAKEFIELD TOWNSHIP, BUCKS COUNTY
LAST UPDATED 2/22/2021

No.	Address	Date Inspected	Date Reviewed	Review No.	Status
424A	48 Sutphin Road Review No. 2	11/5/2020	11/30/2020	1	Passed
425	476 Liberty Drive	11/18/2020	12/8/2020	1	Passed
426	1483 Merrick Road	11/23/2020	12/8/2020	1	Passed
427	11 Olivia Drive	11/18/2020	11/24/2020	1	Passed
428	2408 Brookhaven Drive	11/23/2020	12/8/2020	1	Passed
429	1432 Heather Ridge Drive	11/23/2020	11/25/2020	1	Passed
430	224 Fieldstone Court	11/9/2020	12/2/2020	1	Passed
431	2323 Lakeshore Dr	11/23/2020	12/23/2020	1	Passed
432	1648 Bluebird Drive	11/28/2020	12/9/2020	1	Passed
433	706 Jade Road	11/25/2020	12/10/2020	1	Passed
434	55 N Homestead Drive	11/18/2020	12/3/2020	1	Passed
435	18 Glenolden Road	11/3/2020	12/16/2020	1	Passed
436	1228 Lexington Drive	11/11/2020	12/1/2020	1	Passed
437	601B Rose Hollow Drive	12/1/2020	12/16/2020	1	Passed
438	29 Morningside Drive	11/20/2020	12/17/2020	1	Passed
439	2045 Silverwood Drive	11/16/2020	12/22/2020	1	Passed
440	13203 Cornerstone Drive	12/1/2020	12/8/2020	1	Passed
441	1209 Dickinson Drive	11/25/2020	12/14/2020	1	Passed
442	200 Coventry Court	12/2/2020	12/20/2020	1	Passed
443	201 S Flint Court	12/7/2020	12/16/2020	1	Passed
444	112 West Ferry Road	12/3/2020	12/17/2020	1	Passed
445	252 Yellow Springs Court	12/8/2020	12/15/2020	1	Passed
446	632A Rose Hollow	11/5/2020	12/22/2020	1	Passed
447	1335 University Drive	12/3/2020	12/17/2020	1	Passed
448	1711 Makefield Road	12/7/2020	12/14/2020	1	Passed
449	2048 E. Wellington Road	11/23/2020	12/16/2020	1	Passed
450	10 Noreen Drive	12/6/2020	12/17/2020	1	Passed
451	1367 Yardley-Newtown Road	12/8/2020	12/16/2020	1	Passed
452	2 Sutphin Pines	12/11/2020	12/17/2020	1	Passed
453	17 Highview Lane	12/9/2020	12/22/2020	1	Passed
454	1678 Coolidge Way	12/10/2020	12/22/2020	1	Passed
455	3 Plymouth Lane	12/10/2020	12/22/2020	1	Passed
456	2001 Trowbridge Drive	12/11/2020	12/22/2020	1	Passed
457	927 Hunt Drive	12/2/2020	1/27/2021	1	Passed
458	527 Countess Dr.	4/28/2020	1/12/2021	1	Passed
459	1238 Fountain Road	12/8/2020	12/22/2020	1	Passed
460	103 Vernon Lane	12/14/2020	12/22/2020	1	Passed
461	7902 Spruce Mill Drive	12/19/2020	12/23/2020	1	Passed
462	1310 Apple Blossom	12/21/2020	12/28/2020	1	Passed
463	1011 Lafayette Drive	12/21/2020	12/23/2020	1	Passed
464	1378 Yardley Newtown Road	12/15/2020	12/23/2020	1	Passed
465	7 Oak Ave	12/16/2020	12/23/2020	1	Passed
466	493 American Drive	12/6/2020	12/28/2020	1	Passed
467	1901 Waterford Road	12/7/2020	12/28/2020	1	Passed
468	89 Sutphin Pines	12/31/2020	1/5/2021	1	Passed
469	603 Friar Drive	12/22/2020	1/28/2021	1	Passed
470	12 Highland Drive	12/30/2020	1/12/2021	1	Passed
471	5707 Spruce Mill Drive	12/30/2020	1/5/2021	1	Passed
472	598 Cedar Hollow Road	12/21/2020	1/14/2021	1	Passed
473	1110 Gloria Lane Review No. 1	12/23/2020		1	Failed
473A	1110 Gloria Lane Review No. 2	2/8/2021	2/16/2021	2	Passed
474	2116 Yardley Morrisville Road	1/5/2021	1/14/2021	1	Passed
475	1449 Dolington Road	12/28/2020	1/8/2021	1	Passed
476	2052 Farmview Drive	1/6/2021	1/13/2021	1	Passed
477	53 Homestead Drive	1/5/2021	1/14/2021	1	Passed
478	6002 Spruce Mill Drive	1/7/2021	1/14/2021	1	Passed
479	7104 Sheffield Drive Review No. 1	1/12/2021	2/1/2021	1	Failed
479A	7104 Sheffield Drive Review No. 2	2/5/2021	2/18/2021	2	Passed

STATUS OF SANITARY SEWER LATERAL VIDEO INSPECTIONS
LOWER MAKEFIELD TOWNSHIP, BUCKS COUNTY
LAST UPDATED 2/22/2021

No.	Address	Date Inspected	Date Reviewed	Review No.	Status
480	917 Lanyard Road	1/14/2021	1/22/2021	1	Passed
481	1539 Revere Road	1/13/2021	1/22/2021	1	Passed
482	645A Rose Hollow Drive	1/13/2021	1/15/2020	1	Passed
483	621A Rose Hollow Drive	12/23/2020	1/27/2021	1	Passed
484	617A Rose Hollow Drive	12/28/2020	1/27/2021	1	Passed
485	617B Rose Hollow Drive	12/28/2020	1/27/2021	1	Passed
486	611B Rose Hollow Drive	12/23/2020	1/27/2021	1	Passed
487	655A Rose Hollow Drive	12/23/2020	1/27/2021	1	Passed
488	12 Berkley Drive	1/20/2021	1/29/2021	1	Failed
489	4 North Manor Lane	1/20/2021	1/22/2021	1	Passed
490	19 Lower Hilltop Road	1/18/2021	2/1/2021	1	Passed
491	1206 Ash Lane	1/12/2021	2/1/2021	1	Passed
492	807 Kent Drive	1/21/2021	2/1/2021	1	Passed
493	6505 Spruce Mill Drive	1/19/2021	2/1/2021	1	Passed
494	16 Brook Lane	1/25/2021	2/1/2021	1	Passed
495	349 Margery Road	1/26/2021	2/11/2021	1	Passed
496	2082 East Wellington Road	1/27/2021	2/1/2021	1	Passed
497	1979 Quarry Road	1/28/2021	1/29/2021	1	Passed
498	3 Patrick Lane	1/28/2002	2/17/2021	1	Passed
499	609B Rose Hollow Drive	10/13/2020	2/5/2021	1	Passed
500	2111 Yardley Morrisville Road	2/4/2021	2/14/2021	1	Passed
501	1156 Dickinson Ave	1/29/2021	2/11/2021	1	Passed
502	232 Regency Boulevard	1/6/2021	2/5/2021	1	Passed
503	885 Slate Hill Road	2/5/2021	2/17/2021	1	Passed
503A	885 Slate Hill Road	2/5/2021	2/19/2021	2	Failed
504	827 River Road	2/9/2021	2/22/2021	1	Passed
505	1648 Spring Mill Court	2/12/2021	2/14/2021	1	Passed
506	1744 Clydesdale Circle	1/29/2021	2/15/2021	1	Passed
507	890 Piper Lane	2/5/2021	2/15/2021	1	Passed
508	727 Long Acre Lane	2/11/2021	2/22/2021	1	Passed
				Total Failed	**58**
				Total Passed	**450**

CORRECTIVE ACTION PLAN

FOR THE

THE TOWNSHIP OF LOWER MAKEFIELD COLLECTION SYSTEM

LOCATED IN

LOWER MAKEFIELD TOWNSHIP
BUCKS COUNTY, PENNSYLVANIA

PREPARED FOR

THE TOWNSHIP OF LOWER MAKEFIELD
1100 EDGEWOOD ROAD
YARDLEY, PA 19067

PREPARED BY

Ebert Engineering, Inc.
Water and Wastewater Engineering
P.O. Box 540
4092 Skippack Pike, Suite 202
Skippack, PA 19474

EE PROJECT NUMBER 068-024

SEPTEMBER 21, 2017
LAST REVISED: OCTOBER 25, 2017

TABLE OF CONTENTS

I. PURPOSE

The purpose of this report is to present Lower Makefield Township, Bucks County Corrective Action Plan (CAP) as required by Bucks County Water and Sewer Authority (BCWSA) and Pennsylvania Department of Environmental Protection (PADEP).

The primary reason for the tributaries of the Neshaminy Interceptor to undertake corrective action is to conform to Bucks County Water and Sewer Authority's Corrective Action Plan for the Neshaminy Interceptor, which has a projected hydraulic overload. The goals of this CAP are to reduce flows, especially wet weather peak flows, discharging from Lower Makefield Township sewers into the Neshaminy Interceptor and its service area and to reduce the risk of surcharging and sanitary sewer overflows in the Neshaminy Interceptor and its service area. This CAP will outline the necessary steps to accomplish reduction in I/I. The target for I/I reduction is approximately 10% of the current base flow and the ability to maintain or exceed this target reduction of base flow moving forward.

The Township of Lower Makefield is located in the southern part of Bucks County, Pennsylvania and the majority of the Township is service by public sanitary sewer system. Lower Makefield Township has two major sanitary sewer service areas. The first major service area is the Neshaminy Interceptor Service Area. The sub-areas within the Neshaminy Interceptor are the Core Creek Interceptor, Middletown Township, Falls Township Service Area and Falls Township Contract Area service areas. The wastewater generated within this major service area is conveyed and discharged into the Neshaminy Interceptor. From the Neshaminy Interceptor, the wastewater flows to the City of Philadelphia Northeast Water Pollution Control Plant for treatment and disposal under NPDES Permit No. PA0026689. The sanitary sewer lines are owned and operated by Lower Makefield Township with the exception of the Falls Township Service Area where the sewer lines are the responsibility of Falls Township. The conveyance sanitary sewer lines flow to metering chambers which are owned and operated by Bucks County Water and Sewer (BCWSA).

The second major service area is Morrisville Borough Wastewater Treatment Plant Service Area. This service area consists of two sub-areas, Yardley Borough Service Area and Morrisville Borough Service Area. The wastewater generated by this service area is conveyed to the Morrisville Borough Wastewater Treatment Plant (WWTP) for treatment and disposal under NPDES Permit No. PA0026701.

This Corrective Action Plan (CAP) will only address the service areas that flow directly to the BCWSA Neshaminy Interceptor.

II. SANITARY SEWER SYSTEM DESCRIPTION

As noted above, this CAP focuses solely on the areas that convey the wastewater that is conveyed to the Neshaminy Interceptor. The following is a description of the three sub areas that discharge into BCWSA's Neshaminy Interceptor.

1. Core Creek Interceptor Service Area – The Core Creek Interceptor Service Area is on the west and northwest of Lower Makefield Township and identified in yellow on the Overall Sanitary Sewer Map attached in Appendix B.

   The following is a description of the Core Creek Interceptor Service Area:

   a. Overall Basin Area- 2,555 acres
   b. Number of Public Sewer Customers- 6,946
   c. Linear feet of Pipe- 158,899
   d. Number of Manholes- 890
   e. Number of Meters - 4 (all owned and maintained by BCWSA)
   f. Number of Sanitary Sewer Overflows (SSOs): 0 - Core Creek interceptor has been documented with high flows during rain events
   g. Number of Pump Stations - 3: Farmview Pump Station, Chanticleer Pump Station and Brookstone Pump Station.

   A description of the pump station is as follows:

   i. The Farmview Pump Station - Is a submersible pumping station is located east of the cul-de-sac of S. Kimbles Road and services the surrounding residential developments. The pumping station is equipped with two submersible pumps which pump an average of 169 gpm (243,360 gpd) each. An on-site generator provides emergency power.

      The average flow rate for the pump station in 2016 was 36,841 gpd. There are no anticipated connections to this pump station over the next five years.

   ii. Chanticleer Pump Station - This pumping station is located along just south east of Dyers Lane servicing the two small residential developments along Dyers Lane and Delaware Rim Drive. The pumping station is equipped with two submersible pumps, each with a nominal capacity of 49 gpm (70,560 gpd). A portable on-site generator provides emergency power to the pump station.

In 2016, the Chanticleer Pump Station currently had an average monthly flow rate of 20,858 gpd. The annual average flow rate exceeds the annual average flow capacity of the pump station. There is however no reported overload conditions present at this pump station. The Authority Engineer will further evaluate the capacity in 2017 and make recommendations to the Lower Makefield Township Board of Supervisors and Sewer Authority to address this issue. There are nine (9) projected connections to this pump station over the next five years.

iii. Brookstone Pump Station - This wet well dry well pumping station is located just south of Lynbrook Drive and services the Brookstone residential development. The collected wastewater is pumped to the BCWSA Meter 2003 where it enters and flows to the Neshaminy Interceptor. The pumping station is equipped with two pumps, each with a nominal capacity of 76 gpm (109,440 gpd). An on-site permanent generator provides emergency power to the pump station.

The Brookstone Pump Station is currently has an average monthly flow rate for the pump station in 2016 was 60,564 gpd. The annual average flow rate exceeds the annual average flow capacity of the pump station. There is however no reported overload conditions present at this pump station. The Authority Engineer will further evaluate the capacity in 2017 and make recommendations to the Lower Makefield Township Board of Supervisors and Sewer Authority to address this issue. There are no future connections anticipated at this pump station over the next five years.

2. Middletown Township Service Area -The Middletown Township Service Area is on the west and southwest of Lower Makefield Township and identified in turquoise on the Overall Sanitary Sewer Map attached in Appendix B. The following is a description of the Middletown Township Service Area:

a. Overall Basin Area- 497 acres
b. Number of Public Sewer Customers- 1,861
c. Linear feet of Pipe- 51,818
d. Number of Manholes- 297
e. Number of Meters- 1: BCWSA 2005 (Owned and maintained by BCWSA)
f. Number of Sanitary Sewer Overflows (SSOs)
g. Number of Pump Stations - 1: Oxford Glen/Yardley Oaks Pump Station

A description of each pump station is as follows:

i. The Oxford Glen/Yardley Oaks Pump Station: Is a wet well dry well pumping station that is located at the intersection of Acorn Drive and Woodview Drive and services the surrounding residential developments. The pumping station is equipped with two pumps which pump an average of 141 gpm (203,040 gpd) each. An on-site generator provides emergency power.

   The average flow rate for the pump station in 2016 was 193,680 gpd. The annual average flow rate exceeds the annual average flow capacity of the pump station. There is however no reported overload conditions present at this pump station. The Authority Engineer will further evaluate the capacity in 2017 and make recommendations to the Lower Makefield Township Board of Supervisors and Sewer Authority to address this issue. There are no anticipated connections to this pump station over the next five years.

3. Falls Township Contract Area - The Falls Township Contract Area is an area located in southern Lower Makefield Township that borders Falls Township and identified in purple on the attached Overall Sanitary Sewer Map in Appendix B.

The following is a description of the Falls Township Contract Area Service Area:

a. Overall Basin Area- 628 acres
b. Number of Public Sewer Customers- 2,618
c. Linear feet of Pipe- 62,774
d. Number of Manholes- 283
e. Number of Meters – 2
   i. Derbyshire
   ii. Big Oak Road
f. Number of Sanitary Sewer Overflows (SSOs) - 0
g. Number of Pump Stations - 1 – Derbyshire By-Pass Pump Station

A description of each pump station is as follows:

i. Derbyshire By-Pass Pump Station – The Township permitted and installed a by-pass pump in a manhole adjacent to the Derbyshire Metering Station to prevent surcharging of the sanitary sewer mains in this service area. When the flows cannot be conveyed by gravity a float activates a by-pass pump that pumps the flows through a force main to the exiting sanitary

sewer collection system that conveys the flows to the Morrisville Municipal Authority Service Area.

The Township is now recording the pump run hours and will present the information in the Chapter 94 Reports. The Township will now provide additional monitoring of this pump station during all wet weather events to document the approximate start time and end time of all pumping events as well as using the pump run time to calculate the approximate volume of flow that was by-passed.

4. Falls Township Service Area – The Falls Township Service Area is an area located in southern Lower Makefield Township that borders Falls Township and is identified in orange on the attached Overall Sanitary Sewer Map in Appendix B.

   The area is owned and maintained by the Township of Falls Authority (TOFA) and all properties are direct customers of TOFA. As such this service area is covered by the TOFA I/I Abatement Plan and is not part of the Township's CAP.

III. STUDY AREAS

Lower Makefield Township divided their sanitary sewer system flowing to BCWSA's Neshaminy Interceptor into 8 study areas as shown in the Flow Meter Location Exhibit in Appendix C. Lower Makefield Township will investigate and rehabilitate the required mains, manholes, and laterals in the identified study area. Post metering within the selected area will be completed to measure the effectiveness of the repairs. Based on the comparison of the pre-metering to the post-metering data, Lower Makefield Township will determine if the selected area has been satisfactorily rehabilitated.

A. Study Area Priorities

The order in which Lower Makefield Township will rehabilitate the study areas will be based on meter data, SSO's, knowledge of the system, previous work completed and wet weather observations.

Lower Makefield intends on rehabilitating one Study area at a time, however, Lower Makefield will continue to monitor their entire sewer system. If problem areas are found that require repair outside of the current Study Area, then Lower Makefield Township will make the necessary repair. These repairs will be counted toward Lower Makefield's I/I removal efforts for the release of future connections.

Lower Makefield will begin their I/I removal efforts in Study Area A-1 (northernmost portion of the Core Creek Interceptor Service Area). This study area was selected as there is a known problem in the area of Core Creek Interceptor between Manholes NC-83 to NC-93 which is located inside of Area A-2. Study Area A-1 drains directly into this section of the Core Creek Interceptor and it is important to reduce the upstream flows of this problem area before evaluating the problem area itself. It may be a possibility the flows from Study Area A-1 are causing the issues in Study Area A-2 and that will be determine with the I/I investigation. All the information will be recorded and provide to PADEP.

The known problem area of the Core Creek Interceptor between Manholes NC-83 and NC-93 has manhole lids that are not sealed correctly and the sanitary sewers use concrete pipes where numerous joints are not properly sealed and the connections to the manholes are no longer properly sealed. Therefore, based on visual clues, this section of pipe would appear to be a contributing source of I/I to the Neshaminy Interceptor. This is part of the original sanitary sewer system for the Grey Nuns of Sacred Heart located in Lower Makefield Township that was previously owned and operated by Bucks County Water and Sewer Authority. Since the last revision to this CAP on October 25, 2017, there have been developments on the Core Creek Interceptor. Lower Makefield Township televised the Interceptor where it was determined the majority of the I/I was due to the manhole covers and minimal joint leakage. BCW&SA have not confirmed in writing but have acknowledged that BCW&SA owns the Interceptor. As of this revised report, that is the current status of the efforts and developments on the Interceptor. Lower Makefield Township will continue to work on this issue and will provide PA DEP with updates in the Chapter 94 Reports submitted yearly.

Currently, it is anticipated that the second study area to be rehabilitated will be A-2. The A-1 Study Area flows into the A-2 Study Area portion of the Core Creek Interceptor where there continues to be problems with the interceptor. The order of completion of the remaining study areas will be determined by meter data, visual observations, and Lower Makefield's knowledge of the system. Each year, Lower Makefield will identify and confirm the order of completion of the study areas in their mid-year and annual reports.

B. The following is a description of the study areas:

1. STUDY AREA 1: A-1

Study Area 1 is the northernmost portion of the Core Creek Interceptor Service Area and is identified on the Flow Meter Location Exhibit. The following table outlines the information of the study area:

A	Name of Drainage Basin	Core Creek Interceptor
B	Area in Acres	1,092
C	Linear Feet of Pipe	55,952
D	Number of Manholes	243
E	Number of Public Sewer Connections	
F	Number of Pump Stations	0
G	Number of SSOs	0 (Core Creek interceptor has documented high flows during rain events)
H	Regional Meter Location	0
I	Regional Meter (Direct or Deduct)	-
J	Number of Temporary Meters	3

The pipe in this area contains significant I/I as the infrastructure includes some of the original sanitary sewer installed in Lower Makefield Township.

2. STUDY AREA 2: A-2

Study Area 2 is part of the Core Creek Interceptor Service Area. It receives flows from sub-basin A-1. Being that the Core Creek Interceptor has such substantial I/I, it is most feasible to rehabilitate sub-basin A-2 directly after sub-basin A-1. The following table outlines the information of the study area:

A	Name of Drainage Basin	Core Creek Interceptor
B	Area in Acres	856
C	Linear Feet of Pipe	45,831
D	Number of Manholes	215
E	Number of Public Sewer Connections	
F	Number of Pump Stations	0
G	Number of SSOs	0 (Core Creek interceptor has documented high flows during rain events)
H	Regional Meter Location	Lindenhurst Meter and BCWSA Meter 2001

I	Regional Meter (Direct or Deduct)	Direct
J	Number of Temporary Meters	3

The following Tables describe the future study areas and all of the study areas are shown on the Flow Meter Location Exhibit attached in Appendix C. (Tables are not listed in any specific order):

3. STUDY AREA 4: B-2

A	Name of Drainage Basin	Core Creek Interceptor
B	Area in Acres	190
C	Linear Feet of Pipe	6,392
D	Number of Manholes	31
E	Number of Public Sewer Connections	
F	Number of Pump Stations	0
G	Number of SSOs	0
H	Regional Meter Location	BCWSA Village Road Meter
I	Regional Meter (Direct or Deduct)	Direct
J	Number of Temporary Meters	0

4. STUDY AREA 5: C

A	Name of Drainage Basin	Core Creek Interceptor
B	Area in Acres	186
C	Linear Feet of Pipe	23,421
D	Number of Manholes	109
E	Number of Public Sewer Connections	
F	Number of Pump Stations	1 - Brookstone
G	Number of SSOs	0
H	Regional Meter Location	BCWSA Meter 2003
I	Regional Meter (Direct or Deduct)	Direct
J	Number of Temporary Meters	3

5. STUDY AREA 6: D

A	Name of Drainage Basin	Middletown Township
B	Area in Acres	497
C	Linear Feet of Pipe	51,818
D	Number of Manholes	297
E	Number of Public Sewer Connections	
F	Number of Pump Stations	1 – Oxford Glen/ Yardley Oaks
G	Number of SSOs	0

H	Regional Meter Location	BCWSA Meter 2005
I	Regional Meter (Direct or Deduct)	Direct
J	Number of Temporary Meters	3

6. STUDY AREA 7: E

A	Name of Drainage Basin	Falls Township Contract Area
B	Area in Acres	565
C	Linear Feet of Pipe	57,518
D	Number of Manholes	263
E	Number of Public Sewer Connections	
F	Number of Pump Stations	0
G	Number of SSOs	0
H	Regional Meter Location	Derbyshire Metering Chamber
I	Regional Meter (Direct or Deduct)	Direct
J	Number of Temporary Meters	4

7. STUDY AREA 8:F

A	Name of Drainage Basin	Falls Township Contract Area
B	Area in Acres	62
C	Linear Feet of Pipe	4,428
D	Number of Manholes	17
E	Number of Public Sewer Connections	
F	Number of Pump Stations	0
G	Number of SSOs	0
H	Regional Meter Location	Big Oak Road Meter
I	Regional Meter (Direct or Deduct)	Direct
J	Number of Temporary Meters	1

It is noted that Study Area B-1 and B-2 will be rehabilitated simultaneously due do their relative small size and short length of pipe. Study Areas B-1 and B-2 are broken up into separate Study Areas. A meter will be place at Yardley Newtown Road to meter Area B-1. B-2 Area will be metered by BCWSA regional meter.

IV. CORRECTIVE ACTION PLAN (CAP)

Lower Makefield Township's Corrective Action Plan (CAP) will include mapping, metering, review of water meter records, wet weather investigations, investigating the age

A. MAINS

1. Mapping:

   a. The Service Areas are shown on the Overall Sanitary Sewer Map attached in Appendix B

   b. The Study Areas are shown on the Flow Meter Location Exhibit attached in Appendix C.

2. Metering:

   Each study area will be metered by a regional meter that is either owned by BCWSA or Lower Makefield Township. The regional meters are existing and permanent and will remain in place throughout the duration of the corrective action plan.

   Each study area will also be metered with micro (temporary) meters. These meters will be installed at a minimum of the beginning of the wet weather season (December) and will remain in place through end of the wet weather season (May).

   The general metering procedure is as follows:

   a. Permanent Metering

      Lower Makefield Township will utilize existing, permanent meters in each of the study areas that were previously installed and provide a summary of the assessment of the flow data from the permanent meters in each annual report to the PA DEP. These meters are at the outlet of each study area and are the basis of how each study area was determined. The Big Oak Road Meter and the Derbyshire Meter in Study Areas E and F respectively, are owned and maintained by Lower Makefield Township. The remaining permanent meters are owned and maintained by BCWSA. These meters will be used as an extra meter for each Study Area and will provide the cumulative flow for each individual area.

      These meters will be analyzed in each annual report as well as prior to implementing the corrective action plan. Reviewing and analyzing the data from these meters for the past year prior to commencing the corrective action plan will aid in determining the priority of each of the sub-areas. The annual CAP report will

include a comparison of average daily, minimum daily, maximum daily and peak hourly flows over the course of the year for the permanent meters. I/I will be visibly shown with this flow data as the daily flows would be significantly higher during wet weather events.

b. Micro Meters

Lower Makefield will purchase, install and maintain a total of 4 micro meters. A map of the metering locations for each of the study areas is attached in Appendix C. The micro meters will be used as follows:

1. Year 1 – The selected study area will be divided into smaller sub-areas. These sub-areas will be metered with micro meters. Micro and regional meter data from the first wet weather season will be used to establish a base line (pre-metering) of the average daily, average dry day, maximum daily and peak hourly flows.

2. Year 2 – (The second wet weather season for selected study area) – after the completion of the rehabilitation work, data from the micro meters will be analyzed (post metering) to determine if the flows were reduced and if and additional action on the study area is required.

   In addition, during Year 2 wet weather season, pre-metering will also be done in the next highest priority study area. This metering procedure will be repeated until all the study areas have been successfully rehabilitated.

3. Review of Water Meter Records:

Lower Makefield will review water meter records of all public sewer customers located within the selected study area to determine the actual water use. The actual water use will be compared to the metered sewer flows using micro meters and the existing permanent meters to determine I/I and the sub areas with highest priority.

4. Wet Weather Investigations:

During the wet weather season, (after each rain event greater than 1-inch of rain), Lower Makefield Township will open selected manholes within the selected study area to visually inspect the manhole as well as evaluate the amount of flow. If possible, wet weather investigations will be

completed during the time of day when the flows are known to be low (2-4 pm or 11 pm to 4 am).

Wet weather investigations will also include plugging the pipe at the upstream manhole location (during known periods of low flow) and monitoring the flow at the downstream manhole to determine if there is I/I in the main.

Wet weather investigations will be used to identify areas that require additional investigations (televising) to determine sources of I/I.

It should be noted, pumps have been installed at the Derbyshire meter manhole to be utilized during wet weather events. The Township has received a Water Quality Management Permit from PA DEP. The pump is operated manually by the Authority and only during time of wet weather. Lower Makefield Township in the past has not documented the usage of the pump. Going forward, Lower Makefield Township will take records of the operation of this pump. The pump run hour, approximate duration of operation during each operation, estimated volume by-passed and the frequency. This will be reported in the annual Chapter 94 Report.

5. Age / Location of Pipe Segment:

   The Core Creek Interceptor is part of Lower Makefield Township original sanitary sewer collection and conveyance system. Most of the pipe material for these segments is VCP. These areas may contain significant sources of I/I due to the age of the material and the number of joints. There has been known issues with this interceptor during wet weather events, therefore this was part of the determining factor to start with Study Area A-1 and A-2.

The Core Creek Interceptor is identified on the Overall Sanitary Sewer Plan. The known problem areas of the Core Creek Interceptor are between Manholes NC-83 to NC-93.

6. Knowledge of the System:

Lower Makefield Township has ongoing knowledge of their sanitary sewer system as developed in the annual Chapter 94 Report. The Chapter 94 Report can be used as baseline knowledge as it states which pump stations have an annual average flow exceeding the annual average flow capacity if the currently PADEP recommended peaking factors are applied. Lower Makefield Township will, within each study area, investigate known problem areas.

7. Televising:

Lower Makefield Township will include televising as part of the contract to the awarded contractor performing the rehabilitation to the sewer system.

Lower Makefield will televise all the mains and laterals (from the main to the transition) within the selected study area during the wet weather season. Videos and reports will be reviewed to determine defects in need of repair. All analysis of televised inspections for pipes and manholes will be in accordance with the National Association of Sewer Service Companies (NASSCO) standards.

8. Repair and Rehabilitation:

Identified defects in the mains contained within the selected study area will be repaired during the summer months. Anticipated repair methods are as follows:

a. Root Treatment – roots within pipe segments will be physically removed with a root cutter. Areas within the study area with excessive root growth will be chemically treated.

b. Grouting – Mains that contain leaks only at the joints will be grouted. All grouted pipe segments will be cleaned and televised. Each joint will be air tested and grouted if required.

c. Spot Repairs – Mains that contain a limited number of defects in the pipe (cracks, holes, broken) will be repaired by excavating and installing an exterior sleeve or an interior fiberglass liner segment.

d. Cured in Place Pipe (CIPP) lining – Mains that contain a limited number of defects in the pipe will be spot repair with short sections of CIPP. Entire manhole to manhole pipe sections can be CIPP lined if there are too many defects to do smaller spot repairs. CIPP is the preferred method of pipe repair.

e. Replacement of pipe segments – if its determined that a defect cannot be repaired by any of the above methods, the portion of the pipe containing the defect will be excavated and replaced with a new PVC pipe section.

B. MANHOLES

During the wet weather events, Lower Makefield personnel will visually inspect each manhole within the study area. A manhole inspection report will be completed for every manhole that is inspected.

Found defects will be repaired as follows:

a. Grouting – If possible, Lower Makefield will grout all identified leaks. If grouting does not eliminate the leak, the manhole will be lined.

b. Spraywall Lining – All identified leaking manholes that could not be successfully grouted will be lined. Lower Makefield typically uses SpectraShield epoxy liner for manhole lining projects.

c. Parson Manhole Inserts – Lower Makefield Township will install Parson Manhole Inserts in any manhole that is found to need such an insert (lids that have large pick holes) or are in areas prone to surface runoff or ponding.

C. LATERALS

The Lower Makefield Township lateral inspection program will include the following:

A. Public portion of the lateral (from the main to the transition)

1. Televising – All laterals within the selected study area will be televised from the main to the transition if during the video inspection of the sanitary sewer I/I sources are identified in the laterals. If it is found during video inspections or wet weather investigations that any observation of significant, sustained, or clear water flowing from a private lateral connection, than it will be noted that this is indication of a stormwater or groundwater source directly connected to the lateral. At that point, further investigation of that specific lateral will be required to ensure the illicit stormwater or groundwater connection to the sanitary lateral is disconnected. The municipal engineer will inspect the repair/removal of the illicit connections to the sanitary laterals to ensure all illicit connections are actually removed.

2. Cleanouts – Lower Makefield Township will visually inspect and repair all cleanouts that are located at the right of way line for each parcel in the selected study area.

3. Repair and Rehabilitation – Lower Makefield Township will repair the laterals as follows:

    i. Root treatment – roots located in laterals will be physically removed by a root cutter. Areas within the study area with excessive root growth will be chemically treated.

    ii. Install/repair missing and/or damaged cleanout caps.

Once a defective lateral has been identified, Lower Makefield Township will review the defect to determine the best repair solution. Factors that will be considered in determining the best repair solution include but are not limited to: location, depth, severity of the defect and presence of a clean out. Keeping these factors in mind, a practical repair method will be selected on for the lateral. Anticipated repair methods include: lining or excavation and replacement.

B. Private Sector portion of the lateral (from the transition to the house)

Lower Makefield Township currently has an ordinance in §166-29 – Prohibited Discharges that states "Surface water that has accumulated in or been drained into sump holes in basements, crawl spaces or other areas shall not be discharged into the sanitary sewer system." The ordinance also states "no down spouts, rain gutters, vents, or surface drains shall be constructed in such a manner to permit water to be drained into the sanitary sewer system."

Lower Makefield Township will incorporate a visual lateral inspection program. These visual inspections will ensure that there are no visible illicit connections to the sanitary sewer whether it is from a roof drain or sump pump. It will also allow the Township to verify that all homes have appropriate mushroom style caps on the cleanouts and that cleanouts are above grade as to not allow any rain water to enter the sanitary system.

Lower Makefield Township currently does not have a sewer lateral inspection ordinance which requires the inspection of the private sector of sanitary sewer laterals. As part of the Corrective Action Plan, Lower Makefield Township will draft and vote on an ordinance which requires the inspection of any sanitary sewer lateral whenever ownership of a property is transferred. The ordinance will state that a certified registered plumber will be required to video inspect the lateral and make any repairs necessary prior to property transfer. Upon repair of any lateral defects, the homeowner will be issued a Sewer Lateral Compliance Certification certifying that the home has passed the lateral inspection.

Lower Makefield Township has the proper ordinances in place to allow them to inspect properties for illicit connections and allows for the township to fine the violator request the proper repair. Lower Makefield Township has the right per §166-31- Inspections to "enter upon any or all properties for the purpose of inspecting the system and connections, observing, measuring, and sampling waste discharged into the sewer system for the purpose of determining whether or not the property owner has in use a sump pump and whether or not the sump pump is installed in violation of this article." Then per §166-32 –Violations and Penalties of the Township Code "Any person who shall violate a provision of this article or shall fail to comply with any of the requirements thereof shall be punishable by a fine of not more than $1,000, plus costs of prosecution, including reasonable attorney's fees incurred by the Township. Each day that a violation continues shall be deemed a separate offense. If the defendant neither pays nor timely appeals the judgment, the Township may enforce the judgment pursuant to the applicable rules of civil procedure."

V. REPORTING

A. Annual Reporting (Chapter 94 Report)

As required by PADEP, Lower Makefield Township will submit their annual Chapter 94 report by March 31. The report will include an update on the status of their CAP. The update will include the following:

1. An overall map of the Township showing all study areas. Rehabilitated study areas will be identified.
2. Anticipated sequence of study areas based on the Township's knowledge at the time of writing the report. The sequence is subject to change based on meter data, SSO's, pump stations and found deficiencies.
3. Summary of findings.
4. Summary of work completed.
5. Analysis of permanent and micro meter data (average daily, minimum daily, maximum daily and peak hourly.)
6. Comparison of pre-and post-meter data if applicable.
7. Comparison of actual water use to flow data for the current study area.
8. Re-evaluate and confirm Study Area priorities.
9. Revise Connection Management Plan, update anticipated projects and request release of connections.
10. Anticipated schedule for the next five years.
11. Summary of anticipated budget for the next five years.

VI. SUMMARY OF YEARLY TASKS

The following is a summary of yearly tasks for the program. It is anticipated the program will take roughly eight years to completely implement. Lower Makefield Township's goal is to eliminate SSO's, reduce flows to overloaded pump stations and reduce flows to BCWSA's Neshaminy Interceptor during wet weather events.

A. YEAR ONE

1. Receipt of CAP Approval letter from PADEP.
2. Install micro meters in Study Area A-1 within 4 months after receiving approval of CAP.
3. Pre-meter Study Area A-1 during the wet weather season.
4. Televise and complete an inspection report for all sewer mains in Study Area A-1 during wet weather season.
5. Televise and complete an inspection report for all laterals in Study Area A-1 during wet weather season. Laterals will be televised from the main to the transition.
6. Visually inspect and complete a manhole inspection report for all manholes in Study Area A-1 during wet weather season.
7. Monitor and record all issued Certificate of Compliances for laterals located on private property.
8. Identify all found defects and recommended repair method.
9. Install Parson Manhole Inserts in manholes that require them.
10. Prioritize and schedule the repair of defects (Mains, Manholes and laterals) within budget constraints.
11. Compare flows to existing permanent BCW&SA flow meters and analyze for trends. (Same for all subsequent years)
12. The Annual Chapter 94 Report will provide an update on the I/I Rehabilitation progress. Submit to PADEP before March 31.

B. YEAR TWO

1. STUDY AREA A-1

a. Post meter the area during the wet weather season.
b. Analyze flow data (average daily, minimum daily, maximum daily, peak hourly flows).
c. Compare pre-and post-meter data to determine the reduction of flows (average daily, minimum daily, maximum daily, peak hourly flows).
d. Analyze flows from permanent BCW&SA flow meters for comparison (Same for all subsequent years)

e. Compare actual water usage to the sewer flows to determine I/I in the study area.
f. Determine the effectiveness of the repairs.
g. Determine if additional repairs/rehabilitation are needed.

Lower Makefield Township anticipates rehabilitating one study area at a time. Within Lower Makefield's budget constraints, all necessary repairs will be made to the mains, manholes and laterals (public portion), (does not include the private portion of laterals) within the study area. If Lower Makefield Township determines that the study area has been successfully rehabilitated, they will move on to the next study area.

2. STUDY AREA A-2

a. Install micro meters in Study Area A-2 at the latest on December 1st of Year 2 wet weather season.
c. Pre-meter Study Area A-2 during the wet weather season.
d. Televise and complete an inspection report for all sewer mains in Study Area A-2 during wet weather season.
e. Televise and complete an inspection report for all laterals in Study Area A-2 during wet weather season. Laterals will be televised from the main to the transition.
f. Visually inspect and complete a manhole inspection report for all manholes in Study Area A-2 during wet weather season.
g. Monitor and record all issued Certificate of Compliances for laterals located on private property.
h. Identify all found defects and recommended repair method.
i. Install Parson Manhole Inserts in manholes that require them.
j. Prioritize and schedule the repair of defects (Mains, Manholes and laterals) within budget constraints.
k. The Annual Chapter 94 Report will provide an update on the I/I Rehabilitation progress. Submit to PADEP before March 31.

C. YEAR THREE

1. STUDY AREA A-2

a. Post meter the area during the wet weather season.
b. Analyze flow data (average daily, minimum daily, maximum daily, peak hourly flows).
c. Compare pre-and post-meter data to determine the reduction of flows (average daily, minimum daily, maximum daily, peak hourly flows).

d. Compare actual water usage to the sewer flows to determine I/I in the study area.
e. Determine the effectiveness of the repairs.
f. Determine if additional repairs/rehabilitation are needed.

2. STUDY AREA B-1 and B-2

a. Install micro meters in Study Area B-1 and B-2 at the latest on December 1st Year 3.
c. Pre-meter Study Area B-1 and B-2 during the wet weather season.
d. Televise and complete an inspection report for all sewer mains in Study Area B-1 and B-2 during wet weather season.
e. Televise and complete an inspection report for all laterals in Study Area B-1 and B-2 during wet weather season. Laterals will be televised from the main to the transition.
f. Visually inspect and complete a manhole inspection report for all manholes in Study Area B-1 and B-2 during wet weather season.
g. Monitor and record all issued Certificate of Compliances for laterals located on private property.
h. Identify all found defects and recommended repair method.
i. Install Parson Manhole Inserts in manholes that require them.
j. Prioritize and schedule the repair of defects (Mains, Manholes and laterals) within budget constraints.
k. The Annual Chapter 94 Report will provide an update on the I/I Rehabilitation progress. Submit to PADEP before March 31.

D. YEAR FOUR

1. STUDY AREA B-1 and B-2

a. Post meter the area during the wet weather season.
b. Analyze flow data (average daily, minimum daily, maximum daily, peak hourly flows.
c. Compare pre-and post-meter data to determine the reduction of flows (average daily, minimum daily, maximum daily, peak hourly flows).
d. Compare actual water usage to the sewer flows to determine I/I in the study area.
e. Determine the effectiveness of the repairs.
f. Determine if additional repairs/rehabilitation are needed.

2. STUDY AREA C

a. Install micro meters in Study Area C at the latest on December 1st of Year 4
b. Pre-meter Study Area C during the wet weather season.
c. Televise and complete an inspection report for all sewer mains in Study Area C during wet weather season.
d. Televise and complete an inspection report for all laterals in Study Area C during wet weather season. Laterals will be televised from the main to the transition.
e. Visually inspect and complete a manhole inspection report for all manholes in Study Area C during the wet weather season.
f. Monitor and record all issued Certificate of Compliances for laterals located on private property.
g. Identify all found defects and recommended repair method.
h. Install Parson Manhole Inserts in manholes that require them.
i. Prioritize and schedule the repair of defects (Mains, Manholes and laterals) within budget constraints.
j. The Annual Chapter 94 Report will provide an update on the I/I Rehabilitation progress. Submit to PADEP by March 31.

E. YEAR FIVE

1. STUDY AREA C

a. Post meter the area during the wet weather season.
b. Analyze flow data (average daily, minimum daily, maximum daily, peak hourly flows).
c. Compare pre-and post-meter data to determine the reduction of flows (average daily, minimum daily, maximum daily, peak hourly flows).
d. Compare actual water usage to the sewer flows to determine I/I in the study area.
e. Determine the effectiveness of the repairs.
f. Determine if additional repairs/rehabilitation are needed.

2. STUDY AREA D

a. Install micro meters in Study Area D at the latest on December 1st of Year 5
b. Pre-meter Study Area D during the wet weather season.
c. Televise and complete an inspection report for all sewer mains in Study Area D during wet weather season.

d. Televise and complete an inspection report for all laterals in Study Area D during wet weather season. Laterals will be televised from the main to the transition.
e. Visually inspect and complete a manhole inspection report for all manholes in Study Area D during the wet weather season.
f. Monitor and record all issued Certificate of Compliances for laterals located on private property.
g. Identify all found defects and recommended repair method.
h. Install Parson Manhole Inserts in manholes that require them.
i. Prioritize and schedule the repair of defects (Mains, Manholes and laterals) within budget constraints.
j. The Annual Chapter 94 Reportwill provide an update on the I/I Rehabilitation progress. Submit to PADEP by March 31.

F. YEAR SIX

1. STUDY AREA D

a. Post meter the area during the wet weather season.
b. Analyze flow data (average daily, minimum daily, maximum daily, peak hourly flows).
c. Compare pre-and post-meter data to determine the reduction of flows (average daily, minimum daily, maximum daily, peak hourly flows).
d. Compare actual water usage to the sewer flows to determine I/I in the study area.
e. Determine the effectiveness of the repairs.
f. Determine if additional repairs/rehabilitation are needed.

2. STUDY AREA E

a. Install micro meters in Study Area E at the latest on December 1st of Year 6
b. Pre-meter Study Area E during the wet weather season.
c. Televise and complete an inspection report for all sewer mains in Study Area E during wet weather season.
d. Televise and complete an inspection report for all laterals in Study Area F during wet weather season. Laterals will be televised from the main to the transition.
e. Visually inspect and complete a manhole inspection report for all manholes in Study Area E during the wet weather season.
f. Monitor and record all issued Certificate of Compliances for laterals located on private property.
g. Identify all found defects and recommended repair method.

h. Install Parson Manhole Inserts in manholes that require them.
i. Prioritize and schedule the repair of defects (Mains, Manholes and laterals) within budget constraints.
j. The Annual Chapter 94 Report will provide an update on the I/I Rehabilitation progress. Submit to PADEP by March 31.

G. YEAR SEVEN

1. STUDY AREA E

a. Post meter the area during the wet weather season.
b. Analyze flow data (average daily, minimum daily, maximum daily, peak hourly flows).
c. Compare pre-and post-meter data to determine the reduction of flows (average daily, minimum daily, maximum daily, peak hourly flows).
d. Compare actual water usage to the sewer flows to determine I/I in the study area.
e. Determine the effectiveness of the repairs.
f. Determine if additional repairs/rehabilitation are needed.

2. STUDY AREA F

a. Install micro meters in Study Area F at the latest on December 1st of Year 7
b. Pre-meter Study Area F during the wet weather season.
c. Televise and complete an inspection report for all sewer mains in Study Area F during wet weather season.
d. Televise and complete an inspection report for all laterals in Study Area F during wet weather season. Laterals will be televised from the main to the transition.
e. Visually inspect and complete a manhole inspection report for all manholes in Study Area F during the wet weather season.
f. Monitor and record all issued Certificate of Compliances for laterals located on private property.
g. Identify all found defects and recommended repair method.
h. Install Parson Manhole Inserts in manholes that require them.
i. Prioritize and schedule the repair of defects (Mains, Manholes and laterals) within budget constraints.
j. The Annual Chapter 94 Report will provide an update on the I/I Rehabilitation progress. Submit to PADEP by March 31.

H. YEAR EIGHT

1. STUDY AREA F

a. Post meter the area during the wet weather season.
b. Analyze flow data (average daily, minimum daily, maximum daily, peak hourly flows).
c. Compare pre-and post-meter data to determine the reduction of flows (average daily, minimum daily, maximum daily, peak hourly flows).
d. Compare actual water usage to the sewer flows to determine I/I in the study area.
e. Determine the effectiveness of the repairs.
f. Determine if additional repairs/rehabilitation are needed.

I. YEAR NINE AND BEYOND

The Township will continue to flow monitor one study area a year to determine if additional analysis and/or repairs are required based upon increases in flows not due to additional development. If additional repairs are required then the repairs will be performed in the following budget year. The order that the study areas will be reevaluated may change in order of priority based upon field observations and the analysis of flows at the permanent flow metering locations.

J. This process will be repeated until all study areas have been rehabilitated. After year eight, the Township will do an overall assessment of the system and development of a yearly I/I abatement program.

APPENDIX A- BCWSA AND LOWER MAKEFIELD TOWNSHIP AGREEMENT

SUPPLEMENTAL AGREEMENT
NESHAMINY INTERCEPTOR

THIS AGREEMENT made and concluded this 7th day of February, **2018,** by and between the **BUCKS COUNTY WATER AND SEWER AUTHORITY,** an authority organized and existing pursuant to the laws of the Commonwealth of Pennsylvania maintaining a principal place of business in Warrington, Pennsylvania (hereinafter referred to as "BCWSA") and **TOWNSHIP OF LOWER MAKEFIELD,** an authority organized and existing pursuant to the laws of the Commonwealth of Pennsylvania maintaining a principal place of business in Yardley, Pennsylvania (hereinafter referred to as "Township").

WHEREAS, BCWSA owns and operates the sanitary sewer collection facilities known as the Neshaminy Interceptor;

WHEREAS, BCWSA and Township have an existing Interceptor Agreement dated October 28, 1975;

WHEREAS, the improvements associated with the Neshaminy Interceptor include sanitary sewer pipes, pump stations, metering pits, manholes and other facilities;

WHEREAS, the Neshaminy Interceptor conveys sanitary sewer flow (also referred to herein as "wastewater flow") from various municipalities and other entities located in portions of Bucks County to an interceptor owned and maintained by the City of Philadelphia which said interceptor then conveys the effluent from the Neshaminy Interceptor to a sewer treatment plant owned and maintained by the City of Philadelphia;

WHEREAS, the City of Philadelphia treats the effluent discharged into the Neshaminy Interceptor pursuant to an Agreement between BCWSA and the City of Philadelphia (hereinafter referred to as "City of Philadelphia Agreement") which imposes limitations on BCWSA related to flows including peak wet weather flows. A copy of that Agreement is attached hereto, incorporated

herein and marked as Exhibit "A";

WHEREAS, inflow and infiltration, (hereinafter referred to as "I & I"), removal efforts undertaken as a whole by the contributing municipalities, authorities and other users of the Neshaminy Interceptor have not been sufficient to reduce wet weather peak flows to acceptable levels consistent with the City of Philadelphia Agreement;

WHEREAS, the Pennsylvania Department of Environmental Protection ("DEP") has determined and notified BCWSA that the municipalities, authorities and other entities that contribute flow to the Neshaminy Interceptor need to increase their collective and singular efforts to reduce inflow and infiltration into the sewer effluent that is discharged in the Neshaminy Interceptor so as to reduce wet weather peak flows treated at the facilities owned and maintained by the City of Philadelphia;

WHEREAS, completing the tasks required by DEP, such as Act 537 Sewer Facilities Planning ("Act 537") and as set forth in this Supplemental Agreement in compliance with the time limitations noted herein and pursuant to the BCWSA's Connection Management Plan ("CMP") is essential to the economic vitality of all of the municipalities, authorities and other entities served by the Neshaminy Interceptor and is indicative of good environmental stewardship on the part of all of the participants in the Neshaminy Interceptor;

WHEREAS, DEP believes and avers that the Totem Road Pump Station which conveys sewer flows from the Neshaminy Interceptor to the City of Philadelphia may be hydraulically overloaded in the future and may exceed its permitted capacity;

WHEREAS, BCWSA had previously considered the construction of a surge tank to manage peak flows, but DEP was unwilling to approve the construction of a surge tank.

WHEREAS, DEP and BCWSA have entered into a Settlement Agreement where, in the

resolution of the dispute, DEP requires that BCWSA enter into new supplemental agreements with its customers, which said agreements must impose upon such customers certain obligations as set forth in the CMP, and an executed copy of the Settlement Agreement is attached hereto, incorporated herein and marked as Exhibit "B";

WHEREAS, it has been recommended to BCWSA by its engineers, and approved by DEP, that certain improvements be made to the Neshaminy Interceptor by BCWSA so that BCWSA is able to convey additional wet weather flows in order to avoid surcharging within portions of the Neshaminy Interceptor;

WHEREAS, DEP has directed BCWSA to prepare a CMP for the years 2014 through 2018 which shall deal with inflow and infiltration abatement efforts in the Neshaminy Interceptor, collectively and/or singularly, and the release of capacity for member municipalities and authorities in order to facilitate new sewer connections;

WHEREAS, the most recent CMP that has been accepted by DEP, is incorporated by reference as though were fully set forth and is attached as Exhibit "C";

WHEREAS, the Township operates the sanitary sewer system in the Township pursuant to a lease agreement with the Municipal Sewer Authority of Lower Makefield Township, and is, therefore, authorized to enter itno this agreement on behalf of the Municipal Sewer Authority of Lower Makefield Township Authority and the Townhip; and

WHEREAS, this Supplemental Agreement is intended to set forth the terms and conditions upon which BCWSA will construct the Neshaminy Interceptor upgrades, the allocations of collective costs related to same and the flow limitation obligations imposed upon the member municipalities and authorities as it relates to the CMP.

NOW, THEREFORE, intending to be legally bound and for other good and valuable

consideration, the parties hereto agree as follows:

1. Construction of Interceptor Upgrades.

A. It is anticipated by the parties hereto that based upon the completion of the initial Act 537 Planning, as well as engineering studies conducted by BCWSA, and as required by the Settlement Agreement between DEP and BCWSA, that certain portions of the Neshaminy Interceptor will be upgraded by BCWSA to facilitate sanitary sewer flows, which upgrades shall include, but not be limited to lining and the installation of relief sewers along a portion of the Neshaminy Interceptor. The initial improvements proposed to be constructed by BCWSA, as noted herein, shall be hereinafter referred to as the "Phase I" improvements. The parties acknowledge and agree that the Township, has submitted to BCWSA its Sanitary Sewer Needs Assessment, which assisted BCWSA in analyzing the capacity of the Neshaminy Interceptor. BCWSA has completed its alternative analysis for customer needs and Phase I Interceptor upgrades shall consist of lining portions of the Neshaminy Interceptor and constructing relief sewer lines, all of which said costs shall be funded collectively through user fees. Inasmuch as the Township has completed the requirement to provide its Sanitary Sewer Needs Assessment, sewer capacity for 2015 has previously been made available to the Township.

B. Upon completion of the Act 537 Planning, as required by the Settlement Agreement between DEP and BCWSA, and after completion of an analysis of the DEP approved 537 Plans, submitted by the municipalities which contribute sanitary sewer flow to the Neshaminy Interceptor, the parties hereto acknowledge and agree that BCWSA and DEP intend to engage in further planning discussions for the purpose of determining what additional modifications or changes to the Neshaminy Interceptor may be required, in the future, by the Act 537 planning and by and through individual municipal efforts undertaken to remove inflow and infiltration in each

of the municipal systems. To the extent that any additional non-maintenance improvements are required to be made to the Neshaminy Interceptor, either by way of additional lining or the construction of relief sewers ("Improvements"), those future Improvements shall be hereinafter referred to as "Phase II" Improvements. The parties hereto agree to cooperate and meet to discuss any Phase II Improvements or upgrades or any modifications or changes dictated by the Township's current and/or future Act 537 data or planning submitted to DEP.

C. All Phase II and subsequent Improvements to the Neshaminy Interceptor, or in the event any changes are made to the methods to determine peaking factors, calculating flow limits, or apportioning penalties and fines under this Supplemental Agreement, shall be subject to a discussion in good faith between both parties causing a further amendment to this Supplemental Agreement, as needed.

2. <u>Act 537 Sewer Facilities Planning.</u> TheTownship prepared and submitted for DEP approval an Act 537 Plan of Study outlining the steps to complete an update to its Act 537 Plan. As such, the municipality did receive connections for 2015. In addition, the Township, by and through the Township, has submitted the municipality's projection of capacity needs for the next five years. The Township shall continue to advise both BCWSA and DEP of its sewer capacity needs as such information concerning future sewer connections is made available to the municipality and authority. Along with efforts made by the Township to supply information related to sewer capacity needs and planning, the Township shall take immediate steps to meet all requirements associated with implementation of the Township's Act 537 Plan and shall report progress regarding same to DEP and BCWSA to demonstrate its quantitative efforts to comply with peak flows pursuant to BCWSA's obligations in the City of Philadelphia Agreement. As such, this Supplemental Agreement shall not limit the municipality's or authority's rights and

obligations under Act 537 to address changed circumstances in the municipality's sewer requirements. To that extent, this Supplemental Agreement shall not be considered a final document and shall be revised or amended as needed consistent with changed circumstances, including but not limited to, Act 537 sewer planning requirements and the quantitative efforts demonstrated by and through actions taken in furtherance of, and compliance with the Act 537 Plan as approved by DEP.

Further, upon compliance with the Township's obligations under this Supplemental Agreement, the Township and any other Neshaminy Interceptor customer will project capacity needs within the 5 year projection of their Chapter 94 report. If, as a result of those projections, BCWSA predicts a capacity shortfall, BCWSA will commence with engineering studies and planning to evaluate providing additional capacity in the Neshaminy Interceptor and/or WWTP facilities to provide such capacity. Should BCWSA be unable to provide the requested capacity, the Township may amend its Act 537 Plan to allow for alternative options of sewage conveyance and treatment. Alternative options may be solely undertaken provided that the then current flow which the Township is obligated under agreement to convey through the Neshaminy Interceptor shall continue without interruption.

3. **Peak Flows.** The Township agrees that it will maintain flow limits consistent with the Agreement between BCWSA and the Philadelphia Water Department, a copy of which is attached hereto, incorporated herein and marked as Exhibit "A", on a prorated basis which said flow limits shall include average annual, maximum daily and instantaneous peak flows which said flows shall be maintained by the Township at the limits identified in the attached Exhibit "D". Neither this Supplemental Agreement nor the parties original Neshaminy Interceptor Participation Agreement shall prevent the Township from amending its Act 537 Plan to explore alternative options for

collection and treatment of its flows, to the extent permitted by DEP, subject to approval of any other regulatory agencies having jurisdiction thereto and pursuant to laws and regulations regarding same; however, nothing in the preceeding sentence shall relieve the Township of its obligation to pay for any outstanding bonds for which it is or may be responsible, as noted in prior Agreements between the parties.

For the purpose of determining compliance with the peak flow (PWD), as noted in Exhibit "D," the peak hourly flow will be used. In furtherance of the standard DEP design requirements for Interceptors, the Township shall also maintain flow limits in accordance with the chart attached hereto as Exhibit "E" and incorporated herein by reference. Compliance with the flow limits required by the DEP design requirements for Interceptors shall be a condition precedent to receiving additional connections, as noted hereafter in this Supplemental Agreement. For the purpose of determining compliance with the peak instantaneous flow limits (DEP), as noted in Exhibit "E," the peak hourly flow will be used. Irrespective of the flow limits imposed in Exhibit "E," the Township will still be obligated to implement a DEP approved Inflow and Infiltration Abatement Plan that will allow it to come into compliance with the flow limits in Exhibit "D" on the schedule set forth in the DEP approved CAP/CMP/I & I Abatement Plan, as may be amended in the future, such that the contractual obligations to the City of Philadelphia are met.

Should the Township not meet its flow limits with respect to the obligations to the City of Philadelphia, there shall be no consequences, financial or otherwise, to the Township for not meeting its flow limitations unless exceedances by the Township cause a fine, penalty, or assessment to be levied upon BCWSA by the City of Philadelphia. If the Township is not meeting its flow limitations as defined by this Supplemental Agreement and the failure to meet the flow limitations causes or contributes to a capacity exceedance in the Neshaminy Interceptor system or

causes or contributes to an exceedance of the City of Philadelphia Agreement flow limitations, the consequence to the Township shall be that no additional connections will be permitted until the flow exceedance has been addressed, in addition to any penalties that may be appropriate under this Supplemental Agreement.

Should any fines, penalties, or assessments be levied by the City of Philadelphia, then the provisions of paragraph 6 of the Agreement shall determine the proportionate share to be paid by each Customer, as noted in Paragraph 6 of this Agreement.

The parties acknowledge that the Township have submitted and substantially updated the projection of capacity needs for the next five (5) years. It is understood and agreed that the approval and execution of this Supplemental Agreement is a condition precedent to receiving any connections for 2016 to be utilized by the Township.

Subsequent to 2018, the allowances for average annual, maximum daily and peak hourly flows generated by the Township will be based upon average flow, maximum daily and peak hourly flow limits, which shall be adjusted annually based on DEP's Chapter 94 reporting methodology, which is based on a five (5) year rolling average. Any of the aforementioned flows generated by the Township will be increased by the number of EDUs of additional capacity added to the Neshaminy Interceptor as a result of new connections made to the sanitary sewer system in theTownship.

In order to be allocated the additional connections, it shall be a condition precedent that the Township shall notify, in writing, BCWSA of the location of the connections, the number of connections, the EDUs related thereto, and the timing of any new connections subsequent to 2018. The execution of this Supplemental Agreement and/or the approval of an Act 537 Plan does not constitute an automatic guaranty of capacity. Capacity will be made available to all contributors to the Neshaminy Interceptor on a first-come/first-serve basis.

Every application for an additional connection or connections related to a new project shall require either a full planning module or a planning exemption that includes the appropriate certifications of capacity from the authority, municipality, BCWSA, and the City of Philadelphia. The applicant must provide documentation that the planning module or planning exemption request has been approved by DEP. Alternatively, the applicant may provide documentation that DEP has waived planning for the project. As aforestated, provided that the Township is in compliance with Township's I & I abatement program, additional capacity in the Neshaminy Interceptor shall not be unreasonably withheld provided that the Township has not caused or contributed to a capacity exceedance in the Neshaminy Interceptor system or caused or contributed to an exceedance of the City of Philadelphia Agreement flow limitations. There shall be a further condition precedent with respect to the allocation of any additional capacity to which shall be that the Township is in compliance with its DEP approved I & I abatement program, which shall be determined by DEP.

BCWSA will, however, monitor compliance with the I & I abatement program in connection with reviewing and monitoring flow limitations. Notwithstanding compliance with the aforementioned, no additional capacity will be allocated unless the Neshaminy Interceptor is capable of appropriately conveying the additional capacity to the City of Philadelphia for ultimate treatment.

4. **Future Capacity.** No capacity in 2018 and beyond shall be made available to the Township unless the Township is meeting its current inflow and infiltration goals as set forth in a DEP approved Inflow and Infiltration Abatement Plan provided that the Township has not caused or contributed to a capacity exceedance in the Neshaminy Interceptor system or caused or contributed to an exceedance of the City of Philadelphia Agreement flow limitations. It is understood and agreed that the obligations of the Township pursuant to the schedule in the DEP

approved CAP/CMP/I & I Abatement Plan, as may be amended in the future, shall reach the point where its maximum daily flow is not to exceed 1.4 times their 5 year average annual flow limit based on DEP methodology and a peak flow of 2.5 times their 5 year average annual flow limit based on DEP methodology as noted in Exhibit "E." Notwithstanding the capacity limitations related to the CMP, the Township will still be required to implement a DEP approved Inflow and Infiltration Abatement Plan that will allow it to comply with flow limits, as set forth above, which are based on BCWSA's obligations with the City of Philadelphia Agreement.

5. Connection Management Plan. The terms and conditions of the CMP between BCWSA and DEP are incorporated by reference as though more fully set forth at length.

6. Fines and Assessment of Costs. Should the City of Philadelphia, the United States Environmental Protection Agency, the Pennsylvania Department of Environmental Protection or any other governmental agency impose upon the BCWSA any fines or claims for additional cost due to the conveyance of peak flows in excess of the limitations imposed pursuant to the City of Philadelphia Agreement, the Township shall be responsible for its proportionate share of said costs if, and only if, the Township has exceeded its capacity as set forth in this Supplemental Agreement. The share of penalty allocated to the Township will be based on the proportionate share of the total flows in the Neshaminy Interceptor attributable to the Township's proportionate use. The determination of the Township's proportionate share shall be based upon meter readings, which said meters measure the flow from all of the participants in the Neshaminy Interceptor, and said meters for all of the participants are of similar capability to measure wastewater flow entering the Neshaminy Interceptor. Said meters are owned and maintained by BCWSA.

If fines or penalties or other claims for additional costs are imposed upon the BCWSA, the

method of determining the proportionate share to be paid by the Township shall be based upon meter readings as described in the paragraph above or upon EDU estimates of wastewater flow where accurate meter measurements are not pratical, and such readings and/or estimates are taken at the time of the event which triggers the assessment of additional costs, fines or penalties. The exceedance charge from the Philadelphia Water Department will be distributed to each municipality, authority or other entity (each individually a "Customer" or collectively, "Customers") that exceeds its allowable flows based upon its proportion to the total flow exceedance. The calculation would be as follows:

> Customer Share of Surcharge ($) = (Total of Customer Daily Flow Exceedances for Billing Period (MG) / Sum of all Customers' Daily Flow Exceedances for Billing Period (MG)) X PWD Surcharge Amount ($) for Billing Period
>
> AN EXAMPLE OF THE PENALTY CALCULATION IS PROVIDED IN EXHIBIT "F".

7. **Meters.** The meters used to measure the flows at various locations within the Neshaminy Interceptor, including those flows emanating from the Township are inspected and calibrated semi-annually by a third party. BCWSA shall provide to the Township the name and contact information of the third party contractor. Additionally, should the third party contractor change during the course of the relationship between the parties, BCSWA shall provide to the Township the name and contact information of the new contractor responsible for the maintenance of the meters. Complete calibration documentation and complete inspection documentation will be provided to the Township within 5 days of the date of receipt of any calibration, testing, inspection report, communication or writing by any third party to BCWSA regarding the condition, maintenance or inspection of the meters. BCWSA shall make available, via Telog wireless installation, any and all meter readings to the Township within 5 days of receipt of same from the meter contractor. The meters used to determine fees, penalties,

compliance or the like, will be the meters identified in Paragraph 6, owned by BCWSA and utilized for billing purposes, which measure wastewater flow emanating from all of the connection points between the the Township system and the Neshaminy Interceptor.

8. Inspections. BCWSA and the Township shall provide to each other, from time to time, all information relevant and appropriate to the proper administration of the provisions of this Supplemental Agreement. Any inspections to be undertaken by any party of this Supplemental Agreement in accordance with the provisions of this paragraph shall be conducted at reasonable times and with reasonable notice. Complete records of any inspections will be provided to the other party herein within 30 days of the date of any such inspection with the exception of the inspection reports discussed in Paragraph 7 above.

9. Capacity. The parties hereto acknowledge and agree that future sewer capacity is subject to regulations of the City of Philadelphia and DEP. Accordingly, events may occur which prompt the City of Philadelphia and/or DEP to restrict future sanitary sewer connections to the Neshaminy Interceptor.

10. Force Majeure. Notwithstanding any other provisions of this Supplemental Agreement, neither BCWSA nor the Township are responsible for any damages to the other for any failure to comply with this Agreement resulting from an act of God or riot, sabotage, public calamity, flood, strike, breakdown of facilities or common transportation facilities or any other event beyond its reasonable control. For the purposes of this Agreement, a flood or storm that constitutes a force majeure would be a storm named by an agency of the Federal government. The party having the responsibility for the facility so affected, however, shall proceed promptly to remedy the consequences of such event, with such costs to be shared in accordance with the terms and conditions of this Supplemental Agreement or the original Neshaminy Interceptor Agreement

between the Township and BCWSA for the Neshaminy Interceptor. Notwithstanding anything herein to the contrary, if a force majeure event occurs that causes the City of Philadelphia to take any enforcement action against BCWSA or issue any fines/penalties/assessments against BCWSA in accordance with the provisions of the City of Philadelphia Agreement, then the Township cannot rely on this provision as a defense to a claim by BCWSA of a breach of this Supplemental Agrement arising out of the same force majeure event.

11. Default. In the event of a breach of this Supplemental Agreement by either party, the other party may resort to whatever remedies are available, at law or equity, to enforce this Supplemental Agreement. The parties, by executing this Supplemental Agreement, acknowledge and agree that monetary damages are not an adequate remedy so either party may resort to a court of equity in order to enforce the provisions of this Supplemental Agreement and to compel compliance by the defaulting party.

12. Severability. Should any provision herein or for any reason be held illegal or invalid by a court of competent jurisdiction, no other provision of this Supplemental Agreement shall be effected as the Supplemental Agreement would have been executed even if such invalid or illegal provision had not been contained herein.

13. Other Agreements. This Supplemental Agreement shall not limit BCWSA from entering into other agreements with other municipalities or municipal authorities, but, if any such agreement contains terms, standards and/or conditions more favorable to the municipality or municipal authority than the terms, standards and/or conditions of this Supplemental Agreement, then the terms, standards and/or conditions of the other agreements shall be extended, granted, conferred or otherwise provided to the Township.

14. Effective Date. The Effective Date shall be the date of the execution and delivery

hereof by the parties hereto.

15. Waiver. If any party to this Supplemental Agreement does act and insist upon strict performance of this Supplemental Agreement or any other terms, conditions or otherwise, same shall not be considered as a waiver of any of the rights hereunder.

16. Interpretation. This Supplemental Agreement shall be interpreted in accordance with the laws of the Commonwealth of Pennsylvania and shall be binding upon the respective parties, its successors and assigns and may not be assigned to any third party without the written consent of the other party hereto which consent shall not be unreasonably withheld. This Supplemental Agreement shall be interpreted as an amendment or supplement to any and all existing agreements by and between BCWSA and the Township related to the Neshaminy Interceptor and is not meant to be a replacement of the aforementioned agreements.

17. Disputes. To the extent any disputes arise pursuant to the terms and conditions of this Supplemental Agreement and cannot be resolved by the parties, such disputes shall be litigated in the Court of Common Pleas of Bucks County.

IN WITNESS WHEREOF, and intending to be legally bound hereby, the parties hereto have caused this Agreement to be executed, under seal, by affixing their respective hands and seals the day and year first above written.

BUCKS COUNTY WATER AND SEWER AUTHORITY

By: _____

Attest: _____

TOWNSHIP OF LOWER MAKEFIELD

_____

_____

_____

_____

_____

EXHIBIT A
AGREEMENT BETWEEN BUCKS COUNTY WATER AND SEWER AUTHORITY AND CITY OF PHILADELPHIA

AGREEMENT

This Agreement, made this 5th day of February , 1988 and effective as of January 1, 1988 by and between the City of Philadelphia, hereinafter called "City", and the Bucks County Water and Sewer Authority, hereinafter called "Authority".

WITNESSETH:

WHEREAS, City owns and operates wastewater collection and treatment facilities to convey, treat and dispose of wastewater its by-products, including sludge, collected from retail customers within the City and from outlying municipalities, townships, authorities and entities including Authority; and

WHEREAS, City desires to reserve wastewater treatment capacity for wholesale suburban customers at its Northeast Water Pollution Control Plant (the "Plant") on a long term basis to ensure the most efficient use of the City's resources and facilities, and to provide full and fair compensation to City; and

WHEREAS, the Council of the City of Philadelphia has by Ordinance, Bill No. 1129, May 20, 1987, directed the Water Commissioner to enter into new agreements for the sale of wastewater treatment service to suburban communities; and

WHEREAS, Authority desires to acquire wastewater treatment capacity from City at the Plant to ensure a sufficient wastewater treatment capacity for the communities it serves; and

WHEREAS, the Plant has limited capacity and City has other suburban customers who purchase wastewater treatment service from City; and

WHEREAS, Authority agrees to pay for its reserved wastewater treatment capacity in accordance with this Agreement;

NOW, THEREFORE, intending to be legally bound and in consideration of the mutual covenants contained in this Agreement, the parties agree as follows:

I. WASTEWATER QUANTITY AND QUALITY

A. Reservation of Capacity - City shall reserve wastewater treatment capacity for the Authority at the Plant as set forth in Exhibit "A" attached hereto and incorporated herein ("Flow and Loadings Limits") commencing on the date of this Agreement.

B. Capital Contribution - Upon execution of this Agreement, in consideration of the reservation of capacity at the Plant, Authority shall pay ELEVEN MILLION NINE HUNDRED THOUSAND DOLLARS ($11,900,000.00) to City for net cost to City for wastewater conveyance and treatment facilities, systems and equipment completed prior to July 1, 1986 and allocated to the service of Authority under the terms and conditions stated herein plus THREE HUNDRED AND SEVENTY-THREE THOUSAND DOLLARS ($373,000.00) for wastewater conveyance and treatment facilities, systems and equipment allocated to the service of Authority as stated herein and completed as of December 31, 1987. These sums plus any additional sums

paid to City by Authority for facilities, systems and equipment allocated to Authority under this Agreement shall be referred to as Authority's "Capital Contribution."

C. Pro-rata Share of New Facilities and Renewal and Replacement -

(1) Authority agrees to pay to City its pro-rata share as calculated by City of costs for capital expenditures for renewal and replacement of facilities, and for new facilities, excepting however, new facilities which are intended solely to increase the capacity of the Plant. The costs to be allocated shall be net of grants or other reimbursement from the federal or state government. City shall provide Authority with a Facilities Capital Budget not later than thirty (30) days before the beginning of City's Fiscal Year to notify Authority of its share of the cost of capital improvements and renewal and replacement.

(2) Authority agrees to pay actual costs of capital improvements or renewal and replacement within sixty (60) days of receipt of the bill. In the event that Authority does not pay the bill when due, late charges will accrue in accordance with Section II.B., below.

D. Change in Capacity -

(1) Authority agrees that if the capacity of the Plant is upgraded or downgraded by Federal or State agencies or regulations or if City is directed to acquire additional facilities by Federal or State agencies or regulations,

Authority will pay any costs associated with its revised pro-rata share of capacity as calculated by City. Nothing in this Section I.D. shall serve to revise Authority's flow and loadings limits as set forth in Exhibit A attached hereto and incorporated herein ("The Flow and Loadings Limits Addendum").

(2) In the event that City has excess capacity available, City shall offer it to its suburban customers on a first come, first serve basis. If Authority desires to purchase such excess capacity, it agrees to pay rates and charges then in effect for such capacity, to make a capital contribution therefor and to terms consistent with this Agreement. Nothing in this Section I.D shall be construed as binding upon either party to agree to modify this Agreement, the Flow and Loadings Limits Addendum or binding upon the City to have additional capacity available.

E. Exceedance Charges -

(1) Flow and Loadings Limits - The wastewater delivered by Authority to City shall not exceed the limitations set forth in the Flow and Loadings Limits Addendum. For the purpose of this Agreement the term "Flow Limits" shall mean the maximum amount of wastewater as measured in millions of gallons per day which may be delivered to City for treatment in a given period of time and the term "Loadings Limits" shall mean the maximum biochemical oxygen demand ("BOD") loadings and suspended solids ("SS") loadings which shall be delivered to City for treatment annually.

(2) The Flow Limits shall be as set forth in the Flow and Loadings Limits Addendum. The Flow Limits for "Stage 1" shall remain in effect until acceptance of wastewater flow by City via the Force Main as set forth in Section IV.O, below. Thereafter, the Flow Limits for "Stage 2" shall govern this Agreement.

(3) The "Loadings Limits" for SS and BOD shall be as set forth in the Flow and Loadings Limits Addendum.

(4) Exceedance Charges - City shall estimate or measure the quantity and sample the quality of Authority's wastewater flow. Authority shall be liable to pay penalties to City for exceedances of agreed-upon Flow Limits and Loadings Limits as set forth in the Flow and Loadings Limits Addendum and the "Exceedance Charges Addendum" (attached hereto and incorporated herein as Exhibit "B").

(5) Plan to Eliminate Exceedances - In the event that Authority's wastewater flow exceeds the Flow Limits set forth in the Flow and Loadings Limits Addendum on five (5) or more occasions in one calendar year or eight (8) or more occasions in two consecutive calendar years, or ever exceeds the maximum annual average, or if Authority exceeds the Loadings Limits, either for BOD or SS, Authority agrees:

a) That upon written notice of exceedances from City, Authority shall develop and submit to City within one hundred and eighty (180) days of written notice a written report detailing a plan of action to eliminate the exceedances within five (5) years from the date of sub-

mission of the written report. City shall promptly approve or disapprove the plan. Approval of the plan outlined in the report will not be unreasonably withheld. City shall notify the Authority in writing within sixty (60) days of receipt of the plan of approval or disapproval and shall include reasons for failure to approve.

b) If Authority fails to submit a report outlining a plan to eliminate exceedances, or if City cannot approve such a plan, Authority shall be liable to City for a penalty of One Thousand Dollars ($1,000.00) per week until such time as Authority submits a plan which City can approve.

II. WASTEWATER TREATMENT CHARGE

A. Wastewater Treatment Charges - Authority agrees to pay wastewater treatment charges. The wastewater treatment charges shall consist of:

(1) An operation and maintenance charge based upon actual or estimated wastewater flows and actual or estimated BOD and SS Loadings of wastewater delivered to the Plant by Authority. The operation and maintenance charge shall be based upon the cost (as defined below at Paragraph II.A. (3)) of conveying and treating wastewater delivered by the Authority. Such charges shall be based upon quantity, quality and flow rates of wastewater delivered as well as charges based upon billing, metering, sampling and other related

fixed costs.

(2) A management fee equal to ten percent (10%) of the charges set forth in paragraph (1).

(3) For the purpose of this Agreement the term "Cost" shall include all direct and indirect expenses, including but not limited to, labor, materials, equipment, power, chemicals, rentals, benefits and departmental overhead. Departmental overhead shall include, but not be limited to, such items of cost as administrative, financial, legal, accounting and engineering support.

(4) Authority shall have the right upon written request to review City's method of computing and allocating the cost of providing wastewater treatment service to Authority.

B. Billing and Penalties for Late Payment -

(1) Upon the execution of this Agreement, City shall render bills to Authority on a quarterly basis for the charges set forth in this Agreement. City reserves the right to bill Authority on a more or less frequent basis in the future.

(2) Bills shall be payable to City by Authority within thirty (30) days of receipt of bill by Authority. Authority shall notify City in writing of disputed charges prior to their due date. Authority may withhold payment of disputed charges, but in the event the dispute is resolved in favor of City, payment withheld shall be subject to late fees running from the original due date for said charges. In no event

shall City be liable to Authority for payment of interest or late fees of any nature on disputed charges.

(3) Late fees at the rate of one and one-quarter percent (1-1/4%) per month simple interest shall be added to any balance unpaid thirty (30) days after billing.

(4) City, upon six (6) months prior written notice to Authority, may increase or decrease late fees to a level reflecting additional or decreased costs incurred by City.

C. Notice of Changes in Rates - City shall provide notice to Authority of any change in rates or billing practices at least ninety (90) days in advance of the effective date of such new rates or practices.

III. CONSTRUCTION, OPERATION AND MAINTENANCE OF AUTHORITY'S CONVEYANCE SYSTEM AND RELATED MATTERS

A. Design and Construction of Sewers - Authority shall design, construct, own, operate and repair at its sole cost and expense sanitary sewers and connections to the City system necessary to convey its wastewater to the City limits.

B. Approved Connection Points - The locations of approved points of connection and provisions concerning these connections are described in Exhibit "C", attached hereto and incorporated herein (the "Connection Points"). No additional Connection Points shall be made without prior written approval from City acting through its Water Commissioner.

C. Plan to Eliminate Unauthorized Discharge - If any of Authority's Connection Points are determined by the City or any governmental regulatory agency to be maintenance problems or sources of unauthorized discharges, Authority agrees to immediately submit a plan to City outlining action to be taken to eliminate within forty-five days of written notification the problem or unauthorized discharge. City shall promptly approve or disapprove said plan. Any action taken pursuant to this section III.C. shall be at the sole expense of Authority.

IV. FORCE MAIN EXTENSION

A. Authority to Construct Force Main - Authority agrees to construct an extension of its connection piping and necessary appurtenances into City (the "Force Main") to reconnect with City's Upper Delaware Low Level Interceptor System in the vicinity of State Road and Shelmire Avenue in a location to be approved by City after completion of a route feasability study performed at the sole cost of Authority.

B. Rights of Entry - For the purpose of constructing the Force Main, City shall assist Authority in aquiring rights of entry, easements and rights of way upon land necessary for construction of the Force Main. Rights of way or easements on land for which the City does not hold title required to construct the Force Main shall be acquired at the sole cost of Authority, City assisting in such acquisitions where possible.

C. Right to Revoke - In the event the Force Main is located within any City street and if such City street is needed

for a public purpose, City shall have the right upon twelve months prior written notice to Authority, to revoke or modify any right to place the Force Main within City's streets. In the event City exercises this right of revocation or modification, Authority shall, at its sole cost and expense:

1) Promptly relocate the Force Main according to the directions and requirements of City and restore the surface of the affected streets; or

2) with City's approval, not unreasonably withheld, pay City the increased cost of any project constructed by City in a different location as a result of Authority's failure to make such relocation.

D. Authority to Pay for New Sewer - Authority at its sole expense, shall construct the Force Main in the route to be approved by City in accordance with City's Standard Specifications, where applicable. Authority shall pay all construction expenses relating to the Force Main, including, but not limited to, design, preparation of plans and drawings, construction, and "as-built" plans. Authority shall also pay City for consultation with City's personnel and reasonable costs incurred by City in connection with City's periodic inspection, repair and testing of the Force Main.

E. Review - City shall have the right to review from time to time, plans, shop drawings, materials, workmanship and contract drawings for the Force Main.

F. Other Required Approvals - Any review by the Water Commissioner ("Commissioner") shall not be deemed to constitute approval required by any other department, board or commission of City, including, but not limited to, the Department of Licenses and Inspections and the Streets Department.

G. Emergencies During Construction - City shall have the right throughout the construction of the Force Main to take steps deemed necessary by the Commissioner to alleviate any emergency or potentially hazardous condition or conditions threatening public health, safety or welfare.

H. Drawings - Upon completion of the Force Main, Authority shall deliver to City a full set of shop drawings and "as-built" plans.

I. Materials and Workmanship - The materials used in the Force Main shall conform to the requirements of the plans and specifications and shall be well adapted for the kind of service required. The work shall be of first class construction, free from defects and the work shall be performed in a good and workmanlike manner.

J. Defective Work or Material - Authority shall remove, at its own expense, any work or material judged by City as defective or not in accordance with the plans and specifications and shall reconstruct, rebuild and replace the same until such time as City shall approve the work or material.

K. No Representation or Warranty by City -

(1) Notwithstanding anything contained in this Agreement, any review and/or approval by the City, or acceptance of the Force Main by the City, shall not constitute any representation, warranty or guarantee by City as to the substance or quality of documents, work or other matter reviewed, approved or accepted. No person or firm may rely in any way on such approval and at all times Authority and Authority's agents, contractors and subcontractors must use their own independent judgment as to the accuracy and quality of all such documents and other matters.

(2) The presence of City's representatives during construction shall not lessen the obligation of Authority for construction in accordance with the plans and specifications, free of defects.

L. Insurance -

(1) Prior to the commencement of construction of the Force Main and until one (1) year after acceptance of wastewater flow via the Force Main, Authority shall obtain and maintain in full force and effect or cause its contractor to obtain and maintain in full force and effect: (i) A policy or policies of comprehensive general liability and property damage insurance, with broad form endorsement, protecting Authority and City against all claims, suits and actions, for or on account of any damage or injury to property or persons, including death, arising out of this Agreement and the con-

struction contemplated by this Agreement. The insurance policy or policies shall be in the minimum aggregate amount of Two Million Dollars ($2,000,000.00). Authority or Authority's contractor may obtain the levels of insurance required by this Section with a blanket and/or umbrella policy or policies; (ii) Automobile insurance (owned, nonowned, hired and leased) with total limits per occurrence of not less than One Million Dollars ($1,000,000.00); and (iii) Workers' Compensation insurance as required by law, and employer's liability insurance with a limit of not less than One Hundred Thousand Dollars ($100,000.00).

(2) Each insurance policy shall be in form and content reasonably satisfactory to the City Solicitor, shall name the City of Philadelphia as an additional insured, and shall also (i) contain a contractual liability endorsement applicable to Authority's obligations under Section VIII.C. of this Agreement, and (ii) provide that the insurance provided in the policy or policies shall not operate to limit or void coverage of any one insured with respect to claims against the same insured by any other insured. Each policy shall contain a clause that the policy cannot be cancelled, modified or permitted to expire unless and until at least thirty (30) days prior written notice is given to City.
Authority shall provide City with a certificate or certificates of insurance evidencing such coverage at least fifteen (15) days prior to commencement of construction of the Force Main and shall, upon the request of the City, provide the

City within a reasonable time after such request, but in no event more than sixty (60) days, with a copy of such insurance policy or policies. At least thirty (30) days prior to the expiration of each policy, Authority shall deliver to City a certificate or certificates evidencing a replacement policy or policies to become immediately effective upon the termination of the previous policy. Each insurance policy obtained pursuant to this Section shall be obtained from insurers having a Best rating of A+7 or better and licensed to transact business in the Commonwealth of Pennsylvania.

(3) If Authority fails to cause such insurance to be maintained, City shall not be limited in the proof of any damages which City may claim against Authority or any other person or entity to the amount of the insurance premium or premiums not paid or incurred and which would have been payable upon such insurance, but City shall also be entitled to recover as damages for such breach the uninsured amount of any loss and damages, expenses of suit and costs, including, without limitation, reasonable cancellation fees, suffered or incurred during any period when Authority shall have failed or neglected to provide insurance as aforesaid.

M. Surety Bond - Prior to the commencement of construction of the Force Main and until one (1) year after acceptance of wastewater flow via the Force Main, Authority shall obtain and maintain in full force and effect:

(1) A performance bond, in the form attached to this Agreement as Exhibit "E" and made a part hereof, with a

surety company approved by City naming City as an obligee in the amount of Six Million Dollars ($6,000,000.00) as security for the faithful performance of the obligations of Authority under this Agreement; and

(2) A labor and materialmen's bond in the form attached to this Agreement as Exhibit "F" and made a part hereof, with a surety company approved by City naming City as an obligee in the amount of Six Million Dollars ($6,000,000.00) as security for the full payment of Authority's contractors and subcontractors and others furnishing labor and materials for the Force Main.

N. Conditions for Start of Construction - Prior to commencement of construction of the Force Main, Authority shall obtain:

(1) all policies of insurance required in Section IV.L. of this Agreement;

(2) the surety bonds required in Section IV.M. of this Agreement;

(3) all permits and approvals required pursuant to Section IV.F. of this Agreement.

O. Acceptance of Wastewater Flow Via Force Main - Authority shall notify City and obtain City's approval prior to the conveyance of wastewater flow to the Plant via the Force Main. Prior to acceptance of wastewater flow via the Force Main, all metering equipment must be installed and operable and Authority must present to City for its approval an emergency plan of action to be

carried out in the event it is necessary to bypass or shut down the Force Main.

V. MAINTENANCE AND REPAIRS

A. Maintenance -

(1) Authority shall own and maintain the Force Main and equipment and the electronics associated with the meter installed in Bucks County. City shall own and maintain telemetering equipment installed in Bucks County which shall consist of equipment which converts the signal produced by the meter into a signal which can be transmitted over telephone lines. City shall also own and maintain all equipment located in City necessary to receive and record telemetered information.

(2) Authority shall submit to City for its approval, a plan to City prior to delivery of any wastewater flow to City via the Force Main setting forth a maintenance schedule and maintenance procedures for the metering equipment and electronics to be maintained by Authority under this section V.A. City shall review and approve or disapprove such plan within sixty (60) days of receipt. The plan shall demonstrate that Authority will obtain prompt service by qualified meter maintenance personnel to repair any meter or electronic malfunction or breakdown in a timely manner. City shall receive written reports of maintenance and inspection work performed on the meter.

(3) In the event of a malfunction or breakdown of the

meter, metering equipment or electronics associated with the meter, Authority shall provide City with a report from the independent contractor performing the repairs detailing the cause of the malfunction or breakdown and the repairs undertaken.

(4) A flow accuracy test utilizing metering equipment independent of the Authority's magnetic flow meter to verify the accuracy of the meter shall be performed by Authority's independent contractor annually. If the annual calibration check indicates that recalibration is required, the meter shall be recalibrated as required and another calibration check shall be performed within three (3) months and at three (3) month intervals thereafter until Authority and City determine that recalibration is no longer necessary. Thereafter, annual calibration checks shall resume. Accuracy within two percent (2%) shall be acceptable. City shall have the right to review the qualifications and approve or disapprove the independent contractor chosen by Authority to perform flow accuracy testing. Such approval shall not be unreasonably withheld or delayed. City shall receive a written report of the test directly from the independent contractor. Authority shall pay all costs associated with the flow accuracy testing.

B. Should Authority fail to maintain and repair the Force Main or metering equipment within thirty (30) days after notification by City or immediately in the event of an emergency or

hazardous condition, City shall have the right to proceed with repair or maintenance and to recover the cost thereof from Authority. In addition, Authority shall be liable for a penalty payable to City in the amount of fifteen (15) percent of the cost of maintenance or repairs.

C. Sampling - City shall have the right to enter the area served by Authority at any time upon reasonable advance telephone notice to sample Authority's wastewater for quality.

D. Flow and Strength Estimates - Where City, in its sole discretion, determines that it is impractical or uneconomical to meter and/or sample wastewater, or when actual strength and flow data is unavailable for reasons beyond the control of City or Authority, City shall estimate, using its standard methods for estimating flow and/or strength figures for billing purposes.

E. Billing Information - Upon request, City shall provide to Authority strength and flow data utilized in billing Authority, including descriptions of its standard methods for estimating flow and/or strength figures.

VI. WASTEWATER QUALITY RESTRICTIONS

A. Interjurisdictional Pretreatment Agreement - City and Authority shall enter into the contract attached hereto and incorporated herein as Exhibit "D" (the "Interjurisdictional Pretreatment Agreement"). Authority agrees to comply with all of the provisions contained therein.

B. Sludge Utilization -

(1) Authority recognizes the importance and urgent need to utilize sludge in a timely and proper manner. Immediately upon signing of this Agreement, Authority and City shall work to develop an environmentally sound sludge utilization program meeting Federal and State standards within the area served by Authority. Authority shall propose a sludge utilization program which does not require a Pennsylvania Department of Environmental Resources permit by March 15, 1988 and thereafter shall continue to work with City to develop other applications for sludge utilization in the area served by Authority.

(2) Authority shall actively support City's community education program for sludge by identifying community groups for City which have an interest in sludge utilization and by providing City with appropriate facilities in Bucks County at which City may conduct educational programs.

VII. PAYMENT OF MONIES DUE AND OWING

Upon execution, Authority and City agree to fulfill their respective financial obligations under a prior agreement of October 1, 1982 as modified herein. Retroactive to July 1, 1986, City shall waive the capital portion of the lump sum charge in consideration of the Capital Contribution made under this Agreement and effective as of that date.

VIII. MISCELLANEOUS

A. Inspection and Audit - The parties agree that each shall keep complete records and accounts concerning their responsibilities under this Agreement. Each party shall at all times have the right to examine and inspect said records and accounts upon 30 days written notice. If required by any law or regulation, Authority shall make said records and accounts immediately available to Federal and State auditors.

B. Arbitration of Disputes - If any dispute shall arise between the parties hereto, concerning terms, conditions and covenants of this Agreement, the same shall be submitted to a Board of Arbitration. The Board of Arbitration shall be composed of three (3) arbitrators, one appointed by City, one by Authority, and the third to be agreed upon jointly by the arbitrators selected by City and Authority.

The arbitrators representing Authority and City shall be named within five (5) days from the request for the appointment of such Board. If after a period of ten (10) days from the date of the appointment, the two (2) arbitrators appointed by City and Authority cannot agree on the third arbitrator, then either appointed arbitrator may request the American Arbitration Association or its successor to furnish a list of three (3) members of said Association, who are not residents of either Philadelphia or Bucks Counties, from which the third arbitrator shall be selected.

The arbitrator appointed by Authority shall then eliminate one (1) name from the list furnished by the American Arbitration Association within five (5) days after its publication, following which the arbitrator appointed by City shall eliminate one (1) name from the list within five (5) days thereafter. The individual whose name remains on the list shall be the third arbitrator and shall act as the Chairman of the Board of Arbitrators.

Each party shall bear the costs of its own arbitrator and the parties shall equally divide the costs of the third arbitrator and all other common costs.

The Board of Arbitrators, thus established, shall commence the arbitration proceedings within ten (10) days after the third arbitrator is selected and shall make its determination within thirty (30) days after the appointment of the third arbitrator. The decision of such arbitrators shall be final and binding upon the parties, except in the case of fraud.

C. Claims, Insurance and Related Matters -

(1) Authority agrees to defend, indemnify and save harmless City from and against all claims, actions, causes, suits, demands, losses, interest, penalties and liabilities arising from performance of the terms and conditions of this Agreement by reason of:

a) City's inability, due to causes beyond its control, to perform any of the provisions of this

Agreement;

b) Injury (including death) to persons and damages to property resulting from operations under this Agreement to convey Authority's wastewater to the Plant and to construct the Force Main whether due to the negligence or gross negligence of City, Authority or their employees, servants or agents or the inherent nature of their operations;

c) EPA or Pennsylvania Department of Environmental Resources action of any kind whatsoever, whether direct or indirect, for any work undertaken by Authority, its contractors or consultants, necessary and required by this Agreement due to rejection of said work by the EPA or Pennsylvania Department of Environmental Resources;

d) Any grant fund, or any portion thereof, received by Authority and later determined to be ineligible for reimbursement by the appropriate regulatory agency or grant auditors.

(2) City and Authority agree that in the event of EPA or Pennsylvania Department of Environmental Resources action or any other governmental regulatory action against City of any kind whatsoever, for activities carried out under this Agreement either by City or Authority or their employees, servants or agents, City and Authority shall equitably apportion responsibility for payment of any costs, fines, penalties or damages arising from such action.

(3) Anything in this Agreement to the contrary notwithstanding, Authority shall not be liable for injuries (including death) or property damage occurring during the course of treatment at the Plant, except, to the extent that such injuries and damages increase City's operating costs, Authority shall be responsible for its proportionate share of those increased costs.

(4) Nothing set forth in this Agreement shall limit or debar City from resorting to any appropriate remedy in law or equity, or any combination of remedies for non-compliance with this section VIII.C of this Agreement.

(5) Nothing contained in this Agreement shall be deemed to confer upon any third person any right against City or Authority or to vest in said third person any cause of action against City or Authority or to authorize any such person to institute any suit or suits against City or Authority.

(6) City shall have the right to approve counsel appointed on its behalf pursuant to this Agreement, unless appointed by Authority's insurer.

D. No Transfer of Rights - Authority shall not confer, transfer, convey, assign or license to any third party any rights obtained under this Agreement without the express written consent of the City. Such consent shall not be unreasonably withheld.

E. Term -

(1) Except as set forth in Section VII, this Agreement shall be effective as of January 1, 1988, and shall continue

in force and effect until terminated as hereinafter set forth.

(2) City shall have the right to terminate this Agreement for "cause" at any time, but only upon five(5) years written notice. "Cause" shall mean:

a) continuing exceedances of the flow and loadings limits which are not corrected as required by this Agreement and which impair the safe and efficient operation of the system or which cause City to be in violation of permits issued by PaDER or EPA; or

b) failure by Authority to meet its financial obligations under this Agreement for a period of six consecutive months; or

c) failure by Authority to comply with a decision or determination of a Board of Arbitration or court of competent jurisdiction rendered under this Agreement within three months of the date of the decision or determination.

(3) In the event that City terminates this Agreement for cause, Authority shall forfeit its capital contribution, including the cost of the Force Main.

(4) Authority or City may terminate this Agreement for any reason after it has been in effect for thirty-five (35) years, but only by giving written notice five (5) years before the effective date of termination.

(5) In the event this Agreement terminates for any

reason, except for cause as set forth in subparagraph (2) of this Section VIII. E., City shall pay to Authority an amount equal to the Authority's share of the then-remaining value of all systems, equipment and facilities, except the Force Main, used to convey and treat Authority's wastewater under this Agreement (the "Assets"). The remaining value of the Assets shall be calculated as follows:

a) The remaining useful life of each component of the Assets shall be separately calculated.

b) The original and all subsequent contributions by the Authority towards the cost of acquisition, renewal and replacement of each component of the Assets shall be multiplied by a fraction whose numerator is the remaining useful life of the component, and whose denominator is the sum of the years the component has been in service since January 1, 1988, plus the remaining useful life.

c) The amount thus calculated shall be paid to the Authority in cash on the effective date of termination.

d) The calculation required hereunder shall be made by an independent appraiser selected jointly by the City and the Authority. The expense of the appraisal shall be divided equally between the City and the Authority. If the City and the Authority cannot agree on an appraiser, then one shall be selected by the same method to be used to select a third arbitrator under Section VIII.B. of this Agreement.

(6) Upon termination of this Agreement for whatever reason or upon expiration of this Agreement, Authority shall pay to City the costs of abandoning the Force Main, if any. Such costs shall be established by City as of the abandonment.

F. Ownership, Management and Control of Plant Facilities - City retains sole ownership and control of the Plant and all other sewage treatment facilities in the City except the Force Main, and agrees to operate, maintain, repair, and improve its facilities associated with service to Authority. City retains the sole and exclusive right to make all managerial and other decisions regarding its sewage treatment facilities, including but not limited to those decisions regarding maintenance, upkeep, expansion, or replacement of all or a portion of it sewage treatment facilities. Upon termination of this Agreement for any reason, by either party, ownership of the Force Main shall revert to City. Authority shall transfer its interest in all rights of way and easements for the Force Main to City in consideration of City's payment to Authority of one dollar ($1.00). Said transfer of rights of way and easements to City shall be recorded in the real property records of Philadelphia County.

G. Severability - In the event any provision hereof is held illegal or invalid, no other provision of this Agreement shall be affected; and this Agreement shall then continue in full force as if such illegal or invalid provision had not been contained herein.

H. Successors and Assigns - All the covenants contained in this Agreement shall extend to and bind the respective successors and assigns of the parties hereto with the same effect as if the words "successors and assigns" had, in each case, been specifically mentioned.

I. Waiver - The failure of a party hereto to insist upon strict performance of this Agreement or of any of the terms or conditions hereof shall not be construed as a waiver of any of its rights herein granted.

J. Notices - All notices, payments and communications required to be given in writing under this Agreement shall be sent by United States mail, postage prepaid, or delivered by hand delivery with receipt obtained, to the addresses below or at such other addresses as City or Authority may designate in writing from time to time:

If intended for City:

Water Commissioner
ARA Tower
1101 Market Street
Philadelphia, Pennsylvania 19107

If intended for Authority:

Executive Director
Bucks County Water and Sewer Authority
1275 Almshouse Road
Warrington, Pennsylvania 18976

All notices shall be deemed received five (5) calendar days after mailing or upon actual receipt, whichever is earlier.

K. Captions - The captions in this Agreement are for convenience only and are not part of the Agreement. The captions do

not in any way define, limit, describe or amplify the provisions of this Agreement or the scope or intent thereof.

L. Entire Agreement - This Agreement and its Exhibits and Addendums, incorporated herein, represent the entire agreement of the parties hereto and there are no collateral or oral agreements or understandings. This Agreement may be amended or modified only in writing signed by both City and Authority.

IN WITNESS WHEREOF, The City of Philadelphia has caused this Agreement to be executed by its Water Commissioner; and the appropriate officer of the Bucks County Water and Sewer Authority has executed this Agreement on behalf of the Authority, and has hereunto affixed the corporate seal of the said Authority duly attested by the Appropriate officer thereof, the day and year first above written.

CITY OF PHILADELPHIA

By: WILLIAM J. MARRAZZO
Water Commissioner

Approved as to form:

By: SEYMOUR KURLAND
City Solicitor

BUCKS COUNTY WATER AND
SEWER AUTHORITY

By: Joseph F. Catania

Attest:

Asst. Sec.

FLOW AND LOADINGS LIMITS ADDENDUM

DAYLIGHT FLOW LIMITS

	Maximum Annual Avg.	Instantaneous Max.
STAGE 1	10 MGD	14 cfs[1]
STAGE 2	20 MGD	62 cfs

BOD AND SS LOADINGS

ANNUAL SUSPENDED SOLIDS LOADINGS	ANNUAL BIOCHEMICAL OXYGEN DEMAND LOADINGS
13,400,000 lbs.	13,400,000 lbs.

[1] The allowable flow rate during non-daylight hours in Stage 1 shall not exceed 40 cfs.

EXHIBIT A

EXCEEDANCE CHARGES ADDENDUM

I. Authority shall be liable to City for the exceedance charges stated below beginning January 1, 1992 or upon completion of the Force Main when Authority exceeds the quantity flow limits set forth in the Flow Limits Addendum.

A. Volume: $3,700.00 per unit of flow over the average daily limit during any consecutive 365 day period, such charge to be billed annually. The unit of flow used to determine exceedances shall be each hundred thousand gallons of wastewater flow per day.

II. Authority shall be liable to City for the exceedance charges stated below beginning January 1, 1988 when Authority exceeds the quality flow limits set forth in the Flow Limits Addendum.

A. Suspended Solids (SS): $480.00 per thousand pounds over the limit.

B. Biochemical oxygen Demand (BOD): $900.00 per thousand pounds over the limit.

III. Charges for Years Subsequent to 1987

During January 1988 and during January of each calendar year thereafter, the exceedance charges stated above will be adjusted in accordance with the changes in the Consumer price Index for the prior calendar year. The index to be used for this adjustment shall be the Consumer Price index published by the U.S. Bureau of Labor Statistics for all urban consumers (CPI-U) for the Philadelphia SMSA, all items.

APPROVED CONNECTION POINTS TO CITY WASTEWATER SYSTEM

Stage 1

1. Vicinity of State Road and Grant Avenue

Stage 2

1. Vicinity of State Road and Shelmire Avenue

EXHIBIT C

INTERJURISDICTIONAL PRETREATMENT AGREEMENT
BETWEEN
THE CITY OF PHILADELPHIA
AND
THE BUCKS COUNTY WATER AND SEWER AUTHORITY

This Agreement is entered into this 9th day of March , 1988, between the City of Philadelphia ("City") and the Bucks County Water and Sewer Authority ("Authority").

RECITAL

Whereas, City owns and operates a wastewater treatment system; and

Whereas, Authority currently utilizes this wastewater treatment system pursuant to an agreement between City and Authority dated (the "Service Agreement"); and

Whereas, City must develop and implement an industrial pretreatment program pursuant to conditions contained in its discharge permit (Permit #PA0026689) issued by the Pennsylvania Department of Environmental Resources; and

Whereas, Authority desires to continue to utilize the wastewater treatment system and recognizes its industrial waste control obligations under 40 CFR 403.

In consideration of the following terms and conditions City and Authority agree:

Exhibit D

1. Within two months of the adoption by the City of its new wastewater control regulations, Authority shall enact and diligently enforce a resolution requiring each member municipality to enact an ordinance substantially identical to the regulations adopted by City and providing as specified below ("Resolution").

2. Authority, by Resolution, shall require each member municipality to enact an ordinance specifically incorporating the following provisions:

   (a) a requirement that any industrial user responsible for any accidental discharge notify immediately both City and Authority;

   (b) a prohibition on the use of dilution as a control technique for compliance with discharge limits except as allowed by Federal Pretreatment Standards;

   (c) a grant of authority to impose mass discharge limits in lieu of, or in conjunction with, concentration discharge limits;

   (d) a prohibition against and penalty for the knowing transmittal of false information by an industrial user to either City or Authority;

   (e) a grant of explicit authority to Authority to require the industrial user to install all monitoring and pretreatment facilities.

   (f) within six (6) months of enactment, each member municipality shall notify City and Authority of every non-domestic user with the potential to discharge an extremely hazardous substance as defined by the Superfund Amendments and Reauthorization Act of 1986 and every industrial user within its jurisdiction.

3. City and Authority shall periodically (at a minimum of every five years) review their respective regulations and resolutions and the

member municipalities' ordinances and jointly draft and adopt equivalent amendments to their respective regulations and resolutions where necessary to ensure the effective administration and operation of the pretreatment program. Whenever City becomes aware of a problem with the pretreatment program which can be mitigated by a change in the resolutions, City may draft an amendment which Authority must adopt. If Authority has adopted a resolution requiring its municipalities to adopt ordinances identical to City's regulations, then, whenever City amends its regulations, Authority shall adopt a resolution requiring its member municipalities to adopt the identical amendment.

4. Authority, by Resolution, shall require each member municipality to adopt as part of its ordinance and enforce, and Authority shall establish by resolution and enforce, specific discharge limits at least as stringent as the specific discharge limits established in City regulations.

5. Authority, by Resolution, shall require each member municipality to adopt as part of its ordinance a provision incorporating by reference into the ordinance categorical pretreatment standards promulgated by the U.S. Environmental Protection Agency (EPA) by authority of the Clean Water Act Sections 307(b) and (c) be automatically incorporated by reference into its member municipalities' ordinances. These standards shall supercede any specific discharge limits in the ordinance which are less stringent than the categorical standards as they apply to the particular industrial subcategory. Authority shall notify all affected industrial users of pertinent categorical standards and monitoring and reporting requirements contained in 40 CFR 403.12 or included as part of the categorical standards.

6. Authority, by Resolution, shall require each member municipality to include in its ordinance definitions for "significant industrial user", "industrial user" and "nondomestic user" which are identical to the definitions adopted by City. City may make the final determination as to whether a particular industrial user is a significant industrial user, industrial user or nondomestic user based on information City may request from Authority or its member municipalities. City shall control, through industrial discharge permits, industrial waste discharges from each significant industrial user, industrial user or nondomestic user discharging into the sewer.

7. If there exists any industrial user discharging to Authority sewer system but located outside the jurisdictional limits of Authority, then Authority shall within 30 days of this agreement notify such jurisdiction of this requirement and provide the City with copies of such notification. Authority shall negotiate and enter into an agreement with this outside jurisdiction. Such agreement shall be substantially equivalent to this Agreement, and shall be jointly executed by Authority, City and the outside jurisdiction. If the outside jurisdiction refuses to negotiate and execute an agreement, then City shall enter into a contract with the industrial user which contains terms and conditions substantially equivalent to City industrial discharge permits.

8. Authority, by Resolution, shall require each member municipality to file with City a certified copy of its ordinance and any amendments thereto. Authority shall fill with City other interjurisdictional agreements and any contract entered into for the purposes of industrial

waste control. If Authority maintains, Authority shall provide City access to and copies of, if requested, all industrial monitoring reports including 40 CFR §403.12 compliance reports, self-monitoring reports, baseline reports, records of violations and actions taken, and any other monitoring or reporting requirements imposed by federal, state or local regulations. Any records or other relevant information maintained shall be for at least six years.

9. Any authorized officer or employee of City may enter and inspect at any reasonable time any part of the sewer system of Authority. The right of entry and inspection shall extend to public streets, easements, and property within which the system is located. Additionally, City shall be permitted, as appropriate, to enter onto private property to inspect industrial waste discharges. Authority shall provide complete sets of sewer plans and make all necessary legal and administrative arrangements for these inspections. The right of inspection shall include on-site inspection of pretreatment and sewer facilities, observation, measurement, sampling, testing, and access to (with the right to copy) all pertinent compliance records located on the premises of the industrial user or non-domestic dischargers.

10. Authority and City hereby agree that the City shall implement a pretreatment program within Authority and shall perform in connection therewith technical and administrative activities which may include: 1) updating the industrial waste survey; 2) providing technical services, such as sampling, process chemical analysis, and engineering advice; 3) permitting; 4) compliance monitoring; 5) enforcement support and 6) monitoring hazardous waste disposal practices. Authority may assume

responsibility for conducting the pretreatment program implemented by City at any time upon 90 days' advanced written notice. To the extent Authority shall administer its own pretreatment program, it shall provide the City in writing a detailed outline of the program 90 days prior to initiating such a program and the City shall have the right to approve or disapprove the program. City may periodically review Authority pretreatment program activities and funding to ensure that Authority and any outside jurisdiction is adequately administering its pretreatment program in conformance with the Federal Pretreatment Regulations (40 CRF 403) and all City requirements.

11. City shall review Authority resolution and each member municipality's ordinance and amendments thereto and any interjurisdictional agreements for conformance with 40 CRF part 403, and to ensure inclusion of all other legal provisions mandated by this Agreement. City shall periodically review the enforcement efforts of Authority and any other jurisdiction to ascertain whether pretreatment requirements are being diligently enforced.

12. If City determines that Authority and/or its member municipalities has failed or has refused to fulfill any pretreatment obligations, City may develop and issue a remedial plan containing a description of the nature of the pretreatment deficiencies, an enumeration of corrective steps to be taken and a time schedule for attaining compliance with all pretreatment requirements. Such plans shall be specifically enforceable in a court of competent jurisdiction. Where Authority fails to satisfy the terms of the remedial plan, City may, upon thirty days' written notice, refuse to accept any industrial waste discharges from Authority.

13. In the event that EPA or Pennsylvania Department of Environmental Resources action results in fines, penalties or costs being assessed against City because of industrial or non-domestic waste discharged from Authority, Authority and City shall equitably apportion responsibility for payment of such fines, penalties or costs. Authority shall fully indemnify, defend and hold harmless City for damages or costs arising from personal and property damage pursuant to the Service Agreement.

14. Where a discharge to the wastewater treatment system reasonably appears to present an imminent danger to the health and welfare of persons, or presents or may present an imminent danger to the environment, or threatens to interfere with the operation of the wastewater treatment system, City may immediately initiate steps to identify the source of the discharge, and to hold or prevent said discharge. City may seek injunctive relief against Authority or outside jurisdictions and/or any industrial or non-domestic user contributing to the emergency conditions, and/or may pursue other self-help remedies. Authority shall pay to City the cost of such steps taken to prevent, stop or ameliorate the effects of such discharge.

15. Any disputes arising out of this Agreement shall be submitted to binding arbitration performed in accordance with the procedures set forth in the Service Agreement between Authority and City dated February 5, 1988 .

16. The terms of this Agreement may be amended only by written agreement of the parties. In any event, this Agreement shall be reviewed and revised, as necessary, at least every five years.

17. This Agreement modifies only those provisions of the existing Service Agreement between the two parties which conflict with the terms of this Agreement.

18. This Agreement will remain in effect so long as the Service Agreement remains in effect. Termination of the Service Agreement shall also result in the termination of this Agreement.

The parties hereto have executed this Agreement on the date shown above.

CITY OF PHILADELPHIA — DATE: March 14, 1988

APPROVED AS TO FORM:
SEYMOUR KURLAND
CITY SOLICITOR

BY: _____

BUCKS COUNTY WATER AND SEWER AUTHORITY — DATE: March 9, 1988

ATTEST — DATE: March 9, 1988

PERFORMANCE BOND

KNOW ALL PERSONS BY THESE PRESENTS, THAT WE, THE BUCKS COUNTY WATER AND SEWER AUTHORITY (hereinafter called the "Principal Obligor"), and _____, Surety, are jointly and severally held and firmly bound unto the Water Department of City of Philadelphia ("City") in the sum of SIX MILLION DOLLARS ($6,000,000.00) lawful money of the United States of America, to be paid to the said City, its successors and assigns, to which payment, well and truly to be made, we do bind ourselves and each of us, our and each of our heirs, executors and administrators, successors and assigns, jointly and severally, firmly by these presents.

Sealed with the seal of the said Bucks County Water and Sewer Authority and with the corporate seal of the said _____ _____, Surety, duly attested by the proper officers thereof.

Dated the _____ day of _____, in the year of our Lord One Thousand Nine Hundred and Eighty-Eight (1988).

WHEREAS, the above bounded Principal Obligor agreed to construct a sewer in the City in accordance with the terms and conditions of that certain agreement dated _____, 1988,

EXHIBIT "E"

by and between the City of Philadelphia, acting by and through its Water Department and the Principal Obligor (the "Agreement") and plans and specifications approved by the Water Commissioner of City.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal Obligor shall and do well and truly, in all respects, comply with all the terms, conditions and covenants contained in the above-mentioned Agreement, and shall do and pay unto the City of Philadelphia upon demand, any and all loss, damage and expenses which the said City may or shall sustain by reason of the failure of the said Principal Obligor to comply with the terms of the said Agreement, it being hereby understood and agreed that the reasonable decision of the Water Commissioner or his successor as to such failure in complying with the terms of the said contract Agreement and as to the amount of loss or damage sustained by reason thereof, being binding and conclusive upon the parties hereto, then this obligation to be null and void; otherwise, to be and remain in full force and virtue.

The undersigned Principal Obligor and Surety hereby agree that no modification of the terms of the above-mentioned Agreement or alteration in the work to be done under it, and no forbearance on the part of either City or the Principal Obligor to the other, either by the grant of any extension of time for the performance of the Agreement or otherwise, shall be deemed to release the undersigned or either of them, their or either of their heirs, executors, administrator or assigns, from their lia-

bility hereunder, notice to the Surety of any such modification, alteration, extension of forbearance hereby being waived.

And we do for ourselves and each of us, and each of our heirs, executors, administrators, successors and assigns, hereby authorize and empower any attorney of any court of record in Pennsylvania or elsewhere, upon the filing of this instrument or a copy thereof, duly attested as correct by such attorney, to appear for us or either of us, our or either of our heirs, executors or administrators, successors or assigns, and in our names or in the name of either of us, our or either of our heirs, executors or administrators, successors or assigns, confess a judgment against us or either of us, our or either of our heirs, executors or administrators, successors or assigns, in favor of the Water Department of the City of Philadelphia or any entity performing the functions of the Water Department, for the sum named in this bond, without defalcation, with costs of suit, release of errors, and with five percent (5%) added for collection fees; hereby waiving the benefit of all exemption laws and the holding in inquisition on any real estate that may be levied upon by virtue of such judgment, voluntarily condemning such real estate and authorizing the entry of such condemnation upon any writ of fieri facias and agreeing that said real estate may be sold under the same; and further waiving all errors, defects and imperfections whatsoever in the entering of the said judgment or any process thereon, and hereby agreeing that no writ of error or objection or motion or rule to open or strike off judgment or to

stay execution of appeal, shall be made or taken thereto. The right and power to appear and to enter or confess judgment hereinabove provided for and the right to assess damages under any such judgment shall be exercisable any number of times and shall not be exhausted by one or more uses thereof. And for the doing of these acts this instrument or a copy thereof attested as aforesaid shall be full warrant and authority.

This Performance Bond and the obligations hereunder shall terminate absolutely and be of no further force and effect upon the expiration of the Agreement.

PRINCIPAL:

Attest: _____ By: _____

[Seal]

Surety:

Attest: _____ By: _____

Secretary Attorney-in-fact

[Corporate Seal]

(If Attorney is not a Pennsylvania resident, this bond must be co-signed for the Surety by a Pennsylvania resident.)

LABOR AND MATERIALMEN'S BOND

KNOW ALL PERSONS BY THESE PRESENTS, THAT WE, The Bucks County Water and Sewer Authority (hereinafter called the "Principal Obligor"), and _____ _____, Surety, are jointly and severally held and firmly bound unto the Water Department of City of Philadelphia ("City") for the use of any and every person, copartnership, association or corporation interested in the sum of SIX MILLION DOLLARS ($6,000,000.00) lawful money of the United States of America, to be paid to the said City, its successors and assigns, to which payment, well and truly to be made, we do bind ourselves and each of us, our and each of our heirs, executors and administrators, successors and assigns, jointly and severally, firmly by these presents.

Sealed with the seal of the said Principal Obligor and with the corporate seal of the said _____ _____, Surety, duly attested by the proper officers thereof.

Dated the _____ day of _____, in the year of our Lord One Thousand Nine Hundred and Eighty-Eight (1988).

EXHIBIT "F"

WHEREAS, the above bounded Principal Obligor, agreed to construct a sewer for the Water Department of City in accordance with the terms and conditions of that certain agreement dated _____, 1988, by and between the City of Philadelphia, acting by and through its Water Department and the Bucks County Water and Sewer Authority (the "Agreement") and the plans and specifications approved by the Water Commissioner of City.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal Obligor shall and will promptly pay or cause to be paid to any and every person, copartnership, association or corporation, all sums of money which may be due for material furnished, equipment or machinery rented, services rendered by public utilities, and labor supplied or performed in the prosecution of the work covered by the above-mentioned Agreement, whether or not the said material, equipment, machinery, public utility services or labor enter into and become component parts of the work or improvement contemplated, including, inter alia, (a) all material furnished, equipment or machinery rented, services rendered by public utilities, and labor supplied or performed in preparing the site for the performance of the work covered by said contract, (b) equipment, machinery, public utility services, labor, shoring, sheathing and blasting supplies and other materials used on the site in doing such excavating as may be necessary or required to institute or perform the work specified in the Agreement or machinery rented, services rendered by public utilities and labor supplied or performed in the prose-

cution of work or repair or of maintenance required by or performed under the terms of said Agreement, then this obligation to be null and void; otherwise, to be and remain in full force and virtue.

It is understood and agreed that the City of Philadelphia, by its Water Department, may sue in assumpsit on this bond, for a breach by the Principal under the Agreement, for such sum or sums as may be justly due the City, and have execution thereon; and any such suit shall be commenced not later than the date of termination of the Agreement. It is also understood and agreed that no person, copartnership, association or corporation, who is not a party to the Agreement shall have a right of action upon this bond.

The undersigned Principal Obligor and Surety, for themselves and each of them, their and each of their heirs, executors, administrators, successors and assigns, further agree, jointly and severally, that no modification, alteration, addition or extension of the terms of the above-mentioned Agreement or alteration, addition or diminution of the work to be done under it above-mentioned and described, and no forbearance on the part of either the City or of the Principal Obligor to the other, either by the grant of an extension of time for the performance of the Agreement, of the payments to be made under it, or otherwise, shall be deemed to release the undersigned or either of them, their or either of their heirs, executors or administrators, successors or assigns, from respective liability

hereunder; notice to said surety of any such modification, alteration, addition, extension, diminution and/or forbearance hereby being waived.

It is understood and agreed that the term "Principal Obligor" as used herein shall be construed to include both singular and plural, and shall be deemed to include and designate each and every of the individuals, copartnership, associations and artificial body of person who have entered into the above-mentioned Agreement with the City of Philadelphia, who have been designated above as "Principal", and who other than the Surety have signed and executed this present Indenture.

This Labor and Materialmen's Bond and the Obligations hereunder shall terminate absolutely and be of no further force and effect upon the expiration of the Agreement.

PRINCIPAL:

BUCKS COUNTY WATER AND SEWER AUTHORITY

Attest: _____ By: _____

[Seal]

Surety:

Attest: _____ By: _____
Attorney-in-fact

(If Attorney is not a Pennsylvania resident, this bond must be co-signed for the Surety by a Pennsylvania resident.)

[Corporate Seal]

AMENDMENT TO WASTEWATER
SERVICES AGREEMENT DATED
FEBRUARY 5, 1988

On this 15th day of May, 1997, the City of Philadelphia (hereinafter the "City") and the Bucks County Water and Sewer Authority (hereinafter the "Authority"), pursuant to Section VIII L. of the Wastewater Service Agreement dated February 5, 1988, (hereinafter the "Agreement") hereby amend the Agreement as follows:

A. Provisions A(1) through (5), inclusive, which follow immediately below, shall be in effect from May 15, 1997 until May 15, 2000. Thereafter, Provisions A(1) through (5) shall terminate and be null and void.

1. The City will accept the Authority's flow reduction plan as being sufficient to address its excessive flows. The Authority's flow reduction plan is attached hereto as Exhibit A.

2. The Authority agrees that starting on July 1, 1996 its capital billings will be based on a 23 m.g.d. share of our Northeast treatment plant. The additional 3 m.g.d. of allocated capacity will be purchased on a depreciation and return basis at a cost of $264,000 per 3 m.g.d. per year to be paid in quarterly installments along with the Authority's regularly scheduled capital billings. The retroactive billings for the 3 m.g.d. of additional allocated capacity from July 1,1996 shall be paid as part of the Authority's next regularly scheduled quarterly capital billing. The Authority shall continue to pay for its initial allocation of 20 m.g.d. in accordance with Section I.C of the Agreement.

3. The Authority will continue to pay the City for the additional 3 m.g.d. of allocated capacity until such time that the rolling 365 day average flow returns to 20 m.g.d. or below for a period of 90 consecutive days.

4. If the rolling 365 day average flow returns to 20 m.g.d. or below for 90 consecutive days, but then, at any time thereafter, increases to over 20 m.g.d, the Authority shall again pay for the 3 m.g.d. of additional allocated capacity until such time that the rolling 365 day average flow again returns to below 20 m.g.d. for a period of 90 consecutive days.

5. If at any time, from May 15, 1997 until May 15, 2000, the rolling 365 daily average flow exceeds 23 m.g.d., the Authority agrees that the City may exercise its right to once again deny all Act 537 planning modules.

B. Upon termination of provisions A(1) through (5), inclusive, on May 16, 2000, the City shall determine whether the Authority's flow reduction plan has been successful or has failed. The Authority's flow reduction plan shall be deemed to have failed if on May 16, 2000, the rolling 365 day average flow exceeds 20 m.g.d. If the flow reduction plan has failed, then the Authority agrees that the City may again exercise its rights to deny Act 537 planning modules. If on May 16, 2000 the flow reduction plan succeeds, but at some later point in time the rolling 365 day average flow again exceeds 20 m.g.d., the City reserves its rights to again deny Act 537 planning modules.

C. This Amendment represents the entire agreement of the parties hereto and there are no collateral or oral agreements or understandings.

IN WITNESS WHEREOF, the City of Philadelphia has caused this Agreement to be executed by its Water Commissioner; and the appropriate officer of the Bucks County Water and Sewer Authority has executed this Agreement on behalf of the Authority, and has hereunto affixed the corporate seal of the said Authority duly attested by the appropriate officer thereof, the day and year first above written.

City of Philadelphia

BY: Kumar Kishinchand
KUMAR KISHINCHAND
Water Commissioner

Bucks County Water and
Sewer Authority

BY: B W Jones 6/17/97
BENJAMIN W. JONES
Executive Director

Approved as to form:

BY: David A. Katz
DAVID A. KATZ, ESQ.
Divisional Deputy City Solicitor

Attest:
Mary Ann Morgan

BUCKS COUNTY WATER AND SEWER AUTHORITY

NESHAMINY INTERCEPTOR FLOW REDUCTION PLAN

I. Agreement of all Neshaminy Interceptor Customers to be Billed

ADS flow meters have been installed at 62 points along the Interceptor. They have been tested and calibrated, and are now in service. Billing for the first quarter of 1997 has been based on metered flows, and that will be the case in the future.

II. Infiltration and Inflow Remediation

A. Bucks County Water and Sewer Authority has inspected and repaired 17,000 feet of spur lines entering the Interceptor. This project was completed this month (April 1997).

B. Bucks County Water and Sewer Authority has available $11,000,000.00 for I/I remediation in municipal collection systems. It is proposing to use the money on the following terms:

1. Money will be allocated to each municipality in accordance with its needs and its proportionate use of total capacity in the Interceptor.

2. The amount spent on I/I remediation will be treated as a loan to the municipality. The loans will be interest-free for five (5) years, with no principal repayment required during that period. Thereafter, repayment will be at the Bucks County Water and Sewer Authority cost of funds, with amortization over twenty (20) years.

3. It is contemplated that the total remediation program will take thirty-six (36) months to complete, with results on the following schedule:

5% removal in first 6 months
10% removal in next 12 months
20% removal in next 24 months
30% removal in next 36 months

4. The savings in treatment costs as a result of I/I removal will provide the revenue necessary to repay the remediation costs.

III. Weather-Related flow Reduction

Bucks County Water and Sewer Authority believes that the unusual wet weather conditions between January 1996 and December 1996 have contributed to the high flow averages now existing.

Month	Average Precipitation (1994 to 1995)	Actual Precipitation (1996 - 1997)
January 1996	3.14"	4.38"
February 1996	2.54"	2.13"
March 1996	3.80"	4.27"
April 1996	2.11"	3.92"
May 1996	3.17"	3.17"
June 1996	1.00"	4.68"
July 1996	6.35"	5.65"
August 1996	2.85"	4.29"
September 1996	2.60"	4.19"
October 1996	3.46"	4.19"
November 1996	2.97"	2.89"
December 1996	2.03"	8.48"

AMENDMENT II TO THE WASTEWATER SERVICES AGREEMENT DATED FEBRUARY 5, 1988

WHEREAS, the City of Philadelphia (the "City") and the Bucks County Water and Sewer Authority (the "Authority") (collectively referred to as the "Parties") entered into a Wastewater Services Agreement dated February 5, 1988 (the "Agreement") whereby the City agreed to treat the Authority's wastewater in accordance with the terms and conditions set forth in the Agreement; and

WHEREAS, the Parties first amended the Agreement on May 15, 1997 to address the Authority's flow exceedances; and

WHEREAS, pursuant to the Agreement, the Authority conveys its wastewater to the City via a Force Main which connects to the City's sewer system in the vicinity of State Road and Shelmire Avenues in Philadelphia, Pennsylvania; (the "Connection Point") and

WHEREAS, the Authority's wastewater conveyed via the Force Main causes hydrogen sulfide gas to be produced in and around the Connection Point; and

WHEREAS, the production of hydrogen sulfide gas results in odors being produced in and around the Connection Point as well as possibly excessive corrosion to the City's sewer system; and

WHEREAS, the Authority and the City now desire to address these odor and possible excessive corrosion problems; and

WHEREAS, the Parties have reached agreement on how to resolve both the odor and corrosion issues; and

WHEREAS, the Parties now wish to memorialize their agreement in this Amendment II to the Wastewater Services Agreement Dated February 5, 1988 (henceforth "Amendment II");

IT IS THEREFORE AGREED BY AND BETWEEN THE CITY AND THE AUTHORITY ON THIS 18th day of January 1999 that the odor and excessive corrosion problems are hereby settled and resolved in accordance with the following terms and conditions as set forth below:

1. The City shall operate a sodium hypochlorite system (the "System") at the Authority's Totem Road Pumping Station located in Bucks County. The System shall be operated in such a manner as to eliminate substantially all odors generated by the sewage flowing from the Authority's Force Main into the City's sewer system. Further, the System shall be operated to eliminate any excessive corrosion. The System shall include, but is not limited to, the following:

(1)sodium hypochlorite, (2) pumps, (3) piping to introduce the sodium hypochlorite into the wastewater, (4) tanks to store the sodium hypochlorite, (5) monitors, (6) telecommunications system, (7) any equipment, devices, appurtenances or other requirements as may be necessary to comply with federal, state or local laws and regulations and (8) any other equipment, devices, appurtenances or procedures as may be necessary, in the City's sole judgment, to eliminate the odors and possible excessive corrosion. The City shall be responsible for ensuring that the telecommunications system is compatible with the existing system.

The System is presently operating and the Parties have agreed to take whatever actions are necessary, as expeditiously as possible, to make the System into a permanent installation.

2. The City shall have sole and exclusive control and authority over all matters relating to the operation, maintenance, inspection, repair and replacement of the System. The permanent installation is being designed by Carroll Engineering Corporation pursuant to a contract with the Authority. The City shall have approval rights for the design of the permanent installation. Should the City not approve the design of the final installation this Agreement shall become null and void.

3. The Authority hereby grants the City, its agents, contractors and subcontractors, full and complete access to only that portion of the Totem Road Pumping Station that is necessary for the operation, maintenance, inspection, repair and replacement of the System. This access specifically excludes entry into the Pump Station unless accompanied by a representative from the Authority. The Authority shall provide the City with the keys to the Totem Road Pumping Station gate so that the City may enter and leave the grounds of the facility as needed. The Authority shall be responsible for maintaining the site to ensure that the City, its agents, contractors and subcontractors have access to the site for the purpose of operating, maintaining, inspecting, repairing and replacing the System which specifically includes ensuring that the sodium hypochlorite delivery trucks have access whenever needed.

4. The Authority agrees to fully cooperate with the City so that the existing System that is now being operated can be made into a permanent installation as expeditiously as possible and within the time frame required by law. The Authority shall have the permanent installation completed by no later than June 30, 2000 or earlier if so required by law.

5. (a) The Authority shall be solely responsible for all costs related to the System ("System Costs") with one exception as set forth in paragraph 5(b). System Costs include, but are not limited to, the following:

(1) sodium hypochlorite costs;
(2) equipment costs, including but not limited to, tanks, pumps, piping, monitors, communication systems;
(3) costs involved in making the System a permanent installation;
(4) costs related to the operation, maintenance, inspection, repair and replacement of the System;
(5) utility costs related to the System; and
(6) costs related to the System incurred prior to the signing of this Amendment II.

The Authority shall be the legal owner of the System.

(b) The one exception to the Authority being responsible for all System Costs relates to the additional costs incurred by the City's in house labor force. To the extent City employees will be involved in the daily operation and maintenance of the System, the City may incur additional in house labor costs. The City agrees not to bill or charge the Authority for any additional City employee labor costs incurred by the City in the daily operation and maintenance of the System. The City shall, to the greatest extent possible, use its own in house forces for the daily operation and maintenance of the System and shall not contract out such daily operation and maintenance activities without the Authority's consent. The City currently uses specialized contractors to perform certain functions that are done on a periodic basis such as the periodic testing, calibration and inspection of equipment. The Authority shall be responsible for the costs associated with these specialized contractors.

The City has retained the Authority's federal grant rebate in the amount of $163,942. The City shall use this amount to offset System Costs that the City has already incurred and will incur in the future.

6. System Costs related to capital expenditures shall be included with the City's capital cost billings to the Authority pursuant to Paragraph I(c) of the Agreement. System Costs related to operation and maintenance expenditures shall be included with the City's Wastewater Treatment Charges and billed to the Authority in accordance with Paragraph II(A) of the Agreement.

7. Subject to the null and void provisions contained in Paragraph 9, the City agrees not to take any legal, administrative, contract or other actions against the Authority for odors resulting from the Force Main emanating in and around the Connection Point. This prohibition specifically includes any actions to withhold approval of Act 537 Planning Modules.

8. Subject to the null and void provisions contained in Paragraph 9, the City agrees not to file suit, initiate arbitration proceedings or withhold Act 537 Planning Module Approval in order to hold the Authority solely responsible for any

corrosion to the City's sewer prior to the signing of this Amendment II. The parties acknowledge, however, that at some future date the City's sewer will need to be repaired and/or replaced. The Parties agree that such repair and/or replacement costs shall be shared pro rata in accordance with the terms and conditions of the Agreement.

9. Should the City be unable to operate the System as the result of conditions beyond its control, this Amendment II shall become null and void and the Parties are free to exercise all claims, rights, causes of actions and defenses they may possess in order to address the odors and possible excessive corrosion. Conditions beyond the City's control include, but are not limited to:

   (a) the Authority's failure to cooperate with the City or grant the City, its agents, contractors or subcontractors, access to the Totem Road Pumping Station;

   (b) federal, state or local statutes, regulations, ordinances or laws, that would prohibit the lawful operation of the System.

10. This Amendment II constitutes the full agreement and understanding of the Parties. There are no other agreements or understandings, either oral or in writing, related to the subject matter of this Amendment II.

11. This Amendment II may only be changed or modified in a writing signed by both Parties.

12. The Authority shall immediately notify the City should it become aware of any malfunctions, leaks or improper discharges from the System. The Authority shall call the City representative on stand by for Flow Control at 215-984-0480.

13. This Amendment II constitutes a full settlement of any obligations owed by the Authority to the City related to the subject matter contained herein.

WHEREFORE, the Parties intending to be legally bound execute this Amendment II immediately below.

City of Philadelphia

KUMAR KISHICHAND
Water Commissioner

DAVID A. KATZ
Divisional Deputy City Solicitor

Bucks County Water
and Sewer Authority

BENJAMIN W. JONES
Executive Director

Attest:

EXHIBIT B
SETTLEMENT AGREEMENT
BETWEEN DEPARTMENT OF ENVIRONMENTAL PROTECTION AND BUCKS COUNTY WATER AND SEWER AUTHORITY

BUCKS COUNTY WATER AND SEWER AUTHORITY, Appellant, v. COMMONWEALTH OF PENNSYLVANIA, DEPARTMENT OF ENVIRONMENTAL PROTECTION, Appellee and BUCKS COUNTY WATER AND SEWER AUTHORITY, Plaintiff-Condemnee v. COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, Defendant-Condemnor	: : : : : : : : : : : : : : : : : : : :	Pennsylvania Environmental Hearing Board Docket No. 2012-138-L (Consolidated with 2012-146-L, 2012-152-L, and 2012-155-L) and Docket No. 2013-175-L IN REM EMINENT DOMAIN PROCEEDINGS Bucks County Court of Common Pleas Docket No. 2013-4635

SETTLEMENT AGREEMENT

Bucks County Water and Sewer Authority ("BCWSA") and the Pennsylvania Department of Environmental Protection ("Department") (jointly "the parties"), by and through their respective counsel, with the intent of resolving the above-captioned matters, pursuant to 25 Pa. Code § 1021.141, and all other applicable laws, enter into this Settlement Agreement ("Agreement"), and agree as follows:

A. On June 26, 2012, the Department issued a letter to BCWSA informing it that its 2010 Wasteload Management Report established that portions of BCWSA's Neshaminy Interceptor sewer system are in a state of projected hydraulic overload and that there is an existing hydraulic overload in the Totem Road Pump Station.

B. On July 27, 2012, BCWSA filed an appeal of the Department's June 26, 2012 letter ("Appeal 1") with the Pennsylvania Environmental Hearing Board ("EHB"). The Appeal is docketed at EHB Docket Number 2012-138-L.

C. On July 25, 2012, the Department issued a letter to BCWSA informing it that its 2010 Wasteload Management Report shows that portions of BCWSA's Neshaminy Interceptor sewer system are in a state of projected hydraulic overload and that there is a projected hydraulic overload in the Totem Road Pump Station.

D. On August 17, 2012, BCWSA filed an appeal of the Department's July 25, 2012 letter ("Appeal 2"). The Appeal is docketed at EHB Docket Number 2012-152-L.

E. On August 10, 2012, land developer Horizon Lot 2 Associates filed an appeal of the Department's June 26 and July 25, 2012 letters ("Appeal 3"). Counsel for BCWSA entered his appearance on behalf of BCWSA in Appeal 3 on August 17, 2012. The Appeal is docketed at EHB Docket Number 2012-146-L.

F. On August 24, 2012, Northampton Bucks County Municipal Authority ("NBCMA") filed an appeal of the Department's July 25, 2012 letter ("Appeal 4"). Counsel for BCWSA entered his appearance on behalf of BCWSA in Appeal 4 on September 18, 2012. The Appeal is docketed at EHB Docket Number 2012-155-L.

G. The EHB consolidated Appeal 2, Appeal 3, and Appeal 4 into Appeal 1 (hereinafter collectively, "Consolidated Appeals").

H. On August 19, 2013, the Department issued a letter to Bensalem Township, Bucks County ("the incompleteness letter") finding incomplete a sewage facilities land development planning module which had been submitted for a project known as the "High Tides Café."

I. On September 20, 2013, BCWSA filed an appeal of the Department's August 19, 2013 incompleteness letter ("Appeal 5"). The Appeal is docketed at EHB Docket Number 2013-175-L.

J. On June 19, 2013, BCWSA filed a petition for the appointment of a board of viewers ("Petition") with the Bucks County Court of Common Pleas ("BCCP"). BCWSA alleged that the Department conducted a de facto taking and a regulatory taking of some portion of its Neshaminy Interceptor sewer system and sought compensation for the alleged takings. The Petition is docketed at BCCP Dkt. No. 2013-4635.

K. The parties have engaged in settlement discussions and, as a result of those discussions, have reached agreement on a settlement of the Consolidated Appeals, Appeal 5, and the Petition, in accordance with the terms of the Agreement set forth below.

THEREFORE, the parties desiring to settle this matter without resorting to additional litigation and intending to be bound, hereby agree to the settlement of the Consolidated Appeals, Appeal 5, and the Petition as follows:

1. Within five (5) business days of the Department's acceptance in writing of BCWSA's Neshaminy Interceptor Corrective Action Plan ("NICAP"), in the same form

as attached to this Agreement (Exhibit "A"), by separate praecipe to each tribunal, BCWSA shall withdraw and terminate with prejudice the Consolidated Appeals (including its participation in Appeals 3 and 4), Appeal 5, and the Petition, subject to the conditions of this Agreement, and specifically subject to the provisions of 1.(a) and 1.(b) below. The praecipes shall state that the parties agree to bear their respective attorneys' fees, expenses, and costs associated with this Agreement, the Consolidated Appeals, Appeal 5, and the Petition.

(a) The separate praecipes of withdrawal of the Consolidated Appeals and Appeal 5 shall state that the withdrawals are with prejudice, subject to the limitation of the following reservation of rights. The parties will expressly reserve all rights to raise or dispute any and all factual or legal issues concerning the permitted hydraulic capacity of the Totem Road Pump Station in future proceedings in a Homes of Distinction settlement in the Consolidated Appeals and Appeal 5.

(b) BCWSA will withdraw the Petition with prejudice. However, nothing in this agreement shall preclude BCWSA from raising the issues raised in the Petition in any dispute between BCWSA and any third party, as to that third party, or from raising such issues in any federal action initiated by the United States Environmental Protection Agency, or from raising such issues in any action initiated by the Department.

2. Within five (5) business days of the Department's acceptance in writing of BCWSA's NICAP, BCWSA agrees to withdraw in writing its September 2, 2013 Right to Know Law Request to the Department, docketed as RTKL Request No. 4100-13-0154.

3. BCWSA agrees that it shall not file an appeal or take any other adverse action against the Department as a result of its acceptance of the NICAP as final, if accepted in the same form as Exhibit "A."

4. The Department shall continue to enforce the requirements of the Consent Order and Agreement, entered into by the Department, Keystone Turf Club, Inc., Bensalem Racing Association, Inc., Greenwood Racing, Inc., Greenwood Gaming and Entertainment, Inc., Robert Green, and William Hogwood ("Parx Casino and Racing") on May 16, 2011, pursuant to the terms and conditions of that document, attached to this Agreement (Exhibit "B"). Unless otherwise authorized or required by the Department, and in accordance with Exhibit B and NPDES Permit for Concentrated Animal Feeding Operations, NPDES Permit No. PAI120503 (Exhibit "C"), upon full implementation of the Best Management Practices schedule, set forth in Exhibit C, Special Permit Requirements, Part C, Paragraph N, but no later than May 20, 2016, Parx Casino and Racing is required to submit a request to the Department to permanently configure the diversion structure on Parx Casino and Racing's property, located at 3001 Street Road, Bensalem, PA 19020, so that no stormwater entering Basin B at that property will flow into BCWSA's Neshaminy Interceptor system. As contemplated in Exhibits B and C, the Department shall work diligently with Parx Casino and Racing to assure that, no later than May 20, 2016, Parx Casino and Racing will cease conveying stormwater from its racetrack operations into the Neshaminy Interceptor system. Until such a time that the Department approves Parx Casino and Racing's reconfiguring of the diversion structure and the cessation of conveyance of stormwater from the racetrack operations into the Neshaminy Interceptor system, as set forth in Exhibits B and C, a failure of Parx Casino

and Racing to comply with its deadline for full implementation of the Best Management Practices schedule and removal of stormwater flows from its racetrack operations into the Neshaminy Interceptor system by May 20, 2016, and any stormwater from Parx Casino and Racing will not be counted by the Department towards any determination of exceedance or overload when the Department considers acceptance of new connections in Year 2018 and beyond against Neshaminy System municipal customers, provided that BCWSA has provided to the Department all metered sewage flow data for Parx Casino and Racing in BCWSA's annual Wasteload Management Report for each subsequent year that BCWSA seeks connections.

5. Provided that BCWSA terminates the Consolidated Appeals, Appeal 5, and the Petition, as agreed upon above, and provided that BCWSA remains in full compliance with the Department-accepted NICAP, the Department shall accept BCWSA's release of connections for years 2014 through 2017, as set forth in BCWSA's Neshaminy Interceptor Connection Management Plan ("NICMP"), attached to this Agreement (Exhibit "D"), or as modified by BCWSA and accepted by the Department, pursuant to the provisions of Paragraph 6.

6. The parties agree that BCWSA has a right to submit revised CMPs to the Department that alter the NICMP, and that the Department has a right to accept or not accept any such revisions in accordance with the Clean Streams Law, Act of June 22, 1937, P.L. 1987, *as amended*, 35 P.S. §§ 691.1-691.1001 ("Clean Streams Law"), and the regulations promulgated thereunder, including, but not limited to, the Municipal Wasteload Management regulations, 25 Pa. Code §§ 94.1 et seq. Acceptance of changes to the NICMP shall be based on an evaluation of the impacts of such changes on

projected flows to the Neshaminy Interceptor system and/or documented I/I removal based on metered flows that confirm additional capacity is available. Year 2018 and beyond allocations will be based on municipal compliance with the flow limits established in their supplementary agreement with BCWSA and the remaining available capacity in the Neshaminy Interceptor Sewer System.

7. The parties agree to bear their respective attorneys' fees, expenses, and costs associated with this Agreement, the Consolidated Appeals, Appeal 5, and the Petition.

8. This Agreement constitutes the entire agreement between the Department and BCWSA, and no alteration, additions, or amendments shall be valid unless mutually agreed to by the parties, set forth in writing, and duly executed by them.

9. By their signatures below, the parties consent to the terms of this Agreement and represent that they are authorized to execute this Agreement on behalf of the party or parties for whom they sign.

10. This Agreement shall terminate and be null and void on December 31, 2018, or earlier, if mutually agreed upon in writing by the parties.

FOR BUCKS COUNTY WATER AND SEWER AUTHORITY

Benjamin Jones
Chief Executive Officer
1275 Almshouse Road
Warrington, PA 18976

Dated: 3/6, 2014

REVIEWED BY COUNSEL

Steven A. Hann, Esq.
Hamburg, Rubin, Mullin, Maxwell and Lupin
375 Morris Road
P.O. Box 1479
Lansdale, PA 19446-0773

Dated: 3/6, 2014

Jeffrey P. Garton, Esq.
Begley, Carlin and Mandio
680 Middletown Boulevard
Langhorne, PA 19047

Dated: 3/6, 2014

FOR THE COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Jenifer Fields
Regional Program Manager
Clean Water Program
Pennsylvania Department of Environmental Protection
2 East Main Street
Norristown, PA 19401

Dated: 3/10, 2014

REVIEWED BY COUNSEL

Adam N. Bram, Esquire
Assistant Counsel
Pennsylvania Department of Environmental Protection
Office of Chief Counsel
2 East Main Street
Norristown, PA 19401

Dated: 3/10, 2014

Kenneth A. Gelburd, Esquire
Assistant Counsel
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EXHIBIT C
CONNECTION MANAGEMENT PLAN

Connection Management Plan												
Updated on 6-19-17 (supersedes 6/8/17 version)												
Neshaminy Interceptor Service Area Tributary to Totem Road Pump Station												
	PLANNING STATUS		CONNECTION STATUS						NICMP APPROVED EDU'S			
Development Name	DEP Code No.	Construction Status per Municipality	EDU's Planned or Approved	EDU's Connected To Date	EDU's Needed	EDU's Projected (2014-2017)	GPD/EDU (used to calc Projected Flow)	Projected Avg. Flow (GPD)	2014	2015	2016	2017
GRAND TOTAL FROM ALL MUNICIPALITIES						4,968		1,241,713	1,408	1,389	2,009	950

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Bensalem Township												
Crespo S/D	1-09004-231-E	Approved	13	0	13	13	250	3,250	6	7	0	0
Wellington Estates		Complete	8	8	0	0	250	0	8	0	0	0
DeLuca Residential (Wellington Estates)		Complete	29	29	0	0	250	0	7	7	8	0
APBJ Properties		Complete	7	7	0	0	250	0	3	4	0	0
Jackson Village	1-09004-278-E	Approved	12	0	12	8	250	2,000	0	0	4	4
Holland Enterprises S/D (Saddle Brook)	1-09004-279-E	Under Construction	116	62	54	54	250	13,500	35	27	27	27
Liberty Plaza	1-09004-285-E	Approved	10	0	10	6	250	1,500	0	0	3	3
Guarnaccia S/D	1-09004-250-E	Approved	9	0	9	6	250	1,500	0	2	2	2
Capital Solutions		Approved	8	0	8	8	250	2,000	0	8	0	0
Tremont Village		Approved	128	0	128	85	250	21,250	0	0	42	43
Costa (formerly DiDedidio)		Under Construction	15	5	10	10	250	2,500	5	5	5	0
Liberty Heritage Homes		Under Construction	13	8	5	0	250	0	0	0	4	4
Byberry Woods (SD Real Estate)	[c]	Proposed	39	0	39	39	250	9,750	0	12	12	15
Gvatri Motel		Proposed	40	0	40	40	250	10,000	0	0	20	20
Neoteric		Proposed	5	0	5	5	250	1,250	0	0	5	0
Livengrin [b]		Proposed	15	0	15	11	250	2,750	0	0	11	0
Parx Casino [a]	1-09004-313-3J	Proposed	712	0	712	474	250	118,500	0	0	237	237
Pei Wei (aka Panda)		Complete	4	4	0	0	250	0	0	0	4	0
Horizon Lot No. 2		Proposed	11	0	11	11	250	2,750	11	0	0	0
High Tides Café	1-09004-329-3J	Complete	12	12	0	0	250	0	12	0	0	0
4492 Bensalem Blvd.	1-09004-336-X	Complete	1	1	0	0	250	0	1	0	0	0
Snyder Subdivision (Cypress Ave)	1-09004-335-3J	Under Construction	2	1	1	1	250	250	2	0	0	0
Sarappo (4028 Bristol Pike)		Proposed	2	0	2	2	250	500	2	0	0	0
Snyder Property (4351 Pine Street)	1-09004-328-X	Proposed	1	0	1	1	250	250	0	1	0	0
Digirolamo (3981 Grace Ave.)	1-09004-323-3J	Complete	1	1	0	0	250	0	0	1	0	0
Lesnevec (Hulmeville and Galloway)	1-09004-320-E	Proposed	7	0	7	7	250	1,750	0	7	0	0
Snyder (4800 Cypress Ave.)	1-09004-321-E	Proposed	1	0	1	1	250	250	0	1	0	0
Woelk (2498 Annia Lane)	1-09004-311-X	Proposed	1	0	1	1	250	250	0	1	0	0
Robert Tisone (4337 Chestnut Ave)	1-09004-310-E	Proposed	1	0	1	1	250	250	0	1	0	0
Snyder (Boston Ave. TPN 2-5-321-1)		Complete	1	1	0	0	250	0	1	0	0	0
Nerosa (6378 Lewisville Ave. TPN 2-56-136-3)		Proposed	1	0	1	1	250	250	1	0	0	0
Matthews (3414 Oakford Ave. TPN 2-4-294, lot 2)		Proposed	1	0	1	1	250	250	1	0	0	0
Woelk (4450 Bensalem Blvd. TPN 2-73-70-1)		Proposed	1	0	1	1	250	250	1	0	0	0
Marketplace at Neshaminy		Proposed	30	0	30	30	250	7,500	5.4	0	24.6	0
Re-routing of Pump Station B-11 Force Main		Proposed	200	0	200	200	250	50,000	0	200	0	0
Tofu Processing Facility (via Pump Station B-11)		Proposed	111	0	111	111	250	27,750	0	111	0	0
Marriott Hotel (TPN 02-1-18-17, Horizon Blvd)		Proposed	51.2	0	51.2	51.2	250	12,800	0	0	51.2	0
Faith Univ Mosque (TPN 2-1-55 & 2-33-111)		Proposed	1.51	0	1.51	1.51	250	378	0	0	1.51	0
Byberry Road Twin Dwellings (TPN 2-74-110)		Proposed	16	0	16	16	250	4,000	0	0	0	16
2670 Galloway Road (TPN 02-33-7)	[c]	Proposed	30	0	30	30	250	7,500	0	0	30	0
Miscellaneous EDU's	[d]	Potential	10	0	10	10	250	2,500	0	0	0	10
TOTAL						1,237		309,178	101	395	489	381

[a] Used 712 EDUs as listed on the 2012 Chapter 94 Report.

[b] In accordance Livengrin Foundation letter dated 9/26/16 and DEP's email dated 9/19/16, this project is being treated as a facility of public need.

[c] In accordance with DEP requirements, no reallocating of EDU's from named projects is permitted. Therefore, to undo the changes made on the 2/13/17 NICMP, the following was done:
All of 2670 Galloway Road's EDU's are now shown in Year 2016.
Byberry Woods' EDU's are now reverted back to the 12/22/16 NICMP breakdown, with 12 in 2015, 12 in 2016 and 15 in 2017.

– This project has either been partially or fully connected.

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	PLANNING STATUS		CONNECTION STATUS						NICMP APPROVED EDU'S			
Development Name	DEP Code No.	Construction Status per Municipality	EDU's Planned or Approved	EDU's Connected To Date	EDU's Needed	EDU's Projected (2014-2017)	GPD/EDU (used to calc Projected Flow)	Projected Avg. Flow (GPD)	2014	2015	2016	2017
Hulmeville Borough:												
Vile Property		Proposed	1	0	1	1	250	250	1	0	0	0
Wheeler Property	[d]	Proposed	2	0	2	2	250	500	0	2	0	0
Loretti Property [b]		Proposed	2	0	2	2	250	500	0	0	0	2
Historic Bldg. Rehab (at Hulme and Water Sts)		Anticipated	0	0	0 [a]	0	250	0	0	0	0	0
Period Property (on Ford Ave.)	[d]	Proposed	1	0	1	1	250	250	0	0	1	0
Kiss Electric		Proposed	1	0	1	1	250	250	0	0	1	0
Black Property (Trenton Road)	[c]	Proposed	50	0	50	50	250	12,500	0	0	50	0
Langhorne Wood Products Property (Trenton Road)	[c]	Proposed	35	0	35	35	250	8,750	0	0	0	35
TOTAL						92		23,000	1	2	52	37

[a] Anticipated that any new flow would be offset by mitigation actions and/or existing EDU credits.

[b] This project already had DEP approval to connect, and Borough requested it therefore be removed from the CMP. However, to comply with DEP instructions, it was left on the schedule.

[c] Added per Hulmeville Municipal Authority letter dated 5/1/17.

[d] In accordance with DEP requirements, no reallocating of EDU's from named projects is permitted. Therefore, to undo the changes made on the 6/8/17 NICMP, the following was done:
The two (2) Wheeler Property EDU's were moved back to their original position, in Year 2015.
The one (1) Period Property EDU was moved back to its original position in Year 2017. However, since Year 2016 EDU's are not yet released, it is requested this EDU be moved to 2016.

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Development Name	DEP Code No.	Construction Status per Municipality	EDU's Planned or Approved	EDU's Connected To Date	EDU's Needed	EDU's Projected (2014-2017)	GPD/EDU (used to calc Projected Flow)	Projected Avg. Flow (GPD)	2014	2015	2016	2017
Linshorne Borough												
Miscellaneous Connections		Future	12	0	12	12	250	3,000	3	3	3	3

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Langhorne Manor Borough												
Miscellaneous Connections		Future	2	0	2	2	250	500	0	0	1	1
E&H Properties Construction (TPN 19-7-27-1)	[a]	Proposed	1	0	1	1	250	250	1	0	0	0
McGrath (TPN 19-4-7-1)	[a]	Proposed	1	0	1	1	250	250	0	1	0	0
TOTAL						4		1,000	1	1	1	1

[a] To comply with DEP comment #3 on 4/25/17 email, E&H Properties was assigned the miscellaneous EDU for 2014, and McGrath was assigned the miscellaneous EDU for Year 2015.

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Lower Makefield Township												
Regency at Yardley - Singles	1-09929-267-X	Under Construction	191	157	34	34	250	8,500	30	30	35	35
Regency at Yardley - Carriages (frm. Townhomes) [c]	1-09929-267-X	Under Construction	186	22	164	75	250	18,750	0	0	30	45
Matrix Lower Makefield Residential (aka Matrix Condo's)	1-09929-267-X	Approved	62	0	62	62	250	15,500	0	0	62	0
Matrix - Office	1-09929-267-X	Complete	6	2	0	0	250	0	0	3	1	0
Brookshire Section I	1-09929-247-3J	Complete	21	21	0	0	250	0	1	0	0	0
Brookshire Section II	1-09929-247-3J	Complete	8	8	0	0	250	0	5	3	0	0
Troilo Tract	1-09929-262-E	Complete	5	5	0	0	250	0	1	0	0	0
Minehart Subdivision	1-09929-255-3J	Under Construction	7	5	2	2	250	500	0	4	2	0
Fiorelli Grove	1-09929-268-E	Approved	3	0	3	3	250	750	0	3	0	0
Aria Hospital [a]		Proposed	223	0	223	148	250	37,000	0	0	74	74
Capstone Terrace	1-09929-272-3J	Proposed	192	0	192	0	250	0	0	0	0	0
Reserve at Yardley (aka Freeman's Farm)	1-09929-278-E	Under Construction	15	14	1	1	250	250	0	0	5	10
Moon Nursery [b]		Approved	15	7	8	15	250	3,750	0	15	0	0
Dogwood Drive (aka Harmony Lane Sub.) [e]		Proposed	13	0	13	13	250	3,250	0	0	5	8
Grey Nun Retirement Community		Unknown	114	0	114	0	250	0	0	0	0	0
Grace Point Church (aka 1st Baptist Church)	1-09929-282-3J	Approved	1	0	1	1	250	250	0	1	0	0
Pennwood Middle School Renovations		Approved	1	0	1	1	250	250	0	0	1	0
Miscellaneous Residential Development [d]		--	60	0	60	60	250	15,000	0	0	60	0
Miscellaneous Non-Residential Development [d]		--	70	0	70	70	250	17,500	0	0	70	0
TOTAL						485		121,250	37	59	345	172

[a] This project was reduced from 375,000 SF hospital with two 40,000 SF buildings to only a 180,000 SF health care village, but an updated EDU projection or connection rate was not provided. Therefore, the Projection Schedule has not been updated from the previous version of this table.

[b] Per 2016 Chapter 94, 6 EDU's were connected in 2016, with 8 proposed for Year 2017.

[c] Per 2016 Chapter 94, 8 EDU's were connected in 2016,.

[d] Added per Township Engineer's letter dated 3/28/17.

[e] Per Developer Engineer letter dated 6/6/17 to the Township, revising the name to Dogwood Drive, and changing the status from "complete" (this was an error from a previous Chapter 94 submission) to "proposed". This letter also requests the total project EDU's be changed to 14. However, this request must come from the Township.

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Newtown Township												
Delancy Court	1-09935-156-E-rev	Under Construction	122	78	44	44	250	11,000	35	25	0	0
Villas	1-09935-160-E	Under Construction	177	173	4	4	250	1,000	22	28	0	0
Brubezon / 14 Eldridge		Approved	2	0	2	2	250	500	0	2	0	0
Smolcynski/ 135 Swamp	1-09935-158-E	Completed	1	1	0	0	250	0	1	0	0	0
Johnson Kendall Johnson	1-09935-169-E	Approved	1	0	1	1	250	250	0	0	1	0
Twining (Sullivan)/ 178 Durham	1-09935-152-E	Completed	1	1	0	0	250	0	1	0	0	0
Univest Bank		Completed	10	1	0	0	250	0	2	8	0	0
Walsh/ 385 Stoopville	1-09935-185-3J	Pending	1	0	1	1	250	250	1	0	0	0
Beneficial Bank	1-09935-179-X	Completed	10	1	0	0	250	0	2	8	0	0
Lithos 10 Friends Ln.	1-09935-174-E	Pending	11	0	11	11	250	2,750	0	11	0	0
Platt/ 761 Newtown Yardley	1-09935-189-3J	Pending	56	0	56	56	250	14,000	56	0	0	0
Melsky Tract/ Stoopville		Completed	45	45	0	0	250	0	15	30	0	0
Silver Lake Exec Campus		Pending	45	0	45	45	250	11,250	0	45	0	0
Cricklewood (CAU)		Proposed	45	0	45	45	250	11,250	0	0	45	0
Brookshire Estates	1-09935-155-3J	Pending	1	0	1	1	250	250	1	0	0	0
Deluca/ 192 Durham		Completed	1	1	0	0	250	0	1	0	0	0
Luis Flores/ 595 Linton Hill		Pending	2	0	2	2	250	500	2	0	0	0
Promenade	1-09935-184-3J	Proposed	35	0	35	35	250	8,750	18	17	0	0
Margiotti & Kroll (fmr. DeLorenzo Tomato Pie)	1-09935-186-X	Under Construction	10	3	7	7	250	1,750	0	10	0	0
Qdoba Restaurant/ 250 S Eagle		Proposed	10	0	10	10	250	2,500	10	0	0	0
Wong/ 94 Richboro Rd		Completed	10	1	0	0	250	0	10	0	0	0
Stonehaven Homes/ 162 Durham		Proposed	1	0	1	1	250	250	1	0	0	0
Pickering Manor		Proposed	35	0	35	35	250	8,750	10	10	15	0
Chandler Hall/ 99 Barclay St	1-09935-188-3J	Proposed	7	0	7	7	250	1,750	0	7	0	0
JHM		Proposed	125	0	125	125	250	31,250	0	75	50	0
Wynmere Hunt/ Buck Rd		Proposed	75	0	75	75	250	18,750	0	35	40	0
Stockland Inc/ 4-6 Sycamore		Proposed	10	0	10	10	250	2,500	0	10	0	0
BCC College/ Swamp Rd		Proposed	26	0	26	26	250	6,500	0	26	0	0
Optimal Sports/ 826 Newtown-Yardley Rd	1-09935-190-3J	Completed	6	6	0	0	250	0	6	0	0	0
Meelio's - 15 Swamp Rd. (formerly Rvzner (Dilks)		Under Construction	12	6	6	6	250	1,500	12	0	0	0
Newtown Race/ Pheasant Rd		Proposed	25	0	25	25	250	6,250	0	25	0	0
C. Rock/Middle School	1-09935-180-X	Proposed	10	0	10	10	250	2,500	0	0	5	5
Mill Race Office Campus (1051 Lindenhurst Rd)	1-09935-134-X	Proposed	5	0	5	5	250	1,250	5	0	0	0
Business Commons	[a]	Potential	105	0	105	8	250	2,000	8	0	0	0
Newtown Shopping Center	[a]	Potential	105	0	105	7	250	1,750	7	0	0	0
Village @ Newtown E&W	[a]	Potential	105	0	105	7	250	1,750	7	0	0	0
Village @ Newtown South	[a]	Potential	105	0	105	7	250	1,750	7	0	0	0
Corners @ Newtown	[a]	Potential	140	0	140	7	250	1,750	7	0	0	0
Newtown Depot	[a]	Potential	105	0	105	7	250	1,750	7	0	0	0
Newtown Plaza	[a]	Potential	105	0	105	7	250	1,750	7	0	0	0
Misc. Non-Residential		Potential	438	0	438	159	250	39,750	0	54	105	0
Misc. Residential		Potential	351	0	351	52	250	13,000	0	16	36	0
Phila. Archdiocese (291 Durham Rd, TPN 29-3-20)		Completed	1	1	0	0	250	0	1	0	0	0
Brixmor at Village @ Newtown SC	[b]	Proposed	95	0	95	95	250	23,750	0	95	0	0
Villas at Newtown (TPN 29-10-76)		Proposed	6	6	0	6	250	1,500	0	6	0	0
Laughlin Property (TPN 29-007-001 & -002)		Proposed	9	0	9	9	250	2,250	0	9	0	0
Fresenius Dialysis (105 Terry Drive)		Proposed	16	0	16	16	250	4,000	0	16	0	0
Acqua e Farina	[b]	Proposed	1	0	1	1	250	250	0	1	0	0
TOTAL						977		244,250	262	569	297	5

[a] Per Township's letter dated 4-27-15, they were instructed to eliminate these categories and instead move them to a miscellaneous non-residential category. Therefore, Year 2014 projections were left in place, but projections beyond 2014 were based on the miscellaneous category.

[b] Per Township's letter dated 5-12-17, these projects are to utilize Year 2015 Miscellaneous Non-Residential EDU's (originally 138 EDU's in that category, now 54 EDU's).

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Lower Southampton Township												
Clabbers		Proposed	3	0	3	3	250	750	0	3	0	0
Dorothy Dessalet (Woodside Ave & Spring Ave)		Proposed	3	0	3	3	250	750	0	3	0	0
Tulip Lane		Approved	1	0	1	1	250	250	1	0	0	0
Eastern Dawn Mobile Home Park Expansion	[a]	Proposed	52	0	52	52	250	13,000	0	0	52	0
New Tawanka Elementary School		Proposed	24.72	0	24.72	24.72	250	6,180	0	24.72	0	0
Misc. Growth		Potential	5/year	0	5/year	15	250	3,750	0	5	5	5
TOTAL						98.72		24,680	1	36	57	5

[a] To comply with DEP comment #5 on 4/25/17 email, all Year 2015 EDU's were moved to Year 2016, since this was added to the CMP after 2015 EDU's were already released.

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Northampton Township												
Keith Boyd Subdivision	Exemption Granted	Under Construction	4	2	2	2	250	500	3	0	0	0
Spaeth Subdivision		Under Construction	3	1	2	2	250	500	2	0	0	0
Sewer District 3 - Residential, Phase I (Harvest Ac)	EHB 2008-184L	Approved	41	18	23	8	250	2,000	2	2	2	2
Sewer District 3 - Residential, Phase II (Traymore Manor, Grenoble Manor Area)	EHB 2008-184L	Approved	254	100	154	48	250	12,000	12	12	12	12
Sewer District 3 - Non-Residential	EHB 2008-184L	Approved	254	129	125	125	250	31,250	125	0	0	0
Juliette's Garden		Approved	6	0	6	6	250	1,500	6	0	0	0
Holland Estates	Exemption Granted	Approved	7	2	5	5	250	1,250	5	0	0	0
Schultz Subdivision	Exemption Granted	Approved	3	1	2	2	250	500	3	0	0	0
Leehurst Development (Toll Bros)	1-09937-390-3J	Proposed	40	0	40	40	250	10,000	40	0	0	0
Norton Subdivision (2 lots)	1-09937-384-2	Completed	2	2	0	0	250	0	1	0	0	0
Sewer District 3 - Non-Residential (Future Growth)	EHB 2008-184L	Proposed	54	2	52	40	250	10,000	10	10	10	10
Davis Property		Proposed	65	10	55	55	250	13,750	55	0	0	0
Sewer District 3 - 65 Richard Road	1-09937-393-X	Proposed	2	0	2	2	250	500	2	0	0	0
295 Buck Road	1-09937-392-X	Proposed	3	1	2	2	250	500	2	0	0	0
216 Bustleton Pike		Proposed	1	0	1	1	250	250	1	0	0	0
Keith Boyd Minor Subdivision - Sunset Dr		Completed	1	1	0	0	250	0	1	0	0	0
Proposed Development (31.893 acres)		Proposed	10	0	10	10	250	2,500	10	0	0	0
Proposed Development (12 acres)		Proposed	10	0	10	10	250	2,500	10	0	0	0
Proposed Development (47.38 acres)		Proposed	10	0	10	10	250	2,500	10	0	0	0
Proposed Development (6.7 acres)		Proposed	5	0	5	5	250	1,250	5	0	0	0
Council Rock School District		Proposed	75	0	75	75	250	18,750	75	0	0	0
Miscellaneous Growth per NBCMA's 2011 Chap 94	[a]	Proposed	Unknown	4	Unknown	71	250	17,750	0	6	35	30
340 Rocksville Road	1-09937-394-X	Approved	1	0	1	1	250	250	1	0	0	0
10 Cameron Drive		Completed	1	1	0	0	250	0	1	0	0	0
Bustleton Pike - Snyder		Completed	1	1	0	0	250	0	1	0	0	0
Rocksville Road (JM Contracting)		Completed	1	1	0	0	250	0	1	0	0	0
Chapel Woods Assoc. (582 Beverly Rd)		Proposed	1	0	1	1	250	250	1	0	0	0
656 East Holland Rd		Proposed	15	0	15	15	250	3,750	15	0	0	0
Kampus Klothes		Completed	1	1	0	0	250	0	1	0	0	0
295 Buck Road (Unit 4)		Completed	5	5	0	0	250	0	4	0	0	0
Crossroads Plaza (TPN 31-15-23-4)		Proposed	5	0	5	3	250	750	0	0	1	2
Municipal Expansion		Proposed	4	0	4	4	250	1,000	0	0	4	0
Richboro Plaza (TPN 31-5-103)		Proposed	5	0	5	3	250	750	0	0	1	2
Wawa - Richboro		Proposed	2	0	2	2	250	500	0	0	2	0
727 Hatboro Road (TPN 31-5-82-1		Proposed	1	0	1	1	250	250	0	1	0	0
Industrial Redevelopment (TPN 31-1-4)		Proposed	36	0	36	36	250	9,000	0	0	36	0
Wright Property (TPN 31-10-25-1)		Proposed	40	0	40	40	250	10,000	0	0	20	20
Sibley Property (TPN 31-1-7-2)		Proposed	2	0	2	2	250	500	0	0	2	0
Catalano/Pinnacle aka Russell Prop (TPN 31-10-75)		Proposed	8	0	8	8	250	2,000	0	0	8	0
Jake's Eatery (TPN 31-15-145)		Completed	4	4	0	0	250	0	0	4	0	0
875 Buck Road (TPN 31-54-1)		Completed	1	1	0	0	250	0	0	1	0	0
1671 Bridgetown Pike (TPN 31-39-7-1)		Approved	1	0	1	1	250	250	0	1	0	0
Holland Middle School Expansion (TPN 31-35 5)		Under Construction	63.5 *	0	13.5	13.5	250	3,375	0	0	63.5	0
Misc. Change in Use		Potential	150	0	150	30	250	7,500	0	10	10	10
Russell Tract (TPN 31-5-45)	[a]	Pending	5	0	5	5	250	1,250	4	1	0	0
McKenna - 793 Hatboro Road (TPN 31-5-82)		Pending	2	0	2	2	250	500	0	2	0	0
Deluca Subdivision (TPN 31-5-40)		Pending	1	0	1	1	250	250	0	1	0	0
Montague Subdivision (TPN 31-15-20)		Pending	1	0	1	1	250	250	0	1	0	0
Civic Center Restroom		Proposed	1	0	1	1	250	250	1	0	0	0
Glasgow Road (TPN 31-13-3 & -8)		Proposed	3	0	3	3	250	750	3	0	0	0
Northampton Twp Police Station (111 Township Rd)		Proposed	3	0	3	3	250	750	3	0	0	0
444 St. Leonards Rd LLC (TPN 31-23-45)		Proposed	9	0	9	9	250	2,250	9	0	0	0
TOTAL						704.5		176,125	425	52	207	88

* The total EDU's (63.5) include existing sewer flows.

[a] As requested in NBCMA's email dated 6/2/17, reallocating four (4) Year 2014 miscellaneous EDU's and one (1) Year 2015 miscellaneous EDU to the Russell Tract. The Russell Tract's five (5) Year 2016 EDU's are moved to the miscellaneous category.

= This project has either been partially or fully connected.

Connection Management Plan

Updated on 6-19-17 (supersedes 6/8/17 version)

Neshaminy Interceptor Service Area Tributary to Totem Road Pump Station

	PLANNING STATUS		CONNECTION STATUS						NICMP APPROVED EDU'S			
Development Name	DEP Code No.	Construction Status per Municipality	EDU's Planned or Approved	EDU's Connected To Date	EDU's Needed	EDU's Projected (2014-2017)	GPD/EDU (used to calc Projected Flow)	Projected Avg. Flow (GPD)	2014	2015	2016	2017
Middletown Township												
Durham Ridge	1-09003-297-3IJ	Completed	20	20	0	0	250	0	2	2	0	0
Hovsanian (Matrix Townhouses)	1-09003-355-E	Under Construction	160	146	14	14	250	3,500	20	40	40	40
SMMC (aka St Mary's Medical Center)		Completed	1	1	0	0	250	0	1	0	0	0
Saint Mary Health and Awareness		Proposed	78	0	78	78	250	19,500	0	0	39	39
Pereira/PECO Tract [g]	1-09003-342-E	Proposed	20	0	20	20	250	5,000	0	10	10	0
George School	1-09003-365-X	Completed	2	2	0	0	250	0	2	0	0	0
Matrix Orchards (formerly Glen Willow Prop)	1-09003-323-3J	Proposed	116	0	116	87	250	21,750	0	29	29	29
Woods Services Campus Addition	1-09003-366-X	Completed	5	5	0	0	250	0	5	0	0	0
K&S Greenday		Completed	1	1	0	0	250	0	0	1	0	0
Community Baptist Church	1-09003-338-3J	Approved	6	0	6	6	250	1,500	0	0	3	3
Walmart & Sam's Club [d]		Proposed	8	0	8	8	250	2,000	0	0	8	0
Herling Homes (Willow Ave)		Completed	1	1	0	0	250	0	1	0	0	0
Clamoffer Subdivision (per 2005 Approval)		Completed	1	1	0	0	250	0	1	0	0	0
Matrix Apartments - Big Oak Road [g]		Proposed	150	0	150	150	250	37,500	0	50	50	50
Stone Farm		Proposed	150	0	125	50	250	12,500	0	0	25	25
Country Builders (Adams Ave)		Completed	2	2	0	0	250	0	2	0	0	0
Country Builders (Cedar Ave)		Completed	1	1	0	0	250	0	1	0	0	0
McGrath-Arbutus Ave		Completed	2	2	0	0	250	0	2	0	0	0
Woods Services Cedarwood Addition		Completed	1	1	0	0	250	0	1	0	0	0
Bridgetown Mill House (only 5 EDU's proposed)		Proposed	40	0	40	40	250	10,000	0	0	40	0
Oxford Valley Mall - Restaurant Additions		Proposed	45	0	45	25	250	6,250	0	0	0	25
Shoppes at Flowers Mill		Proposed	20	0	20	20	250	5,000	0	20	0	0
Stellato Property (Sumac St.)	1-09003-368-X	Under Construction	1	0	1	1	250	250	1	0	0	0
570 Rosewood Ave Subdivision (TPN 22-12-592)		Approved	1	0	1	1	250	250	0	0	1	0
Glenside Ave Property, Lot 5&6 (TPN 22-36-114)		Approved	1	0	1	1	250	250	0	0	1	0
120 Middletown Blvd./Restaurant (TPN 22-57-20-6)	[e]	Proposed	34	0	34	34	250	8,500	0	0	34	0
Stone Haven S/D (2651 Langhorne Yardley Rd)	[c]	Proposed	12	0	12	12	250	3,000	0	0	12	0
468 Hulmeville Rd (TPN 22-17-52-1&2)		Proposed	2	0	2	2	250	500	0	2	0	0
468 Hulmeville Rd (TPN 22-17-51-1)		Proposed	1	0	1	2	250	500	0	1	1	0
629 Hulmeville Rd (TPN 22-17-77)	1-09003-372-3J	Proposed	2	0	2	2	250	500	0	2	0	0
1597 Fulling Mill Road (TPN 22-5-13)		Under Construction	3	2	1	3	250	750	0	2	1	0
962 Old Lincoln Hwy (TPN 22-13-305)		Proposed	1	0	1	1	250	250	0	1	0	0
Barner Subdiv. - 364 Cedar Ave (TPN 22-13-164-21)		Proposed	1	0	1	1	250	250	0	1	0	0
1006 W. Lincoln Highway (TPN 22-19-56-17)		Proposed	1	0	1	1	250	250	0	0	1	0
139 Elmwood (TPN 22-8-150)		Proposed	1	0	1	1	250	250	0	0	1	0
Huberfeld/N. Woodbourne Rd (TPN 22-31-13)		Proposed	1	0	1	1	250	250	0	0	1	0
Today Inc. (TPN 22-31-15)		Proposed	12	0	12	3	250	750	0	0	3	0
1755 Fulling Mill Road (TPN 22-5-15-1)		Proposed	2	0	2	2	250	500	0	0	2	0
1420 Super Highway (TPN 22-16-18)		Potential	15	1	14	0	250	0	None projected before Year 2018			
729 Highland Ave. (TPN 22-20-41-57 & 58)		Proposed	3	0	3	2	250	500	0	0	0	2
Chipotle Mexican Grill (2339 Lincoln Hwy)	[a]	Proposed	7	0	5	7	250	1,750	0	7	0	0
226 Rosemary Ave (TPN 22-13-156-1)		Proposed	1	0	1	1	250	250	0	0	1	0
Ash Ave. (TPN 22-9-119-5)		Proposed	1	0	1	1	250	250	0	0	1	0
Eastern Warehouse Distributers, 1050 Wheeler Way (TPN 22-21-66-2)		Proposed	1.12	0	1.12	1.12	250	280	0	0	1.12	0
Eastern Warehouse Distributors, 355 South Flowers Mill Road		Proposed	5	0	5	5	250	1,250	0	0	5	0
376 Pennecrest Drive (TPN 22-25-29)	[b]	Proposed	1	0	1	1	250	250	0	0	1	0
1021 W. Maple Ave. (TPN 22-22-190)	[b]	Proposed	2	0	2	2	250	500	0	0	2	0
131 N. Hawthorne Ave (TPN 22-13-80)	[b]	Proposed	1	0	1	1	250	250	0	0	1	0
452 Bellevue Ave (existing gas station)	[b]	Proposed	1	0	1	1	250	250	0	0	1	0
570 Rosewood Ave (subdivision)	[b]	Proposed	1	0	1	1	250	250	0	0	1	0
Marketplace at Oxford Valley	[b]	Proposed	5	0	5	5	250	1,250	0	0	5	0
Miscellaneous EDUs	[f]	Potential	10	0	10	10	250	2,500	0	0	0	10
TOTAL						604.12		151,030	39	168	321	223

[a] Address of restaurant changed from 2424 E. Lincoln Hwy to 2339 Lincoln Hwy.

[b] These projects were requested per Twp. letters dated 3/17/17, 5/9/17, 5/17/17, & 6/2/17, but because reallocations are not permitted, these EDU's are shown in Year 2016.

[c] Stone Haven reverts to its prior position on the 2/13/17 NICMP, with 12 EDU's in Year 2016.

[d] This project previously was known as just Sam's Club, but Walmart is being added to it. Also, it previously had 4 EDU's in Year 2016, but it now needs 8 EDU's (so 4 added to total in 2016).

[e] This project previously had 30 EDU's for Year 2016. It now requires 34 EDU's (so 4 EDU's were added to the total in Year 2016)

[f] Per DEP's suggestion, a miscellaneous category has been added to the NICMP for Year 2017.

[g] Matrix Apartments and Periera/PECO Tract are reverted back to their positions in the 2/13/17 NICMP.

* Most and Loonhauser Subdivisions were removed form the NICMP, as they are no longer proposed.

= This project has either been partially or fully connected

Connection Management Plan												
Updated on 6-19-17 (supersedes 6/8/17 version)												
Neshaminy Interceptor Service Area Tributary to Totem Road Pump Station												
	PLANNING STATUS		CONNECTION STATUS						NICMP APPROVED EDU'S			
Development Name	DEP Code No.	Construction Status per Municipality	EDU's Planned or Approved	EDU's Connected To Date	EDU's Needed	EDU's Projected (2014-2017)	GPD/EDU (used to calc Projected Flow)	Projected Avg. Flow (GPD)	2014	2015	2016	2017
Penndel Borough												
Schoolhouse Court	1-09938-014-3J	Approved	12	0	12	12	250	3,000	12	0	0	0
Apt Rental Office (Village at Mill Creek)		Pending	1	0	1	1	250	250	0	0	1	0
Fairview Ave Subdivision	1-09938-018-E	Completed	2	2	0	0	250	0	0	0	0	0
Robbins Ave Apartments		Approved	12	0	12	12	250	3,000	12	0	0	0
WAWA/CVS	[a]	Proposed	11	0	11	11	250	2,750	0	11	0	0
200 W. Lincoln Highway	[b]	Proposed	4	0	4	4	250	1,000	0	0	4	0
Miscellaneous Residential Development	[c]	--	42	0	42	42	250	10,500	0	0	42	0
Miscellaneous Non-Residential Development	[c]	--	48	0	48	48	250	12,000	0	0	48	0
TOTAL						130		32,500	24	11	96	0

[a] 2016 Chapter 94 says this project connected in 2016, but stayed within the property's allotted EDU, so no new EDU's were connected.
[b] Ebert Engineering letter dated 3/28/17 requested this project be added to the Year 2016 column. The project requires 4 EDU's, but a credit of 1 existing EDU for the lot is applied.
[c] Added per Ebert Engineering letter dated 3/28/17.
* This project has either been partially or fully connected.

Connection Management Plan												
Updated on 6-19-17 (supersedes 6/8/17 version)												
Neshaminy Interceptor Service Area Tributary to Totem Road Pump Station												
	PLANNING STATUS		CONNECTION STATUS						NICMP APPROVED EDU'S			
Development Name	DEP Code No.	Construction Status per Municipality	EDU's Planned or Approved	EDU's Connected To Date	EDU's Needed	EDU's Projected (2014-2017)	GPD/EDU (used to calc Projected Flow)	Projected Avg. Flow (GPD)	2014	2015	2016	2017
Falls Township												
Viking Assoc. Townhouses [a]	1-09002-224-3J	Under Construction	40	0	40	40	250	10,000	40	0	0	0
166-168 Lincoln Highway		Proposed	50	0	50	35	250	8,750	0	10	10	15
640 Lincoln Highway		Proposed	8	0	8	8	250	2,000	0	8	0	0
550 W. Trenton Avenue		Proposed	12.4	0	12.4	12.4	250	3,100	0	0	12.4	0
212 Lincoln Highway		Proposed	1	0	1	1	250	250	0	1	0	0
482 West Trenton Avenue		Proposed	1	0	1	1	250	250	0	0	1	0
115 Lincoln Highway/Car Wash (TPN 13-4-555.608.509,612.616&617)		Proposed	2	0	2	2	250	500	0	0	2	0
38 E. Cabot Blvd. [b]		Proposed	19	3	19	19	250	4,750	0	0	19	0
440 Lincoln Hwy (day care)		Proposed	2	0	2	2	250	500	0	0	2	0
139 Trenton Road (day care)		Under Review	5	0	5	5	250	1,250	0	0	5	0
188 Lincoln Highway [a]		Proposed	2	0	2	2	250	500	0	0	2	0
312 N. Oxford Valley Road [a]		Proposed	5	0	5	5	250	1,250	0	0	5	0
Miscellaneous Residential Redevelopment [a]		--	20	0	20	20	250	5,000	0	0	20	0
Miscellaneous Non-Residential Redevelopment [a]		--	30	0	30	30	250	7,500	0	0	30	0
TOTAL						182.4		45,600	40	19	108.4	15

[a] Added per Township Engineer letter dated 3/28/17.

[b] Modified per Township Engineer letter (specifically the table they provided) dated 3/28/17.

= This project has either been partially or fully connected.

Connection Management Plan												
Updated on 6-19-17 (supersedes 6/8/17 version)												
Neshaminy Interceptor Service Area Tributary to Totem Road Pump Station												
	PLANNING STATUS		CONNECTION STATUS						NICMP APPROVED EDU'S			
Development Name	DEP Code No.	Construction Status per Municipality	EDU's Planned or Approved	EDU's Connected To Date	EDU's Needed	EDU's Projected (2014-2017)	GPD/EDU (used to calc Projected Flow)	Projected Avg. Flow (GPD)	2014	2015	2016	2017
Bristol Township												
Med-Flex Facility (Frost & Ford Rds)	[a]	Proposed	11	0	11	11	250	2,600	85	0	0	0
2917 Veteran's Hwy (Tire City)		Complete	2	2	0	0	250	0	2	0	0	0
McDonalds (Ford Rd & Veteran's Hwy)	1-09001-243-3J	Complete	9	9	0	0	250	0	9	0	0	0
3113 Veteran's Hwy		Approved	75	0	75	75	250	18,750	75	0	0	0
3011 Veteran's Hwy		Approved	83	0	83	83	250	20,750	83	0	0	0
1111 Veteran's Hwy		Proposed	7	0	7	7	250	1,750	0	7	0	0
1159 Veteran's Hwy (Dunkin Donuts)		Proposed	4	0	4	4	250	1,000	0	4	0	0
2520 & 2526 Durham Rd (AAMCO)		Proposed	10	0	10	10	250	2,500	0	10	0	0
Community Collene Pad Site (for bank)		Proposed	3	0	3	3	250	750	0	3	0	0
Ford Rd and Veteran's Hwy (former Getty Station)		Proposed	9	0	9	9	250	2,250	0	9	0	0
Deon Square (518 S. Oxford Valley Rd)		Complete	5	5	0	0	250	0	0	5	0	0
2405 New Falls Road		Complete	1	1	0	0	250	0	0	1	0	0
Avenue B (TPN 5-16-62)	1-09001-265-X	Waived	1	0	1	1	250	250	0	0	1	0
TOTAL						203		50,600	254	39	1	0

[a] Twp. Engineer's letter dated 3/7/16 revised the proposed flow for Med-Flex from 25,425 gpd to just 2,600 gpd (11 EDU's).
= This project has either been partially or fully connected.

Connection Management Plan												
Updated on 6-19-17 (supersedes 6/8/17 version)												
Neshaminy Interceptor Service Area Tributary to Totem Road Pump Station												
	PLANNING STATUS		CONNECTION STATUS						NICMP APPROVED EDU'S			
Development Name	DEP Code No.	Construction Status per Municipality	EDU's Planned or Approved	EDU's Connected To Date	EDU's Needed	EDU's Projected (2014-2017)	GPD/EDU (used to calc Projected Flow)	Projected Avg. Flow (GPD)	2014	2015	2016	2017
Newtown Borough												
Steepleview		Pending	170	38	132	132	250	33,000	200	0	0	0
Stockland Trust		Pending	50	0	50	50	250	12,500	0	20	20	10
Miscellaneous		Pending	25	0	25	56	250	14,000	19	15	12	10
111 S. State Street	[a]	Proposed	1	0	1	1	251	251	1	0	0	0
TOTAL						239		59,500	220	35	32	20

[a] RV&B email dated 2/8/17 stated NBCJMA has reserved 1 EDU for this project. This 1 EDU was taken from Year 2014 Miscellaneous Category.

= This project has either been partially or fully connected (per 2016 Chapter 94, Phase 1 connected 20 EDU's, 2 were existing)

EXHIBIT D
LOWER MAKEFIELD TOWNSHIP
FLOW LIMITATIONS (PWD)

The following flow limitations are based on the five (5) year average that includes 2012 through 2016. Flows noted below shall be adjusted based upon connections made during the five (5) year period.

I.	Five-year Average Flow (2012-2016)	734,000 gpd
II.	Maximum Daily Flow	1,027,600 gpd
III.	Instantaneous Peak Flow	1,468,000 gpd

It should be noted that the Peak Instantaneous Flow at the connection points with Lower Makefield Township will be based on peak hourly flow.

EXHIBIT E
LOWER MAKEFIELD TOWNSHIP
FLOW LIMITATIONS (DEP)

The following flow limitations are based on the five (5) year average that includes 2012 through 2016. Flows noted below shall be adjusted based upon projections and connections made during the period five (5) year metering period.

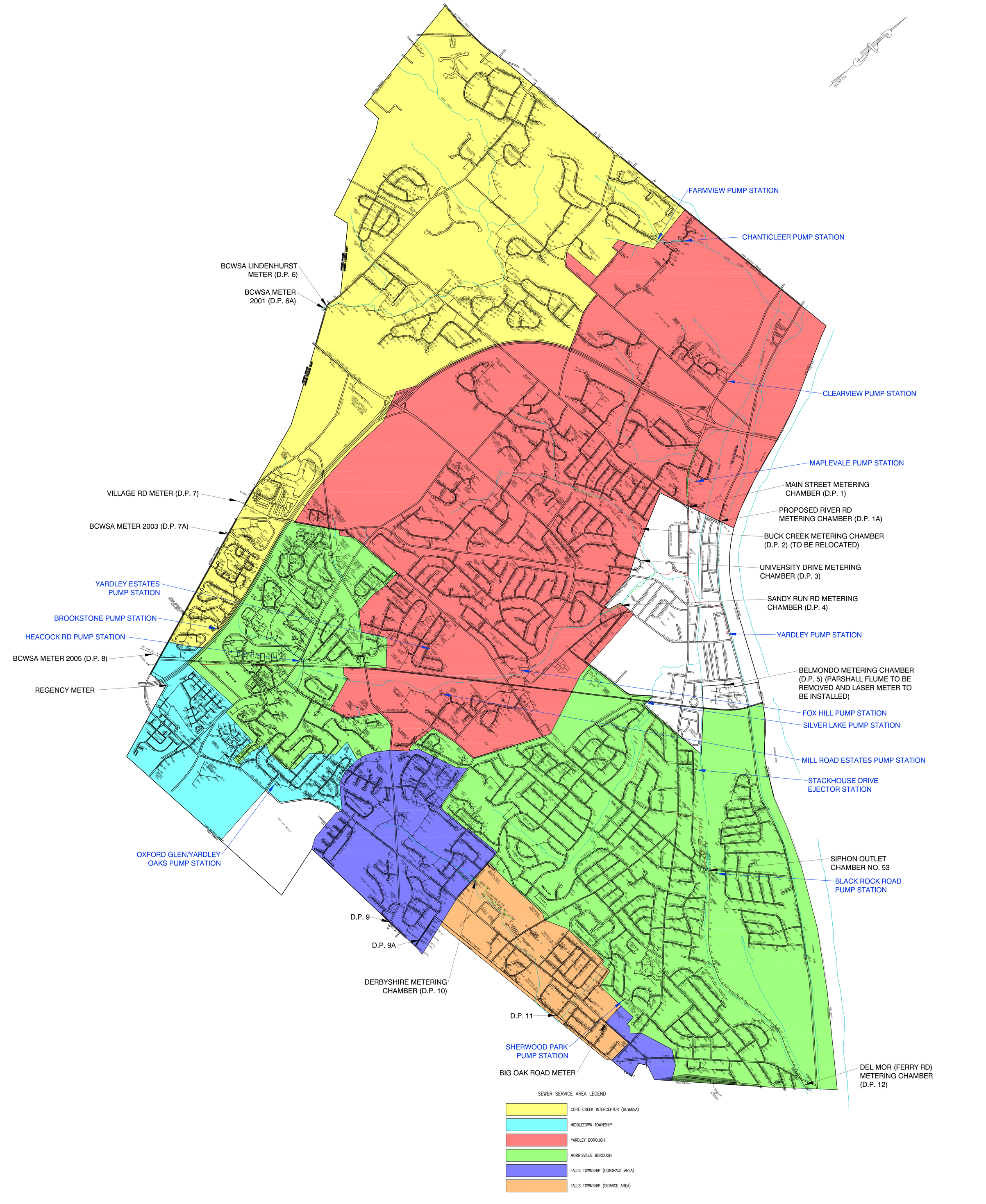
I.	(2012 - 2016) Average Flow	734,000 gpd
II.	Instantenous Peak Flow	1,835,000 gpd

It should be noted that the Peak Instantaneous Flow at the connection points with Lower Makefield Township will be based on peak hourly flow.

EXHIBIT F
PENALTY CALCULATION
Neshaminy Interceptor
Sample Penalty Calculation for Customer Contributions to PWD Limit Exceedances

Column # ==>	A	B	C=A-B	D	E	F=D-E	o	H	I=C/Hx100	J	K=Ixl
	ABC Imp F IOAE			Totem Road Pump Station			Exceedance Surcharge Allocation				
Date	Max Daily Cmgd)	Limit (mgd)	Exceedance (mgdj	Totem Rd Flow Ogd)	Limit (mgd)	Exceedance (mgd)	Sum of All Customers' Max Dailx (mgd)	Sum of All Customers' Total Exceedance (mgd)	ABC Imp Share of Total Exceedance	RWD Surcharge	ABC Timp Share
5/18/2025	7.39	2.76	4.63	51.85	37.00	14.85	54.05	27.90	16.6%	6170,763.50	623,327.53
5/19/2025	3.82	2.76	1.06	40.59	37.00	3.59	33.27	7.23	14.6%	641,27350	66,043 52
6/16/2025	4.20	2.76	1.44	38.27	37.00	1.27	34.42	8.29	17.4%	614,61650	62,536 88
6/17/2025	6.80	2.76	4.04	45.28	37.00	8.23	50.24	24.06	16.3%	695,243 00	615,935.70
6/18/2025	4.01	2.76	1.25	40.71	37.00	3.71	39.16	13.03	9.6%	642,619 00	64,08389

APPENDIX B- OVERALL SANITARY SEWER MAP



0 1000 2000 3000

1"=1000'

GENERAL PLAN OF SANITARY SEWERS WITH SEWER SERVICE AREAS

FOR

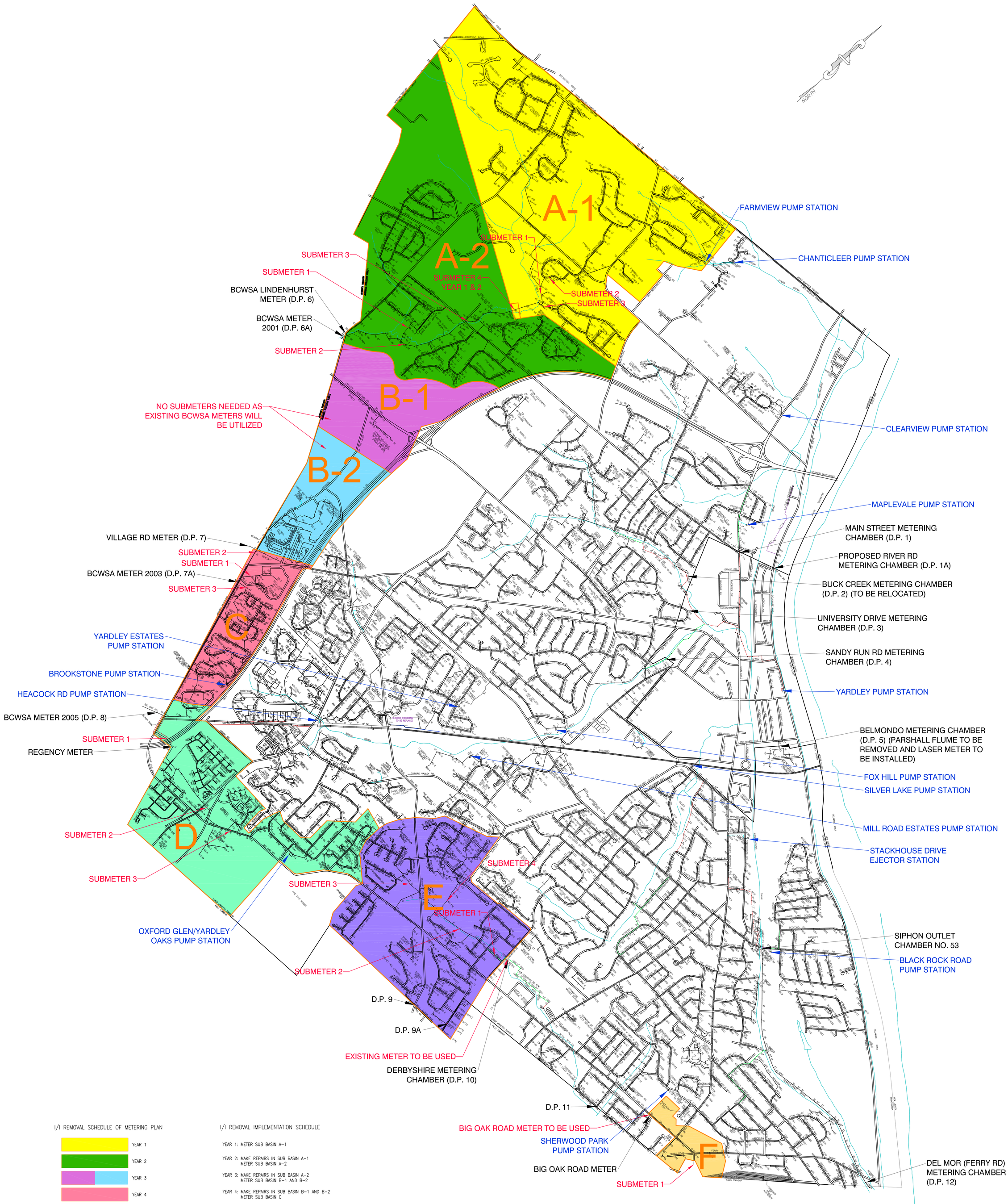
LOWER MAKEFIELD TOWNSHIP

Number	Description	Date
1	REVISION TO MORRISVILLE BOROUGH SERVICE AREA	08/31/18

Ebert Engineering, Inc.
Water and Wastewater Engineering
PO Box 540
4092 Skippack Pike, Suite 202
Skippack, PA 19474
Phone (610) 584 6701
Fax (610) 584 6704
E-mail febert@ebertengineering.com

Drawn By	Project Engr.	Checked By	Scale	Job No.	Date	Drawing No.
EMK	FEE	FEE	1"=1000'	068-001	05/16/16	1 OF 1

APPENDIX C- FLOW METER LOCATION EXHIBIT



I/I REMOVAL SCHEDULE OF METERING PLAN

- YEAR 1
- YEAR 2
- YEAR 3
- YEAR 4
- YEAR 5
- YEAR 6
- YEAR 7

I/I REMOVAL IMPLEMENTATION SCHEDULE

YEAR 1: METER SUB BASIN A-1

YEAR 2: MAKE REPAIRS IN SUB BASIN A-1
METER SUB BASIN A-2

YEAR 3: MAKE REPAIRS IN SUB BASIN A-2
METER SUB BASIN B-1 AND B-2

YEAR 4: MAKE REPAIRS IN SUB BASIN B-1 AND B-2
METER SUB BASIN C

YEAR 5: MAKE REPAIRS IN SUB BASIN C
METER SUB BASIN D

YEAR 6: MAKE REPAIRS IN SUB BASIN D
METER SUB BASIN E

YEAR 7: MAKE REPAIRS IN SUB BASIN E
METER SUB BASIN F

YEAR 8: MAKE REPAIRS IN SUB BASIN F

0 1000 2000 3000

1"=1000'

Number	Description	Date

FLOW METER LOCATION EXHIBIT

PREPARED FOR
LOWER MAKEFIELD TOWNSHIP
LOCATED IN
BUCKS COUNTY, PENNSYLVANIA

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Drawn By	Project Engr.	Checked By	Scale	Job No.	Date	Drawing No.
EMK	FEE	FEE	1"=1000'	068-001	05/16/16	1 OF 1