PRETREATMENT PROGRAM

ANNUAL REPORT

JANUARY 1, 2017 – DECEMBER 31, 2017

The Narragansett Bay Commission

FIELD'S POINT AND BUCKLIN POINT DISTRICTS

MARCH 15, 2018

The Narragansett Bay Commission
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Vincent J. Mesolella
Chairman

Raymond J. Marshall, P.E.
Executive Director

March 15, 2018

Dear Friends:

I am pleased to present the 2017 Narragansett Bay Commission (NBC) Pretreatment Program Annual Report for the period from January 1, 2017 through December 31, 2017. This annual report is a detailed summary of the many accomplishments associated with the NBC source reduction and control programs utilized in the two sewage districts.

The educational and regulatory source reduction and control programs of the NBC Pretreatment and Environmental Safety & Technical Assistance Sections, coupled with the monitoring, analytical and enforcement work done by the Environmental Monitoring & Data Analysis, Laboratory, and Legal Sections, have been instrumental at ensuring that toxics are not discharged into the NBC sewer system. The NBC is committed to protecting Rhode Island's greatest resource, Narragansett Bay.

Since the NBC acquired the Field's Point Wastewater Treatment Facility in 1981, the total metal loadings to the Field's Point facility have been reduced by 928,235 pounds, which equates to 97.3%. In addition, the cyanide loadings were reduced by 79,090 pounds, a 98.3% reduction from 1981 levels.

The NBC takes its responsibility to protect the receiving waters of Narragansett Bay very seriously. During 2017, the NBC issued 1,664 Notice of Violation letters and one Administrative Order against violators assessing $4,000 in administrative penalties for various violations of the NBC Rules and Regulations. Funds collected are deposited in the Environmental Enforcement Fund and used to further protect the environment.

The NBC continues to be a national leader in the field of wastewater treatment and environmental protection. The outstanding work done by the NBC staff members in environmental education, enforcement, monitoring and analysis will ensure a cleaner Narragansett Bay for all to enjoy. I trust you will find this report to be thoroughly detailed and informative.

Sincerely,

Raymond J. Marshall, P.E.
Executive Director

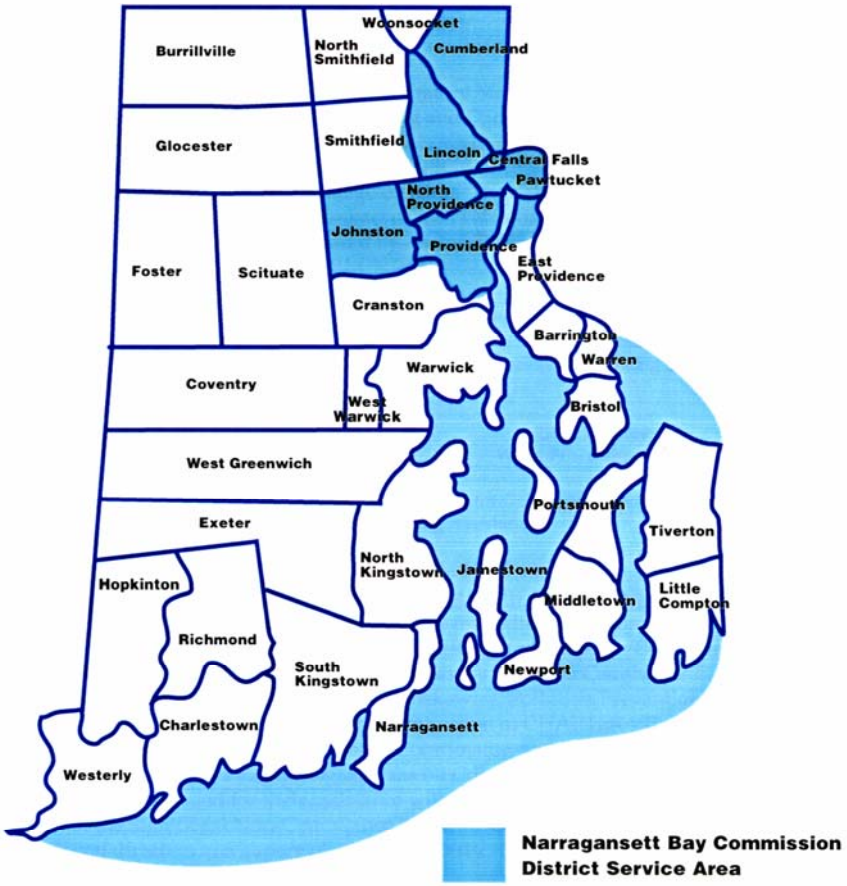
Narragansett Bay Commission
Mission Statement:

To maintain a leadership role in the protection and enhancement of water quality in Narragansett Bay and its tributaries by providing safe and reliable wastewater collection and treatment services to its customers at a reasonable cost.

Narragansett Bay Commission

Service Area

The Narragansett Bay Commission is Rhode Island's largest wastewater authority dedicated to providing reliable, cost-effective wastewater collection and treatment services to over 360,000 residents and 8,000 businesses in ten Rhode Island communities in the metropolitan Providence and Blackstone Valley areas. These communities include: Providence, North Providence, Johnston, Pawtucket, Central Falls, Cumberland, Lincoln, the northern portion of East Providence and small sections of Cranston and Smithfield.



ACKNOWLEDGMENTS

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I. EXECUTIVE SUMMARY

The Narragansett Bay Commission

The Narragansett Bay Commission (NBC) was created in 1980 by the R.I. General Assembly. Shortly thereafter voters approved an $87.7 million bond referendum to reduce the amount of pollutants the Field's Point Wastewater Treatment Facility in Providence was discharging into Narragansett Bay and its tributaries. At that time, nearly 45 million gallons of untreated sewage flowed into Rhode Island waterways daily, resulting in temporary and permanent closures of shellfishing beds in Upper Narragansett Bay, violating federal laws, and most importantly, threatening public health and the region's environmental and economic well-being.

The NBC owns and operates the state's two largest wastewater treatment facilities and provides quality wastewater collection and treatment services to about 360,000 people and 10,687 commercial and industrial customers located in Providence, North Providence, Johnston, Pawtucket, Central Falls, Cumberland, Lincoln, the northern portion of East Providence, and small sections of Cranston and Smithfield. The Pretreatment Program is charged with protecting these treatment facilities and Narragansett Bay from the discharge of toxic and nuisance pollutants.

Field's Point Wastewater Treatment Facility

In 1982 the NBC took over the operation of the Field's Point Wastewater Treatment Facility (FP). Prior to the NBC taking over the operation, FP was discharging untreated wastewater to the receiving waters of Rhode Island. At that time, the treatment plant was receiving approximately one million pounds of metals per year in the plant's influent.

Field's Point Wastewater Treatment Facility

Since the NBC took over the ownership and operation, the plant has been transformed into a highly sophisticated, award winning facility. As the largest secondary wastewater treatment facility in Rhode Island and the second largest in New England, the Field's Point Wastewater Treatment Facility provides preliminary and primary treatment for up to 200 million gallons per day (MGD) of wastewater, secondary treatment for up to 91 MGD and in 2017 had an average daily flow to the facility of 42.4 MGD.

The NBC installed three 1.5 megawatt (MW) industrial grade wind turbines at the Field's Point plant in 2012. Due to the success of these three wind turbines, the NBC purchased three additional wind turbines located in Coventry, Rhode Island. In 2017, 45.5% of electricity used by the NBC came from wind energy. In addition, the NBC has invested in other renewable energy sources such as use of biogas at Bucklin Point and solar energy. Additional information on the NBC energy projects can be found in CHAPTER VII.

Field's Point Wind Turbine and IFAS Tank

In addition to the wind turbine project, the NBC upgraded the Field's Point plant with Biological Nutrient Removal (BNR) technology to comply with Consent Agreement requirements to meet the nitrogen limitation of 5.0 ppm. This limit was incorporated in the RIPDES permit that became effective on December 1, 2017. The ten existing secondary treatment aeration tanks were converted to Integrated Fixed Film for Activated Sludge (IFAS) tanks, an advanced treatment technology and this project made Field's Point the largest IFAS treatment plant in the world. These tanks have five zones, both aerobic and anoxic, that wastewater travels through in order to remove nitrogen. Media is added to each IFAS tank to provide a substrate where a film of nitrifying bacteria can grow and be retained in the treatment tank. All of the tanks have been converted and nitrogen concentrations have decreased dramatically in the plant effluent. The seasonal 2017 nitrogen load to the Providence River decreased by 78% from 2003 loading levels, the year of the Greenwich Bay fish kill. The NBC was required to comply with the seasonal total nitrogen permit limit of 5.0 ppm beginning in May of 2014. Throughout the 2017 permit season, Field's Point met the total nitrogen permit limits of 5.0 ppm and 2,711 pounds per day, averaging a seasonal discharge concentration of 3.7 ppm and 1,361 pounds per day. The annual average total nitrogen discharged from Field's Point was 5.4 ppm and 2,020 pounds per day in 2017.

IFAS Media

Bucklin Point Wastewater Treatment Plant

In 1992, the R.I. General Assembly expanded the NBC mission by placing it in charge of the Bucklin Point Wastewater Treatment Facility in East Providence. This facility is designed to provide secondary treatment of 46 million gallons per day, and the average daily flow was 18.6 MGD in 2017. During 1999, supervisory management of this plant was privatized and United Water was the management contractor of the Bucklin Point plant through June 2015. In July 2015, the NBC resumed the supervisory management of Bucklin Point.

During 2006 the Bucklin Point plant completed a series of facility upgrades. A wet weather treatment facility was built that significantly reduced weather by-pass events by allowing the plant to process up to 116 MGD during wet weather. The facility upgrades included biological nitrogen removal treatment (BNR) and replaced chlorine disinfection by the use of ultraviolet light (UV). An enhanced BNR treatment system went on-line in 2014. The plant was upgraded to a four stage nitrification/denitrification process from a two stage process. Also, a building on site was converted to hold a carbon source for the BNR process. Bucklin Point was to comply with the seasonal total nitrogen limitation of 5.0 ppm beginning in May 2014. The 2017 seasonal nitrogen loading from this facility to Narragansett Bay was reduced by 78% from 2003 loading levels, the year of the Greenwich Bay fish kill.

Bucklin Point Wastewater Treatment

Throughout the 2017 permit season, Bucklin Point did well to meet the total nitrogen limits of 5.0 ppm and 1,293 pounds per day. There was a substantial disruption to the BNR process during July, when nitrification was temporarily lost, leading to exceedances of ammonia and total nitrogen permit limits. The disruption was attributed to anaerobic conditions caused by septicity in the pre-anoxic zone of the four-stage BNR system. Instrumentation was installed to prevent a recurrence. The average total nitrogen discharged from May through October was 4.60 ppm and 728 pounds per day. The annual average total nitrogen discharged from Bucklin Point was 4.7 ppm and 752 pounds per day in 2017.

Pretreatment Annual Report Overview

CHAPTER I of this report provides an overview of the NBC, its unique and innovative approaches to source reduction and control and provides a summary of each chapter of the annual report. Also contained in this chapter is a section regarding firms that have had their user classification changed during 2017, including a list of new significant industrial users and a section regarding firms that experienced major changes in water usage in 2017. A summary of the work done over the past year by the Pretreatment, Environmental Monitoring, and Enforcement Sections of the NBC is provided at the end of this chapter in TABLES 3, 4, 5, and 6, the Pretreatment Performance Summary Sheets for both districts.

CHAPTER II describes the administration of the NBC Pretreatment Program including the status of Pretreatment, Environmental Monitoring & Data Analysis (EMDA), Environmental, Safety & Technical Assistance (ESTA), Planning, and Laboratory staff, a summary of the budgets for these sections, staff training, the Pretreatment information management system and public information and education methods used by the NBC.

CHAPTER III details the industrial and commercial user base of the NBC and includes the NBC permit classification system, user inspections and emergency and special investigations. During 2017, Pretreatment staff issued 351 permits to users located in the Field's Point and Bucklin Point Districts, conducted 2,045 facility inspections, held 37 regulatory compliance meetings with users and responded to 17 emergency or special investigations.

CHAPTER IV details the compliance monitoring protocols and provides a review of all types of monitoring results including user self-monitoring, NBC monitoring of users, and surveillance manhole sampling results. During 2017, the NBC conducted 163 sampling inspections, performed 363 manhole sampling events, and reviewed 2,519 analytical reports of users located in the Field's Point and Bucklin Point Districts.

CHAPTER V of this report provides an analysis of the toxic pollutant loadings contained in the wastewater influent, effluent, and sludge for the Field's Point and Bucklin Point Wastewater Treatment Facilities. This analysis shows that the total metals loading to Field’s Point slightly increased during 2017 by 1,458.3 pounds, or 6.0% when compared to 2016. Similarly, the total metals loading to Bucklin Point very slightly increased by 136.2 pounds, or 1.2% when compared to 2016. The cyanide loading to Field’s Point increased by 218.1 pounds, or 19.3% in 2017, and the cyanide loading to Bucklin Point increased by 73.7 pounds or 26.1%. Loadings to both facilities were well within the Maximum Allowable Headworks Loadings (MAHL) established for each plant.

CHAPTER VI details the types of enforcement actions used by the NBC and reviews the enforcement actions initiated by the NBC over the past year. During 2017, the NBC issued 1,664 Notice of Violation letters. The NBC issues some type of enforcement action against 100% of the violators of the NBC Rules and Regulations.

CHAPTER VII of this report details projects and programs underway and those already completed by the Environmental Science & Compliance Division of the Narragansett Bay Commission.

CHAPTER VIII reviews the status of the goals established by the Pretreatment, EMDA, ESTA, Laboratory, and Planning Sections for 2017 and describes the ambitious goals established by these sections for 2018.

Unique Program Elements, Activities, Awards And Accomplishments

The NBC uses innovative and unique activities, projects, and programs to control and reduce the discharge of toxic and nuisance pollutants into the sewer system. The following is a short summary of these innovations and unique programmatic elements, along with a summary of NBC awards and accomplishments for the past year. Details about each of these innovations, accomplishments, and awards can be found within the chapters of this report.

User Education, Training and Outreach

- Workshops and public presentations regarding Pollution Prevention, Pretreatment, Storm Water Management, Sewer Connection, Water Quality, and Monitoring topics
- Periodic informational mailings to permitted users
- Press releases and public notices
- Development and distribution of fact sheets, Best Management Practice (BMP) documents, and case studies summary sheets
- NBC informational websites (http://www.narrabay.com and http://snapshot.narrabay.com)
- Phase III CSO Stakeholders Process
- Citizens Advisory Committee

Special Projects, Programs, and Studies

- Environmental Merit Award Programs, include:
  - ~ Pollution Prevention Award
  - ~ Perfect Compliance Award
  - ~ Storm Water Management Award
- Grease Control Program, which has greatly reduced sewage backups and overflows attributable to grease accumulations in sewer lines
- Silver and Mercury loading reduction and evaluation program
- River Water Quality Monitoring Program
- Residential Septage Hauler Discharge Control Permitting Program
- Wet Weather CSO Monitoring Program
- Regional Ocean Modeling Systems Hydrodynamic Model Development Project
- Evaluation of bacteria sources to receiving waters

- Fixed Site Monitoring Network Project to monitor Narragansett Bay water quality and provide on-line monitoring data to the public
- Computerization of Sewer System Mapping
- Woon River Environmental Education Program
- River Restoration Initiative
- Energy Management Program including alternative energy evaluations
- Sustainable Energy Management of Wastewater Treatment Facilities Program

Permitting

- Prompt and standardized user plan reviews through weekly internal plan review meetings
- Permitting of all users with process wastewater discharges to the sewer system
- Unique and equitable rate structure with varying rates dependent upon hydraulic/pollutant loadings, which covers the cost to operate the Pretreatment Program
- Permitting of facilities recycling and/or disposing process wastewater off site as they have the potential to discharge to the sewer system via sanitary connections
- Aggressive program of permitting all users that greatly exceeds EPA permitting requirements
- Sewer connection permitting referral program with cities and towns

NBC Monitoring Program

- Aggressive program of sampling permitted users
- NBC internal goal to sample every Significant Industrial User (SIU) twice per twelve month period, exceeding EPA requirements
- Clean sampling programs utilized by the EMDA Section
- Extensive use and documentation of all standard operating procedures to ensure quality assurance and quality control that greatly exceeds EPA requirements
- Extensive receiving water and POTW sampling programs
- Sanitary and industrial surveillance manhole monitoring conducted weekly to monitor compliance and loadings to the treatment facilities
- Septage monitoring program to scan for toxic, industrial and non-residential quality waste

NBC Inspection Program

- NBC internal goal to inspect every SIU at least twice per twelve month period, exceeding EPA requirements
- Development and use of SIU annual inspection form ensures thorough and standardized inspections of each SIU
- Zero discharge firms are inspected at least twice per year to ensure compliance with permit requirements
- Extensive inspections of non-significant industrial and commercial users performed annually

- Monthly inspections of industrial areas/mill complexes are conducted to ensure all sources of non-sanitary wastewater are permitted in accordance with the NBC Rules and Regulations
- Intensive restaurant inspection program to verify grease trap maintenance
- All NBC inspections stress user education regarding EPA Significant Non-Compliance (SNC) criteria, NBC mission statement, and available compliance programs, in addition to addressing regulatory compliance issues. This has contributed to the decreased rates of SIU Significant Non-Compliance
- Response to 100% of reports regarding chemical spills, unusual influents, odors, etc.

User Self-Monitoring

- Permitted users are required to conduct regularly scheduled self-monitoring of their final effluent as well as batch discharges. The frequency of self-monitoring ranges from bi-annually to monthly and is dependent on the category and hydraulic loading from the facility
- Four consecutive weeks of resampling indicating full compliance is required for any effluent violation recorded. Benefits include: users are brought back into compliance quickly, SNC is reduced due to increased monitoring, reduced loadings to sewer, escalated enforcement due to additional evidence, etc.
- SIU permit required monitoring greatly exceeds that required by EPA regulations

Computerized Compliance and Data Tracking System

- Networked computer database consisting of all company, permit and compliance information which is available via desktop and tablet connections to all Pretreatment, ESTA, EMDA, and Enforcement staff
- Pretreatment system software has been upgraded to increase functionality and is expandable
- System automatically generates violation letters for any non-compliance event and tracks all user requirements
- System calculates SNC and enables flagging of any user approaching SNC, allowing staff to implement corrective actions

Pollution Prevention Program

- Free technical compliance assistance program
- On site consultations and pilot testing
- Routine referrals for pollution prevention assistance by regulatory staff in all Notices of Violation (NOV) and other user correspondence and communications
- Solicitations for pollution prevention assistance by ESTA staff directly to industries
- Extensive educational efforts
- Free water audits conducted of businesses, large residential buildings and industries

Staff Training

- NBC provides extensive training to its employees, including safety and procedural training
- Pretreatment, EMDA and ESTA staff receive 40-hour HAZWOPER and annual 8-hour HAZWOPER refresher training
- NBC has a tuition reimbursement program to assist employees to further their education and enhance their performance
- Intrasectional Training
- Interagency Training

Enforcement

- Some type of enforcement action issued against 100% of violators
- Cost of SNC Public Notice billed to firms published
- Use of innovative settlement agreements, which may include:
  - ~ Community based environmental projects
  - ~ Development of public service announcements
  - ~ Purchase of Pollution Prevention and Monitoring Equipment
  - ~ Use of Supplemental Environmental Projects
- Environmental Enforcement Fund - Penalties assessed are deposited into this NBC fund, from which special environmental projects and/or enforcement equipment and resources are funded. NBC received EPA Environmental Merit Award in 1995 and AMSA Public Service Award in 1995 and 2000 for this fund
- In-house legal staff available for quick enforcement response
- Work with state and federal criminal investigators regarding criminal pollution violations

2017 Accomplishments

~ ***Permitting:***

- 351 Permits issued
- 87 New permits issued to previously unpermitted firms
- 264 Revised permits issued

~ ***Inspections and Sampling:***

- 2,045 Non-sampling Inspections conducted
- 293 Non-sampling Inspections of SIUs
- 194 Non-sampling Inspections of Categorical Users
- 99 Non-sampling Inspections of Significant Non-Categorical Users
- 1, 752 Non-sampling Inspections of Non-Significant Users
- 37 Regulatory Compliance Meetings held with Users
- Pretreatment staff reviewed 2,519 User Monitoring Reports
- 17 Emergency/Special Investigations conducted
- 182 User Monitoring Reports generated by NBC
- 163 NBC Sampling Inspections of Industry

- 77 Different Facilities Sampled by NBC
- 182 Monitoring Reports of SIUs generated
- 93 Monitoring Reports of Categorical Users generated
- 59 Monitoring Reports of Significant Non-Categorical Users generated
- 13 Monitoring Reports of Non-Significant Users generated
- 363 Manhole Sampling Events conducted
- 313 Industrial Surveillance Manhole Sampling Events conducted
- 39 Sanitary Manhole Sampling Events conducted

~ ***Enforcement:***

- 1,664 NOV Letters Issued
- 9 Firms listed in the February 23, 2018 Public Notice in the Providence Journal as being in Significant Non-Compliance (SNC)
- All but three of the 9 firms listed in SNC achieved full compliance with cited violations prior to publication of the Public Notice

~ ***User Compliance:***

- 5.4% Rate of SIU SNC in the Field's Point district for 2017, a reduction from 39% in 1992
- Rate of SIU SNC reduced in Bucklin Point from 44.8% in 1994 to 2.8% for 2017
- Overall rate of SIU SNC is 4.1% in 2017
- 96.3% Overall Rate of Compliance for All Significant Users
- 97.7% Overall Rate of Compliance for All Categorical Users
- 95.3% Overall Rate of Compliance for All Non-Significant Users
- 95.8% Overall Rate of Compliance for All Users
- 72.3% of EPA categorically regulated users had perfect effluent compliance records with all effluent parameters excluding pH
- 70.4% of Significant Users AND 90.2% of all users had perfect effluent compliance records with effluent pollutants excluding pH
- Rate of SNC has been significantly reduced in both sewage districts over the past decade through Pretreatment's User Education Methods

Notification of Changes in User Status

During 2017, five users were reclassified from significant to non-significant. Two of the five users that were reclassified were categorical users. The other three users were non-categorical. All five of the users were reclassified to non-significant because they went out of business. Two users were located in the Field's Point district and eliminated 3,801 gallons per day of industrial flow to the Field's Point facility. The remaining three users that were reclassified were located in the Bucklin Point district and eliminated 64,483 gallons per day of industrial flow to the Bucklin Point facility.

In 2017, there were four new SIUs, one is located in the Field's Point district and contributes 9,326 gallons per day of industrial flow to the plant. This new Field's Point SIU manufactures dyes and pigments. The other three new SIUs are located in the Bucklin Point district and contribute 72,809 gallons per day of industrial flow to the plant. One new Bucklin Point SIU is an industrial laundry. One conducts brewery operations. The final new Bucklin Point SIU conducts chemical manufacturing operations.

A review of the baseline monitoring reports submitted by the newly classified SIUs indicates that the discharge from these facilities had no adverse effect on the quantity or quality of effluent discharged from either the Field's Point or Bucklin Point Wastewater Treatment Facilities. The SIUs which were reclassified during 2017 and the reason for each reclassification are detailed in TABLE 1.

TABLE 1

2017 Significant Industrial Users Classification Changes

Firms Reclassified to Non-Significant

Field's Point Firms	*Reason for Reclassification*
DFI-EP, LLC	Firm is out of business.
Eastern Color & Chemical Co.	Firm is out of business.

Bucklin Point Firms	*Reason for Reclassification*
Angelica Textile Services, Inc.	Firm is out of business.
Darlene Group	Firm is out of business.
Lincoln Fine Ingredients	Firm is out of business.

Newly Classified Significant Users

Field's Point Firms	*Reason for Reclassification*
Organic Dyes and Pigments, LLC	Firm discharges greater than 5,000 gallons per day.

Bucklin Point Firms	*Reason for Reclassification*
9W Halo OpCo L.P.	Firm discharges greater than 5,000 gallons per day.
Isle Brewers Guild	Firm discharges greater than 5,000 gallons per day.
Maroon Group, LLC	Firm has the potential to adversely impact the treatment plant.

Two Significant Industrial Users changed their names in 2017. Surface Coatings Division MFB, LLC changed to Surface Coatings, LLC and Mahr Federal, Inc. changed its name to Mahr, Inc.

During 2017, 23 Field's Point SIUs had changes in water usage that is noted in this section. Seven of the 23 firms increased their water usage by a combined total of 26,422 gallons per day. The remaining 16 of the 23 firms decreased their water usage by a combined total of 131,252 gallons per day. The net change to the Field's Point facility is a

decrease of 104,830 gallons per day of industrial flow. This decrease in industrial flow did not have an adverse effect on the quality of wastewater discharged from the Field's Point treatment facility.

Twenty Bucklin Point SIUs experienced notable changes in water usage during 2017. Eleven of the 20 SIUs increased their water usage by a combined total of 43,407 gallons per day. Nine of the 20 SIUs decreased their water usage by a combined total of 24,364 gallons per day. The net change in flow to Bucklin Point is an increase of 19,043 gallons per day of industrial flow. This increase in industrial flow did not have an adverse effect on the quality of wastewater discharged from the Bucklin Point treatment facility.

The SIUs with significant changes in water usage during 2017 are detailed in TABLE 2.

TABLE 2

2017 Significant Industrial User Changes in Water Usage
Firms with Increased Flow

Field's Point

Company	*Change in Flow (gpd)*	*% Change*
Armbrust International, Ltd.	4,142	38.8%
Induplate, LLC	12,354	26.6%
International Etching, Inc.	526	13.3%
International Insignia Corporation	892	22.5%
Monarch Metal Finishing, Inc.	4,080	18.3%
Pilgrim Screw Corporation	299	1,031.0%
Providence Specialty Products	4,129	18.2%

Bucklin Point

Company	*Change in Flow (gpd)*	*% Change*
Eaton Corporation	656	160.8%
Pawtucket Power Associates	21,175	111.7%
Tiffany and Company	873	104.3%
General Cable Industries, LLC	2,357	68.4%
Teknicote, Inc.	683	47.7%
Ecological Fibers, Inc.	1,501	45.3%
Denison Acquisition Company, LLC	742	36.9%
Teknor Apex Company	2,301	23.9%
Tanury Industries	10,632	21.1%
Murdock Webbing Co., Inc.	1,075	9.6%
Summit Manufacturing Corporation	1,412	8.5%

TABLE 2
(continued)

2017 Significant Industrial User Changes in Water Usage

Firms with Decreased Flow

Field's Point

Company	*Change in Flow (gpd)*	*% Change*
A & F Plating Company	-177	-15.0%
DiFruscia Industries, Inc.	-4,497	-18.1%
E&M Enterprises, Ltd.	-4,735	-70.7%
Eagle Laundry, Inc.	-1,802	-23.4%
International Chromium Plating Co., Inc.	-352	-28.4%
Ira Green, Inc.	-2,798	-9.4%
Mahr Federal, Inc.	-377	-25.5%
Metallurgical Solutions, Inc.	-85	-27.6%
Monarch Metal Finishing Co. - Aurora Street	-1,877	-58.2%
Providence Journal Company - Production Facility	-16,390	-41.2%
Rhode Island Resource Recovery Corporation	-87,324	-36.3%
Surface Coatings, LLC	-1,286	-22.2%
Technodic, Inc.	-373	-9.7%
Unique Plating Company	-1,183	-36.0%
Univar USA, Inc.	-7,776	-46.2%
Universal Plating Co., Inc.	-220	-27.4%

Bucklin Point

Company	*Change in Flow (gpd)*	*% Change*
Cintas Corporation	-6,956	-9.4%
The Okonite Company	-631	-11.2%
Bliss Manufacturing Co., Inc.	-143	-16.9%
Providence Metallizing Company, Inc.	-3,902	-17.6%
Accent Plating Company	-624	-18.4%
Tedor Pharma Inc.	-30	-18.6%
Chemart Company	-4,418	-19.9%
Liquid Blue	-5,404	-37.3%
John H. Collins & Sons, Inc.	-2,256	-57.3%

Pretreatment Program Performance Evaluation

Nationally, the EPA assesses the effectiveness of a pretreatment program by reviewing specific data submitted by each program. This data is reported on a standard EPA form entitled the Pretreatment Performance Summary Sheet. The Pretreatment Performance Summary Sheet contains general information about the sewage agency, the permitting and compliance status of significant industrial users, and the enforcement actions issued.

The NBC believes that the Pretreatment Program has achieved its stated goals and has been quite effective at reducing and controlling the discharge of toxics into the sewage system. This is evidenced by the fact that user compliance rates are excellent, no incidents of pass through or interference occurred, and treatment plant influent loading goals are being met. As a result, the NBC Pretreatment Program has been recognized twice by the U.S. EPA as being the *"Best Pretreatment Program in the Nation"*, receiving these awards in 1990 and 1998. In addition to the two national awards, the NBC Pretreatment Program received the 2009 EPA Region 1 Excellence Award.

Various factors are reviewed to properly evaluate and measure the effectiveness of a Pretreatment Program. These factors include the following:

- Industrial User Rate of Significant Non-Compliance;
- Effectiveness of Enforcement Response Program;
- Sufficiency of Program Funding and Staffing Levels;
- Application of Local Limits;
- Sufficiency of Statutory Authority and Rules and Regulations;
- Evaluation of recent and proposed program modifications;
- Pretreatment Performance Summary Sheet "Bean Counts".

The NBC routinely reviews all the aforementioned criteria to ensure that the Pretreatment Program satisfies and exceeds all EPA and DEM Pretreatment Program requirements. The following paragraphs detail the NBC efforts with regard to each criteria, as required by RIPDES permit requirements C(7)(i) and C(7)(j).

~ Evaluation of Significant Non-Compliance

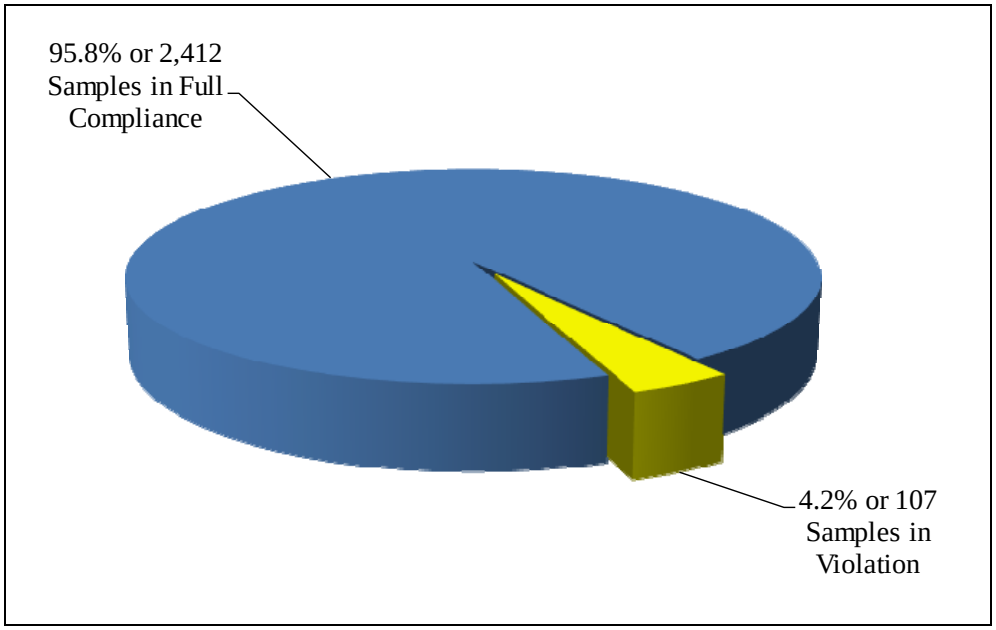
Through extensive user education efforts, quick enforcement response to user violations and regular monthly reminder telephone calls to users, the Pretreatment Section has over the years reduced its SIU rate of significant non-compliance substantially in both districts. The combined rate of SNC for significant industrial users located in the two NBC sewage districts for 2017 was 4.1%, a decrease from the SNC rate of 7.0% observed in 2016.

The SIU rate of SNC was dramatically reduced in Field's Point from a high of 39.0% in 1992 to 5.4% for 2017, while the SIU rate of SNC for Bucklin Point was reduced from a high of 44.8% in 1994 to 2.8% in 2017. These impressive reductions in the rate of SIU SNC are directly attributed to increased user education efforts made by the Pretreatment staff and by stringent regulatory requirements to promptly identify and correct user violations.

These Pretreatment educational efforts include informing users about the EPA SNC violation criteria during all inspections and by sending annual informational letters to remind users about permit requirements and SNC ramifications. Regulatory efforts to reduce SNC include imposing stringent resampling requirements over four consecutive weeks for any effluent monitoring violation, and by the implementation of a procedure to call users prior to a monitoring report being thirty (30) days late past the due date. In addition, Pretreatment runs monthly reports to identify companies with the potential to be in SNC. Staff contacts these companies and informs them of the steps necessary to avoid SNC.

As a result of these efforts, the NBC has been able to maintain overall SIU rates of SNC to 10% or below. As can be seen from FIGURE 1, 95.8% of the 2,519 analytical reports reviewed by the Pretreatment staff during 2015 were in full compliance with effluent discharge limitations, standards which are more stringent than EPA categorical standards.

FIGURE 1
USER COMPLIANCE RATE
FOR ALL EFFLUENT ANALYSES



2,519 Total Analyses Reviewed

In addition, as shown in CHAPTER IV of this report, the 2017 rate of compliance of categorical users in the two districts was 97.7%, while the compliance rate for significant users was 96.3%. These excellent rates of user compliance with effluent limits are reflected in the long term reductions in toxic loadings to the Field's Point and Bucklin Point treatment facilities, as shown in CHAPTER V of this report.

Nine firms located in the Field's Point and Bucklin Point districts were listed in a Public Notice in the Providence Journal on February 23, 2018 as being in SNC for the period from October 1, 2016 through December 31, 2017. Of the nine firms published for being in SNC, six users are located in Field's Point and three users are located in Bucklin Point.

The names of one categorical and two non-categorical significant users were published for being in SNC, two are located in Field's Point and one is located in Bucklin Point. Six non-categorical industrial users were listed in the Public Notice, four from Field's Point and two from Bucklin Point. Six of the nine firms, or 66.7%, were listed as being in SNC solely for administrative violations such as submitting a report late. Three firms listed in the notice were cited as being in SNC solely due to violations of effluent limitations. At the time of publication of this report, all but three of the facilities cited as being in SNC were back in full compliance with NBC regulations.

~ Effectiveness of NBC Enforcement Response Program

The NBC has a very aggressive and effective enforcement program. The Pretreatment Program issues some type of enforcement action for 100% of all violations observed, in accordance with the NBC approved Enforcement Response Plan (ERP). Pretreatment staff works very closely with the Legal Section and has the capability to issue an Administrative Order or Cease and Desist Order immediately, if necessary, to halt illicit discharges as detailed in the approved ERP.

During 2017, the NBC issued 1,664 Notice of Violation letters and one Administrative Order. The NBC Enforcement Program is efficient and clearly effective at ensuring users comply with NBC regulations and requirements. Additional information regarding the Enforcement Program is provided in CHAPTER VI.

~ Sufficiency of Program Funding and Staffing Levels

The NBC has provided continual support and funding to the Pretreatment, EMDA, ESTA, Permits & Planning, and Laboratory Sections, the teams responsible for controlling and reducing toxic loadings to the NBC treatment facilities and Narragansett Bay. This funding commitment has ensured adequate staffing levels necessary to get the job done in an exemplary manner. Additional information regarding the budgets and staffing of these sections is provided in CHAPTER II.

~ Application of Local Limits

The two NBC Wastewater Treatment Facilities have separate and distinct local limits designed to protect each wastewater treatment facility from pass-through and interference, ensuring the proper operation of the facility, to protect the receiving waters of the state, to protect the sludge quality and to protect the health and safety of NBC workers and the general public. The local limits are rigidly enforced by the NBC Pretreatment staff. The NBC routinely reviews influent, effluent, sludge, and receiving water analytical data to ensure that the NBC local limits are appropriate for each treatment facility. Based upon this review and on-going studies being conducted by the NBC, the existing local limits are appropriate and enforceable. A review of the local limits and loading evaluations for each NBC plant is provided in CHAPTER V of this report.

During 2004, the NBC was required to submit a final metals compliance report as required by a Consent Agreement with the DEM (RIA-330). This report included a re-evaluation of local limits for both Field's Point and Bucklin Point using the July 2004 EPA Local Limits Development Guidance. Plant data, background loadings, and site-specific metal translators were developed for both facilities to determine local limits that protect plant operations and infrastructure, human health, and the NBC receiving waters, while allowing for the safe disposal of solids extracted from the collection system. The findings of this report indicate that the current local limits are both appropriate and enforceable. In addition, this report details analytical data indicating that the NBC receiving waters are meeting EPA Water Quality Criteria for toxic pollutants, clearly proving that the local limits are adequate for protecting the receiving waters of Narragansett Bay.

On September 29, 2017, the DEM issued new RIPDES permits to the Field's Point and Bucklin Point facilities. The permits became effective on December 1, 2017. The permits require the local limits for both facilities to be re-evaluated. The initial Local Limits Monitoring Plans were submitted to DEM on December 29, 2017. Revised Local Limits Monitoring Plans incorporating comments from DEM and the Local Limits Workplan were submitted to DEM on February 28, 2018. Sampling and data collection will begin in 2018.

~ Sufficiency of Statutory Authority and Rules and Regulations

The NBC has statutory authority detailed in the State of Rhode Island General Laws, Title 46, Chapter 25 et seq. This legislation permits the NBC to develop, adopt, and enforce Rules and Regulations for use of the sewage system. In 2006, the NBC petitioned the DEM to revise the Rules and Regulations. The NBC requested revisions to the Significant Non-Compliance definitions as required by the EPA Pretreatment Streamlining rules as well as voluntary changes outlined by the Streamlining rules. These Revisions can be found in Article 2 of the Rules and Regulations. Other revisions concerning the Pretreatment Program were made to clarify existing regulations. In addition, the NBC made minor revisions to the Rules and Regulations regarding sewer connections. The revised Rules and Regulations were approved by the DEM and became effective on December 20, 2006. The NBC Rules and Regulations satisfy all EPA and DEM requirements and are fully enforceable. The NBC Rules and Regulations are available on-line at www.narrabay.com.

~ Evaluation of Recent and Proposed Program Modifications

In 2017, Pretreatment staff worked closely with RI Commerce Corporation on a LEAN permitting. Part of the program incorporates e-permitting. E-permitting will allow business owners to sign permit applications electronically and submit the applications through a portal. NBC Wastewater Discharge Permit Applications required "wet" signatures. In order to fully participate in the e-permitting program, the NBC requested a non-substantial modification to the Pretreatment Program to allow electronic signatures on permit applications. The DEM approved the modification on July 7, 2017.

~ Pretreatment Performance Summary Sheets

The U.S. EPA measures the effectiveness of a Pretreatment Program by tracking routine activities performed by the program. These include the number of users of each type, number of violations cited, number of inspections conducted, number of permits issued, number of sampling events conducted, amount of penalties assessed, etc. This information

is provided in the Pretreatment Performance Summary Sheets. The Pretreatment Performance Summary Sheets, one for each NBC sewage district, are provided in TABLES 3 and 5 and detail the 2017 accomplishments of the NBC Pretreatment, Environmental Monitoring, and Enforcement Programs. In early 2008, the EPA revised the Pretreatment Performance Summary Sheet. The revised summary sheets can be found in TABLES 4
and 6.

TABLE 3

NARRAGANSETT BAY COMMISSION

FIELD'S POINT DISTRICT

PRETREATMENT PERFORMANCE SUMMARY SHEET

1. General Information

Control Authority Name	Narragansett Bay Commission
Address (treatment facility)	2 Ernest Street, Providence, RI 02905
(main office)	1 Service Road, Providence, RI 02905
(pretreatment office)	2 Ernest Street, Providence, RI 02905
Contact Persons	Raymond Marshall, P.E. , Executive Director
	Thomas P. Uva, ES&C Director
	Kerry M. Britt, Pretreatment Manager
Contact Telephone	(401) 461-8848
RIPDES Number	RI 0100315
Reporting Period	January 1, 2017 - December 31, 2017
Total Categorical Industrial Users as of the date of this report (throughout the reporting period)	24 (25) (See Note 1)
Total Significant Non-Categorical IUs as of the date of this report (throughout the reporting period)	11 (12)
Total # Significant Industrial Users (SIUs)	35 (37) (See Note 1)

2. Significant Industrial User (SIU) Compliance

	Significant Industrial Users	
	Categorical	**Non-Categorical**
1. # Of SIUs Submitting BMRs/# Required	10/10	2/2
2. # Of SIUs Submitting 90-Day Compliance Reports/# Required	0/0	1/1
3. # Of SIUs in SNC with Pretreatment Compliance Schedule/ # Required To Meet Schedule	0/0	0/0
4. # Of SIUs In Significant Noncompliance With Self Monitoring Reporting Requirements and have not returned to compliance	0	1
5. # Of SIUs in SNC for Violating Effluent or Reporting Requirements and have Not had Adequate Enforcement Action by POTW	0	0
6. # Of SIUs in SNC with Reporting Requirements At End of Report Period	0	0
7. # Of SIUs in SNC With Effluent Requirements At End of Report Period	0	0

TABLE 3

(continued)

NARRAGANSETT BAY COMMISSION

FIELD'S POINT DISTRICT

PRETREATMENT PERFORMANCE SUMMARY SHEET

3. Compliance Monitoring Program

	Significant Industrial Users	
	Categorical	**Non-Categorical**
1. # Of Control Documents Issued/# Required	10/10	2/2
2. # Of SIUs Without Active (Expired) Permits	0	0
3. # Of SIUs With Permits Expired For 180 Days Or More	0	0
4. # Of Non-Sampling Inspections Conducted	99	40
5. # Of Sampling Visits Conducted	52	25
6. # Of Facilities Inspected (Nonsampling)	25	12
7. # Of Facilities Sampled	25	11 (See Note 2)
8. # Of SIUs (Both) Not Inspected And Not Sampled By POTW In Past 12 Months	0	0
9. # Of SIUs Not Sampled/Not Inspected By POTW In Past 12 Months	0/0	1/0 (See Note 2)
10. # Of SIUs in SNC with Self Monitoring and Not Inspected and Not Sampled in the Past 12 Months	0	0

TABLE 3
(continued)
NARRAGANSETT BAY COMMISSION
FIELD'S POINT DISTRICT
PRETREATMENT PERFORMANCE SUMMARY SHEET

4. Enforcement Actions

	Significant Users			
	Categorical	**Non-Categorical**	**Non-Significant**	**Total All Users**
1. Compliance Schedules Issued	0	0	0	0
2. Notices Of Violation Issued	138	49	973	1,160
3. Admin. Orders Issued	0	0	1	1
4. Combined Total Of Administrative Orders and Notices of Violation	138	49	974	1,161
5. Civil Suits Filed	0	0	0	0
6. Criminal Suits Filed	0	0	0	0
7. Combined Total of Civil and Criminal Suits	0	0	0	0
8a. Published IUs in SNC (See Newspaper Notice in Enforcement Chapter)	1	1	4	6
8b. Rate of IUs in SNC	1/25 = 4.0%	1/12 = 8.3%	N/A	N/A
9a. Amount Of Penalties Collected (Total Dollars/IUs Assessed)	$4,000/1	$0/0	$400/1	$4,400/2
9b. Amount Of Penalties Assessed (Total Dollars/IUs Assessed)	$0/0	$0/0	$4,000/1	$4,000/1
10. # of IUs Subject to Any Enforcement Action	17	7	411	435
11. Other Actions (Permit Suspensions, Sewer Bans, Etc.)	0	0	0	0

I certify that the information contained in the Pretreatment Performance Summary Sheet is complete and accurate to the best of my knowledge.

AUTHORIZED REPRESENTATIVE **DATE** March 15, 2018

TABLE 3
(continued)
NARRAGANSETT BAY COMMISSION

FIELD'S POINT DISTRICT

PRETREATMENT PERFORMANCE SUMMARY SHEET

Notes Regarding the Pretreatment Performance Summary Sheets

Note 1: Numbers in parentheses () reflect totals for users classified as significant for some time during the reporting period. Some of these companies are no longer classified as SIUs since they may have changed process operations eliminating discharges to the sewer.

Note 2: The non-categorical SIU not sampled by the NBC in 2017 was under construction throughout 2017 and did not discharge process wastewater in 2017.

TABLE 4

NARRAGANSETT BAY COMMISSION

FIELD'S POINT DISTRICT

REVISED PRETREATMENT REPORT SUMMARY SHEET

January 1, 2017 through December 31, 2017

POTW Name:	Narragansett Bay Commission (NBC)
NPDES Permit #:	RI0100315
Pretreatment Report Period Start Date:	January 1, 2017
Pretreatment Report Period End Date:	December 31, 2017
# of Significant Industrial Users (SIUs):	35 (37) (See Note 1)
# of SIUs Without Control Mechanisms:	0
# of SIUs not Inspected:	0
# of SIUs not Sampled:	1 (See Note 2)
# of SIUs in Significant Noncompliance (SNC) with Pretreatment Standards:	1
# of SIUs in SNC with Reporting Requirements:	1
# of SIUs in SNC with Pretreatment Compliance Schedule:	0
# of SIUs in SNC Published in Newspaper:	2
# of SIUs with Compliance Schedules:	0
# of Violation Notices Issued to SIUs:	187
# of Administrative Orders Issued to SIUs:	0
# of Civil Suits Filed Against SIUs:	0
# of Criminal Suits Filed Against SIUs:	0
# of Categorical Industrial Users (CIUs):	24 (25) (See Note 1)
# of CIUs in SNC:	1
Penalties Total Dollar Amount of Penalties Collected:	$4,000
# of IUs from which Penalties have been collected:	1

TABLE 4
(continued)
NARRAGANSETT BAY COMMISSION

FIELD'S POINT DISTRICT

REVISED PRETREATMENT REPORT SUMMARY SHEET

January 1, 2017 through December 31, 2017

Local Limits Date of Most Recent Technical Evaluation of Local Limits:	September 30, 2004
Date of Most Recent Adoption of Technically Based Local Limits:	1987

Pollutant	**Limit (mg/l)**	**MAHL (lb/day)** (See Note 3)
Cadmium	0.11	6.1
Chromium	2.77	102.2
Copper	1.20	46.3
Lead	0.60	23.4
Mercury	0.005	0.5
Nickel	1.62	57.9
Silver	0.43	10.8
Zinc	2.61	137.0
Cyanide	0.58	2.4
Selenium	-	436.5
Arsenic	-	2.5

Note 1: Numbers in parentheses () reflect totals for users classified as significant for some time during the reporting period. Some of these companies are no longer classified as SIUs since they may have changed process operations eliminating discharges to the sewer.

Note 2: The non-categorical SIU not sampled by the NBC in 2017 was under construction throughout 2017 and did not discharge process wastewater in 2017.

Note 3: MAHL values were recalculated as a part of the Local Limits Re-evaluation that was submitted to the Rhode Island Department of Environmental Management in September 2004.

TABLE 5

NARRAGANSETT BAY COMMISSION

BUCKLIN POINT DISTRICT

PRETREATMENT PERFORMANCE SUMMARY SHEET

1. General Information

Control Authority Name	Narragansett Bay Commission
Address (treatment facility)	102 Campbell Avenue, East Providence, RI 02916
(main office)	1 Service Road, Providence, RI 02905
(pretreatment office)	2 Ernest Street, Providence, RI 02905
Contact Persons	Raymond Marshall, P.E. , Executive Director
	Thomas P. Uva, ES&C Director
	Kerry M. Britt, Pretreatment Manager
Contact Telephone	(401) 461-8848
RIPDES Number	RI 0100072
Reporting Period	January 1, 2017 - December 31, 2017
Total Categorical Industrial Users as of the date of this report (throughout the reporting period)	19 (20)
Total Significant Non-Categorical IUs as of the date of this report (throughout the reporting period)	14 (16)
Total # Significant Industrial Users (**SIUs**)	33 (36) (See Note 1)

2. Significant Industrial User (SIU) Compliance

	Significant Industrial Users	
	Categorical	**Non-Categorical**
1. # Of SIUs Submitting BMRs/# Required	8/8	4/4
2. # Of SIUs Submitting 90-Day Compliance Reports/# Required	0/0	3/3
3. # Of SIUs in SNC with Pretreatment Compliance Schedule/ # Required To Meet Schedule	0/0	0/0
4. # Of SIUs In Significant Noncompliance With Self Monitoring Reporting Requirements and have not returned to compliance	0	0
5. # Of SIUs in SNC for Violating Effluent or Reporting Requirements and have Not had Adequate Enforcement Action by POTW	0	0
6. # Of SIUs in SNC with Reporting Requirements At End of Report Period	0	0
7. # Of SIUs in SNC With Effluent Requirements At End of Report Period	0	0

TABLE 5
(continued)

NARRAGANSETT BAY COMMISSION

BUCKLIN POINT DISTRICT

PRETREATMENT PERFORMANCE SUMMARY SHEET

3. Compliance Monitoring Program

	Significant Industrial Users	
	Categorical	**Non-Categorical**
1. # Of Control Documents Issued/# Required	8/8	4/4
2. # Of SIUs Without Active (Expired) Permits	0	0
3. # Of SIUs With Permits Expired For 180 Days Or More	0	0
4. # Of Non-Sampling Inspections Conducted	95	59
5. # Of Sampling Visits Conducted	41	34
6. # Of Facilities Inspected (Nonsampling)	20	16
7. # Of Facilities Sampled	19 (See Note 2)	16
8. # Of SIUs (Both) Not Inspected And Not Sampled By POTW In Past 12 Months	0	0
9. # Of SIUs Not Sampled/Not Inspected By POTW In Past 12 Months	1/0 (See Note 2)	0/0
10. # Of SIUs in SNC with Self Monitoring and Not Inspected and Not Sampled in the Past 12 Months	0	0

TABLE 5
(continued)

NARRAGANSETT BAY COMMISSION

BUCKLIN POINT DISTRICT

PRETREATMENT PERFORMANCE SUMMARY SHEET

4. Enforcement Actions

	Significant Users			
	Categorical	**Non-Categorical**	**Non-Significant**	**Total All Users**
1. Compliance Schedules Issued	0	0	0	0
2. Notices Of Violation Issued	53	58	393	504
3. Admin. Orders Issued	0	0	0 (See Note 3)	0
4. Combined Total Of Administrative Orders and Notices of Violation	53	58	393	504
5. Civil Suits Filed	0	0	0	0
6. Criminal Suits Filed	0	0	0	0
7. Combined Total of Civil and Criminal Suits	0	0	0	0
8a. Published IUs in SNC (See Newspaper Notice in Enforcement Chapter)	0	1	2	3
8b. Rate of IUs in SNC	0/20 = 0%	1/16 = 6.3%	N/A	N/A
9a. Amount Of Penalties Collected (Total Dollars/IUs Assessed)	$0/0	$0/0	$0/0	$0/0
9b. Amount of Penalties Assessed (Total Dollars/IUs Assessed)	$0/0	$0/0	$0/0	$0/0
10. # of IUs Subject to Any Enforcement Action	9	15	192	216
11. Other Actions (Sewer Bans, Etc.)	0	0	0	0

I certify that the information contained in the Pretreatment Performance Summary Sheet is complete and accurate to the best of my knowledge.

AUTHORIZED REPRESENTATIVE

March 15, 2018
DATE

TABLE 5
(continued)

NARRAGANSETT BAY COMMISSION

BUCKLIN POINT DISTRICT

PRETREATMENT PERFORMANCE SUMMARY SHEET

Notes Regarding the Pretreatment Performance Summary Sheets

Note 1: Numbers in parentheses () reflect totals for users classified as significant for some time during the reporting period. Some of these companies are no longer classified as SIUs since they may have changed process operations eliminating discharges to the sewer.

Note 2: The categorical SIU that was not sampled by the NBC in 2017 discharges on a batch basis and decided to ship all process wastewater off-site for disposal in 2017. This was verified during inspections.

Note 3: An Administrative Order (AO) was prepared for a non-significant industrial user in 2017. However, the firm went into receivership prior to the AO being issued. Further discussion on this AO is provided in CHAPTER VI.

TABLE 6

NARRAGANSETT BAY COMMISSION

BUCKLIN POINT DISTRICT

REVISED PRETREATMENT REPORT SUMMARY SHEET

January 1, 2017 through December 31, 2017

POTW Name:	Narragansett Bay Commission (NBC)
NPDES Permit #:	RI0100072
Pretreatment Report Period Start Date:	January 1, 2017
Pretreatment Report Period End Date:	December 31, 2017
# of Significant Industrial Users (SIUs):	33 (36) (See Note 1)
# of SIUs Without Control Mechanisms:	0
# of SIUs not Inspected:	0
# of SIUs not Sampled:	1 (See Note 2)
# of SIUs in Significant Noncompliance (SNC) with Pretreatment Standards:	1
# of SIUs in SNC with Reporting Requirements:	0
# of SIUs in SNC with Pretreatment Compliance Schedule:	0
# of SIUs in SNC Published in Newspaper:	1
# of SIUs with Compliance Schedules:	0
# of Violation Notices Issued to SIUs:	111
# of Administrative Orders Issued to SIUs:	0
# of Civil Suits Filed Against SIUs:	0
# of Criminal Suits Filed Against SIUs:	0
# of Categorical Industrial Users (CIUs):	20
# of CIUs in SNC:	0
Penalties Total Dollar Amount of Penalties Collected:	$0
# of IUs from which Penalties have been collected:	0

TABLE 6

(continued)

NARRAGANSETT BAY COMMISSION

BUCKLIN POINT DISTRICT

REVISED PRETREATMENT REPORT SUMMARY SHEET

January 1, 2017 through December 31, 2017

Local Limits Date of Most Recent Technical Evaluation of Local Limits:	September 30, 2007
Date of Most Recent Adoption of Technically Based Local Limits:	1991

Pollutant	**Limit (mg/l)**	**MAHL (lb/day)** (See Note 3)
Cadmium	0.11	1.4
Chromium	2.77	28.6
Hexavalent Chromium	-	51.3
Copper	1.20	8.0
Lead	0.69	7.5
Mercury	0.06	0.03
Nickel	1.62	3.6
Silver	0.40	1.1
Zinc	1.67	45.2
Cyanide	0.50	0.3
Selenium	0.40	1.7
Arsenic	0.20	0.68

Note 1: Numbers in parentheses () reflect totals for users classified as significant for some time during the reporting period. Some of these companies are no longer classified as SIUs since they may have changed process operations eliminating discharges to the sewer.

Note 2: The categorical SIU that was not sampled by the NBC in 2017 discharges on a batch basis and decided to ship all process wastewater off-site for disposal in 2017. This was verified during inspections.

Note 3: MAHL values were recalculated as a part of the Local Limits Re-evaluation that was submitted to the Rhode Island Department of Environmental Management in September 2004.

II. PROGRAM ADMINISTRATION

RIPDES Permit Numbers

On December 31, 2001, the Rhode Island Department of Environmental Management, (DEM) Office of Water Resources issued new RIPDES permits to the Narragansett Bay Commission's two wastewater treatment facilities. The RIPDES permit number for the Field's Point Wastewater Treatment Facility is RI 0100315 and the RIPDES permit number for the Bucklin Point Wastewater Treatment Facility is RI 0100072. These RIPDES permits required nitrogen removal for the first time for the NBC plants, and due to this newly imposed requirement and several other issues, NBC appealed these permits. The NBC then worked with the DEM to resolve the issues of concern. A Consent Agreement, (CA) RIA-330, resolving the appealed conditions was signed by both parties and became effective in January 2004. The CA imposed more stringent nutrient limitations for both the Field's Point and Bucklin Point wastewater treatment facilities, but provided NBC time to install treatment and achieve compliance. The CA detailed requirements which the NBC need to satisfy to achieve compliance with the new limitations and require full compliance with interim limitations until such requirements are implemented. The RIPDES permits for both facilities have expired, however these permits remained in full effect until the DEM issues new permits to the NBC. The DEM issued draft RIPDES permits for both facilities on November 30, 2016. A public hearing on the permits was held on January 26, 2017. The public comment period was open until January 31, 2017 and extended until February 27, 2017 for comments on total nitrogen and $CBOD_5$ loading to the Field's Point facility.

On September 29, 2017 the DEM issued final RIPDES permits to both the Field's Point and Bucklin Point facilities. The RIPDES permit number for Field's Point is RI0100315 and the RIPDES permit number for Bucklin Point is RI0100072. These permits incorporate the stringent seasonal nitrogen limits detailed in CA, RIA-330. In addition to the nitrogen the permits limits also imposed new requirements. The NBC has requested and received a stay on many of these new stringent requirements. The final permits became effective on December 1, 2017. Further discussion on the permits can be found in CHAPTER V.

Personnel

The control and reduction of toxic and nuisance discharges to the sewer falls under the Division of Environmental Science and Compliance (ES&C) formerly Planning, Policy & Regulation which works closely with and relies upon the resources of many other NBC sections to achieve its goal of protecting the two NBC treatment facilities and ultimately Narragansett Bay. From the wastewater operators that report unusual influents to the legal staff that issues escalated enforcement actions against violators, environmental protection is a team effort at the NBC.

During 2017, the NBC reevaluated the organizational needs of the agency. The divisions were restructured to better align with the future needs of the agency. As part of the restructuring, the Planning, Policy & Regulation Division was renamed the Environmental Science & Compliance (ES&C) Division. The ES&C Division focuses on all water quality issues and compliance for the agency. The NBC organizational plan is provided in FIGURE 2.

The ES&C Division consists of five sections, the Pretreatment, Environmental, Safety & Technical Assistance (ESTA), Environmental Monitoring & Data Analysis (EMDA), Laboratory and the Water Quality & Compliance sections. ES&C is responsible for developing, implementing, and performing source reduction and control activities and programs for the NBC. The Pretreatment Section works to control the discharge of toxics through regulatory and user educational mechanisms, while the ESTA Section achieves pollutant reductions through user education efforts and by providing free technical assistance. Both sections rely upon the services and expertise of the EMDA and Laboratory Sections. The EMDA Section conducts user, river, treatment facility, and manhole monitoring activities and is responsible for logging and reviewing data reported on samples analyzed by the Laboratory Section. The organizational plan for the ES&C Division is provided in FIGURE 3.

During 2017 there was one personnel change in the Pretreatment Section. The change occurred in September when Katelyn Ludemann vacated her Pretreatment Engineer position for a position with the U.S. Navy. This vacant Pretreatment Engineer position was filled by Anthony Erricola in November.

There was one personnel change in the EMDA Section in 2017. Kevin Wilcox vacated his Environmental Monitor position in January. This vacant Environmental Monitor position was filled in April by Heather Nicholson.

There was one personnel change in the Laboratory Section during 2017. Ralph Ruggiano retired in June from his Laboratory Technician position. This vacant position was filled in September by Sean Grace.

There were no personnel changes in the ESTA Section during 2017. However, there was a title change. In order to accurately reflect the duties of the position, Barry Wenskowicz' title was changed from Pollution Prevention Engineer to Sustainability Engineer.

During the agency reorganization it was determined the Sewer Connection and Storm Water permitting programs belong in the Engineering Section in the Construction & Engineering Division. The Permit Coordinator position was transferred to the Engineering Section. The Permits & Planning Section was renamed Water Quality & Compliance to better describe the functions of the section. With this change there were two title changes. The first the Permits & Planning Manager is now Planning Manager and the Administrative Assistant is now Environmental Coordinator. In addition, Stephen Lallo vacated his Permits Coordinator position in July. This position was filled by Tina Moretti when it was transferred to the Engineer Section.

FIGURE 2
Narragansett Bay Commission

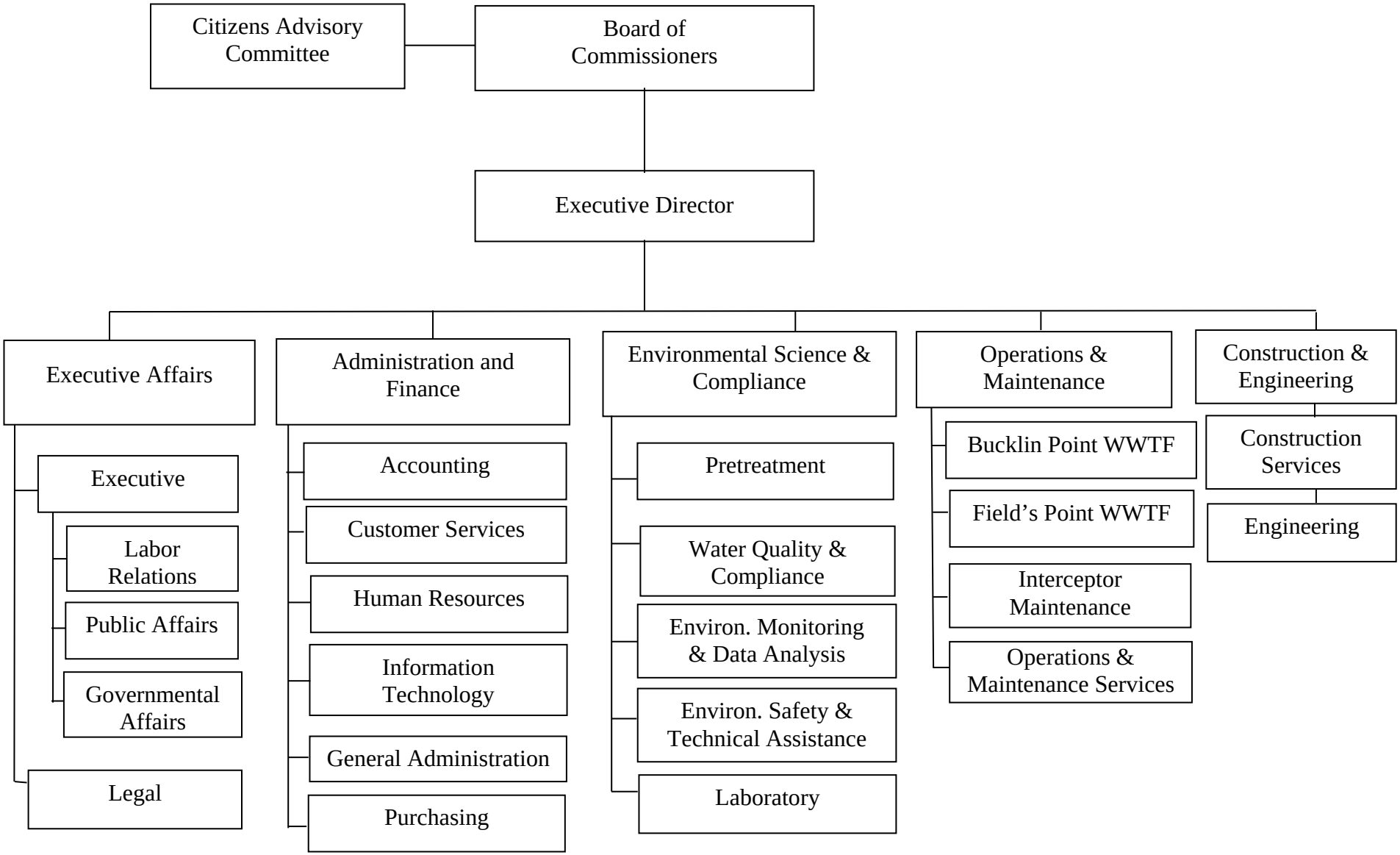
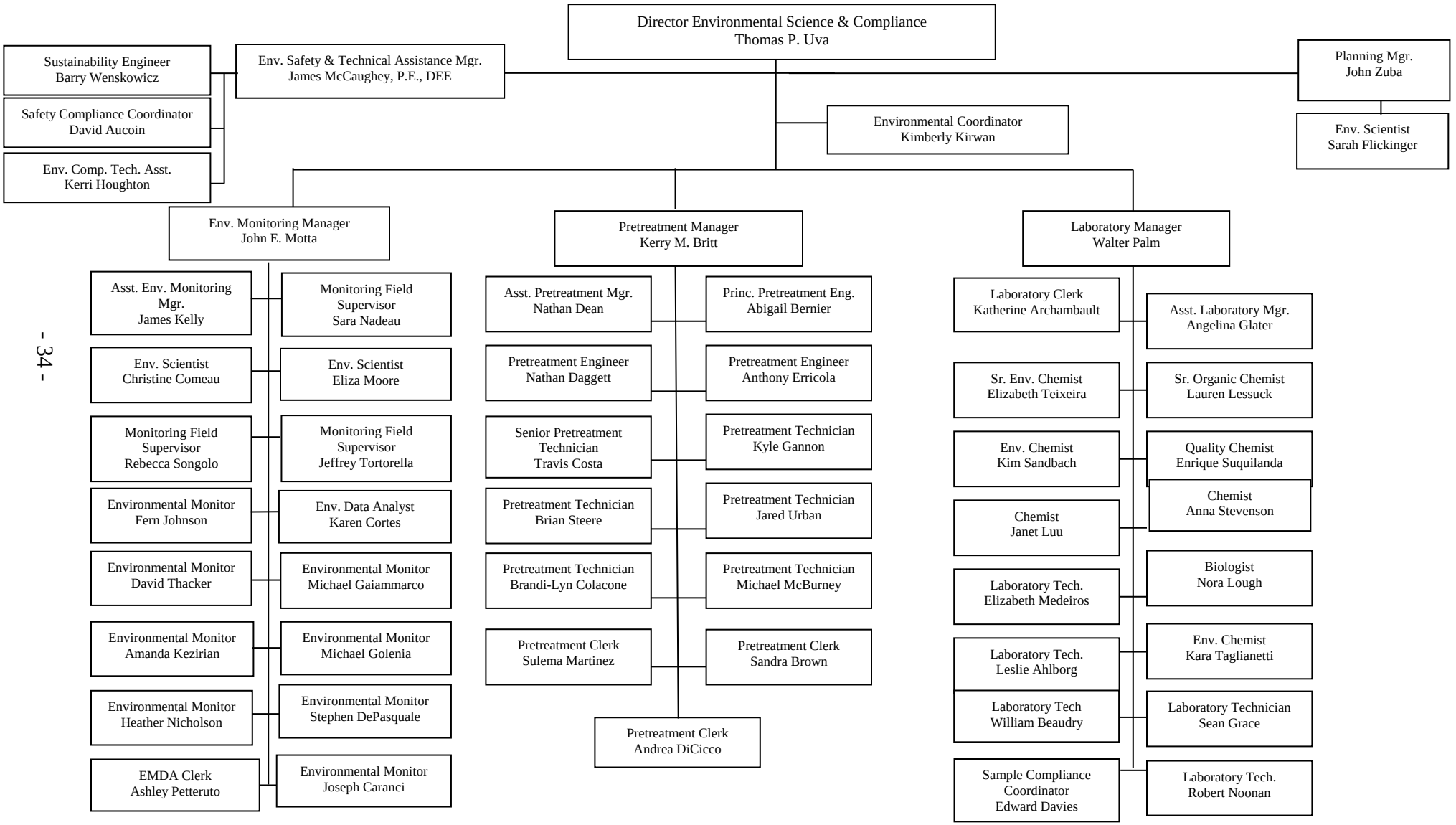


FIGURE 3
Narragansett Bay Commission
Division of Environmental Science & Compliance
March 15, 2018



Staff Training

The NBC provides extensive training to its employees and has a tuition reimbursement program to assist employees in furthering their education. During 2017, staff received training by attending seminars, workshops and classes in many areas including safety, technical and office productivity.

The NBC places a high value on the safety of its employees. Therefore safety training is provided to all personnel and in many cases this training is mandatory for certain positions. The following lists the safety trainings provided in 2017:

- CPR/AED
- Environmental Health & Safety Awareness
- HazCom/Right-to-Know Training
- New Employee Safety Training
- Personal Protective Equipment
- Healthy Back, Slips, Trips and Falls
- Occupational Hearing Safety
- Permit Required Confined Space
- First Aid Training
- Man Overboard Training
- Work Zone Safety
- Emergency Preparedness Plans
- Air Monitor Equipment Training
- Voluntary Respirator Training
- Supervisor Safety Awareness Training
- Port Evacuation
- Lock-out Tag-Out Training
- Active Shooter & Workplace Violence

To ensure that staff can adequately perform their job functions, specialized technical training is provided. Staff often suggests topics for training. The following is a list of the technical trainings provided to Pretreatment, EMDA, ESTA and Laboratory personnel during 2017:

- 40-Hour HAZWOPER Training
- Enforcement Response Plan Training
- 8-Hour HAZWOPER Refresher Training
- Wastewater Discharge Permit Tracking
- Grease Control Program Permits
- User File Maintenance
- How to Handle Active User Files
- Phone Logs
- Four Gas Meter Training
- iLAB Receipting Procedures
- Sample Receipt Procedures
- Wastewater Operator Grade I
- Introduction to Sample Manager
- Clean Room Training

ES&C staff is encouraged to attend conferences and workshops to educate themselves on current and emerging issues in the wastewater and environmental fields. The technical conferences and workshops that were attended in 2017 are as follows:

- 2017 New England Regional Pretreatment Coordinators Conference
- 2017 National Association of Clean Water Agencies Pretreatment & Pollution Prevention Conference
- 2017 NEWEA Conference
- Natural Gas Pipeline Safety for First Responses
- RI Commerce – LEAN Permitting
- NEWEA Spring Conference
- NEWEA Young Professionals Summit
- Presenting Data & Information Workshop
- RI Bays Rivers & Watershed Coordination Team Workshop
- 2017 WEFTEC Conference
- Hospital Hazard Vulnerability
- Monitoring Harmful Algae Blooms from Data to Decisions Seminar
- Hands-on WW Nutrient Removal Using Process Control Simulators
- New England Estuarine Research Society Meetings
- Emergency Planning & Community Right-to-Know ACE Training
- Electric Transmission Conference
- The Energy Council of RI
- Using Food Waste in digesters to Boost Biogas Production Webinar
- FlowCam for Phytoplankton Analysis Webinar
- Toward Comprehensive Monitoring of Narragansett Bay
- URI-GSO Nutrient Workshop
- Coastal & Estuarine Research Federation Conference
- Ronald C. Baird Sea Grant Science Symposium: Changes in Narragansett Bay: A Conversation Among Citizens and Scientists.

The NBC provides 40-Hour HAZWOPER training to all new Pretreatment, ESTA and EMDA personnel. The 40 hour training program is required by OSHA of all emergency response personnel that may be first responders to chemical spills or who may work at hazardous waste sites. This training includes hands-on use of Self-Contained Breathing Apparatus (SCBA) equipment, respirators, personal protective equipment, air and water monitoring equipment, etc. Staff members were instructed in First Aid, CPR, confined space entry, hazardous waste handling, toxicology and spill and hazardous waste site control and coordination.

An eight hour HAZWOPER recertification training session is provided annually to Pretreatment, EMDA, ESTA and Laboratory personnel that have previously completed the 40 hour HAZWOPER training program. The eight hour recertification training session is required by OSHA annually as a refresher class. The recertification program covers many topics, such as incident command, confined space entry, spill tracking, boom deployment, personal protective equipment, use of air monitoring equipment, CPR/AED and first aid.

In order to ensure productivity remains efficient and of high quality, staff participate in many administrative trainings. The trainings that staff participated in during 2017 are as follows:

- Water Quality Science Building Alarm Training
- Windows 2016
- New Computer Training
- Sexual Harassment
- Share Point
- Service Desk
- Web and Internet Email
- HACH WIMS
- NBC Accident Reporting Policy

The NBC provides a tuition reimbursement program to encourage its employees to further their education. The college courses that staff attended during 2017 are as follows:

- General Chemistry I
- Database Software

In addition to attending trainings, workshops and seminars, ES&C staff also provide technical training for other sections of the NBC as well as assist other agencies with developing and training on inspection skills. The following trainings were conducted by ES&C staff in 2017:

- Kerry Britt, Pretreatment Manager, and John Zuba, Planning Manager conducted the required annual Spill Prevention, Control & Countermeasures/Storm Water Management Plan training in May and December respectively to Bucklin Point and Field's Point treatment plant personnel.

- During 2017 the Pretreatment Section assisted in the City of New Bedford, MA in training its Pretreatment staff on inspecting food service establishments

Throughout 2017, ES&C staff mentored high school students from across the state. They were educated on the responsibilities of each section and were also assisted with science fair projects.

NBC Toxics Reduction, Control and Monitoring Program Budgets

The NBC is committed to protecting the two wastewater treatment facilities and Narragansett Bay from toxic discharges. This pledge to protect the environment is evidenced by NBC continued commitment to ensure adequate staffing and funding levels for the ES&C Division as necessary to ensure environmental protection. The ES&C Division budget for fiscal year 2018 (FY18) was $6,590,681. The FY17 ES&C Division budget allocated $5,195,626 or 78.8% to personnel costs.

The approved FY18 Pretreatment budget was $1,182,483, a very slight decrease of 0.71% from the FY17 budget of $1,191,005. The FY18 Pretreatment budget allocated 96.8%, or $1,144,213, to personnel costs.

The budget for the EMDA Section in FY18 was $1,938,943 of which 76.6% or $1,485,943 was attributed to personnel expenses. The FY18 EMDA budget increased by 10.9% from the previous year.

The ESTA budget for FY18 was $432,077, an increase of $8,924 from the FY17 budget of $423,153. The approved FY18 Laboratory budget was $2,545,029 an increase of 7.1% or $169,229 from the previous year. The approved FY18 Water Quality & Compliance budget was $492,149. Personnel costs associated with the ESTA, Laboratory and Permits & Planning Sections budgets were 90.3%, 67.1% and 95.2% respectively.

In 1983, the R.I. General Assembly passed Public Law 1983, Chapter 235 which required that the NBC begin direct billing of sewer users effective July 1, 1985 and that all sewer use rates be subject to review and approval by the RI Public Utilities Commission (PUC). On July 1, 1995, a new permit fee rate structure approved by the PUC became effective to ensure recovery of Pretreatment costs. These rates were increased in 2003 in accordance with a PUC Rate hearing. This permit fee rate structure is provided in CHAPTER III.

Pretreatment Information Management Computer System

The Pretreatment software system that was completely developed in-house by the NBC Information Technology (IT) Section. User Wastewater Discharge Permits and Zero Process-Sanitary Discharge Permits are uploaded to the Pretreatment System and can be viewed on all desktop computers. The software also allows entry of photographs of users sampling locations, pretreatment systems and surveillance manholes to be uploaded to the system. The Laboratory purchased and implemented a new Laboratory Information Management system (LIMS) in 2012. IT staff wrote a program to ensure LIMS would interface with the Pretreatment system to ensure there was no loss in data transfer. The Pretreatment System also interfaces with the Customer Service software which was also developed by NBC IT Staff.

During 2017 Pretreatment and IT staff worked on debugging the Pretreatment System which had been upgraded in 2016. The upgrade improved the functionality and efficiency. The upgraded system can be accessed on the iPads. In addition staff can access mapping apps directly from the software. During 2018 Pretreatment staff will continue to work with IT to enhance the system. These enhancements include pages to track manhole data, grease control program data and industrial area inspection data.

The Pretreatment software system was developed to track the requirements specified by the DEM in the RIPDES permits issued to the NBC. The Pretreatment software package has the following capabilities:

- Ability to track users in multiple drainage districts with different local limits and analyze the user data either separately or collectively.

- Ability to create a file for each user containing information pertinent to the user such as company name, address, permit number, company contacts, compliance status, solvents and chemicals used, user classification, user category, water usage, permit history, inspection history, the key manhole that the user discharges to, sample locations, monitoring requirements, reporting requirements, etc.

- Automatically generate form letters, based on data entered into the system, to notify users that are not meeting standards or have failed to submit monitoring results and certifications.

- Subroutines that summarize compliance monitoring and other user requirements and print the data in a format suitable for inclusion in the annual report.

- Maintain a user requirements file for tracking of user compliance with administrative orders, compliance schedules, submittal due dates, and other requirements that are issued to users to ensure that user requirements are met on time. Notices of Violation are generated automatically to notify the user of noncompliance with specified deadlines.

- Ability to maintain files of NBC and EPA pretreatment standards and compare monitoring results with these standards to automatically generate a Notice of Violation form letter notifying user of Failure to Meet Standards.

- Subroutines to review monitoring data to determine a user's compliance with standards for any time period specified. These subroutines are used to determine the "List of Firms in Significant Non-Compliance" for exceeding discharge standards 66% of the time or the EPA TRC value of 1.2 times the standard for metals and cyanide and 1.4 times the standard for oil and grease 33% of the time.

- Ability to send out mailings to specific users or various categories or classifications of users to notify them of changes in standards, requirements, etc.

- Subroutines that allow input, output, tracking and maintenance of a list of all inspections performed and the type of the inspection conducted for any specified reporting period.

- Ability to run an "EPA Counts" program that will review and analyze all user data for any specified time period and print out pertinent data that must be routinely reported to the EPA and the local control authority.

- Subroutines that track worker performance, such as number of inspections and meetings conducted, permits written, number of active assigned users, and the number of days required by the worker to process user submittals.

- Ability to enter industrial and sanitary manhole monitoring data and create reports based upon this data.

- Ability to track and print out any changes in user classification from significant to non-significant status or vice versa, the date of the change, and the engineer that made the change.

- Ability to print out a report of all companies with the number of batch, non-batch, and pH violations for any specified reporting period.

- Ability to print out a list of all companies indicating the number of months since the last sampling or non-sampling inspection.

- Subroutines that track the number of user parameter violations and analyze and track pollutant loadings for various classes of users.

In 2017 programming to give Pretreatment staff the ability to generate letters for vacation and holiday inspections from the system was completed. It was put online in November to be used for the holiday shutdown inspections conducted in December.

In 2013 iPads were purchased for Pretreatment technical staff. The purpose of using this technology is to improve efficiency throughout the inspection process. Pretreatment staff continued to use inspection checklists developed for the iPad during 2017. These checklists are completed in the field and downloaded to SharePoint so that the documents can be efficiently processed at the office for inclusion in the user file. With the use of the iPad, staff can now take pictures in the field and email them to supervisors back in the office as well as being readily attached to the inspection reports.

Public Information and Education Methods

One of the most effective means of ensuring user compliance is through continued user education regarding environmental problems, NBC programs and ever-changing regulations. The NBC is committed to user education and public information. The NBC Public Affairs Office, in conjunction with the staffs of the ESTA and Pretreatment Sections continually inform users of various NBC activities. The NBC uses several means for providing public education about the goals, requirements, and accomplishments of the NBC source reduction and control programs. These include the following:

- Mailings to users informing them of pretreatment requirements;
- Newspaper and Magazine Articles, Public Notices, and various NBC newsletters;
- Development and distribution of educational fact sheets and technical bulletins;
- Public Meetings, Workshops, and Hearings;
- Displays at Public Events;
- Social Media outlets, such as Facebook, Twitter and YouTube;
- The NBC Citizens Advisory Committee.

During the past twelve months, the NBC used all of these means to keep users and the community informed of the requirements, activities and accomplishments of the NBC source reduction and control program. Activities in each of the above-listed categories are described in the following paragraphs.

Mailings

During 2017, the NBC sent twelve informational letters to various categories of regulated users located in the two districts. TABLE 7 below describes each of these informational letters.

TABLE 7
2017 Informational Letters

Issue Date	Description
January 10, 2017	This letter was issued to permitted users that were required to monitor for BOD and TSS. The letter informed them the DEM had issued draft RIPDES Permits for the two NBC facilities and made them aware of the Public Hearing and comment period.
January 10, 2017	This letter was issued to State, City and Town Planners informing them of the draft RIPDES Permits, the Public Hearing and comment period.
January 25, 2017	This letter was issued to State, City and Town Planners to let them know that the NBC and DEM were working together on issues regarding the draft RIPDES permits.
March 3, 2017	This letter was sent to all permitted users announcing the 22nd annual Environment Merit Awards and invited them to nominate themselves for an award.
March 6, 2017	This letter was issued to all SIUs congratulating the 17 companies that achieved perfect compliance for the 2016 review period.
March 8, 2017	This letter was issued to all SIUs notifying them they were classified as SIUs during 2016. This letter reminded these companies of the reporting requirements outlined in 40CFR§403.12.
March 16, 2017	This letter was issued to all industrial users and notified them of EPA SNC criteria used by the NBC and outlined permitting and reporting requirements.
April 3, 2017	This was issued to all users who were published in the Providence Journal on February 23, 2017 for being in Significant Non-Compliance (SNC) for the reporting period of October 1, 2015 through December 31, 2016. An invoice for their portion of the cost publish the notice was included with the letter.
June 6, 2017	This letter was sent to all industrial users notifying them prohibited substances should not be discharged to the sewer system during summer shut down and clean-up operations. The letter warned users that civil and criminal penalties would be strictly enforced against violators caught illegally dumping.
October 11, 2017	This letter was issued to facilities utilizing #4, #5, or #6 fuel oil. The letter recommended the companies to inspect their heating systems prior two seasonal start-up of their heating systems to prevent accidental releases of fuel oil to the sewer.

TABLE 7
2017 Informational Letters (continued)

October 11, 2017	This letter was issued to permitted users with the potential to impact the two treatment plant with nitrogen. It informed them the NBC would be developing local limits for nitrogen and advised them to investigate sources of nitrogen at their facilities and ways to minimize or eliminate nitrogen discharges.
November 30, 2017	This letter was sent to all industrial users notifying them prohibited substances should not be discharged to the sewer system during the holiday shut down and clean-up operations. The letter warned users that civil and criminal penalties would be strictly enforced against violators caught illegally dumping.

Newspaper and Magazine Articles, and Public Notices and the NBC Newsletter

The NBC routinely issues press releases on its activities and discusses events relating to pretreatment and other environmental matters with reporters. Articles pertaining to the NBC have appeared in newspapers and magazines over the past year relating to:

- Educational workshops, meetings and articles by the ESTA and Pretreatment Programs;
- Articles regarding NBC personnel;
- NBC Progress on Combined Sewer Overflow (CSO) project;
- Public and community outreach projects;
- Capital Improvements for NBC facilities;
- Water Quality;
- Permitting Issues;
- NBC Energy Projects.

Copies of each of the aforementioned newspaper and magazine articles are provided in ATTACHMENT VOLUME I, SECTION 1. The NBC also published numerous Public Notices regarding the following topics:

- Public Notice listing the names of firms in Significant Non-Compliance;

- Public Notice listing the names of Significant Industrial Users in Perfect Compliance;

- Public Notice announcing the NBC Environmental Merit and Regulatory Compliance Award winners;

- Public Notices of Rate Filing and Public Hearings regarding various NBC projects and informational meetings.

In addition to public notices, newspaper and magazine articles, the NBC also publishes notices requesting proposals and qualifications, issues press releases, publishes bill inserts which are sent to all permitted users, and develops educational brochures and fact sheets. The NBC bill inserts inform the users of various NBC activities including: improvements at the treatment facilities, billing activities, reductions in toxic loadings, water conservation, and pollution prevention. Copies of the 2017 public notices and NBC newsletters are included in ATTACHMENT VOLUME I, SECTION 1.

Public Relations & Outreach Events

Public participation and outreach has played an essential part of fulfilling the challenging goal of increasing public awareness and understanding of wastewater treatment. A summary of this year's highlights include:

- *Facility Tours* - In 2017, over 2,000 visitors took complimentary tours of the NBC wastewater treatment facilities. These visitors ranged from school children to university students to engineers. To make the tours even more accessible to area students, the NBC offered school bus scholarships to help defray transportation costs for schools in the NBC service district. On May 20, 2017, the NBC participated in National Infrastructure week by opening up the Field's Point treatment facility to the public for tours. Governor Raimondo recognized the day as Wastewater Treatment Appreciation Day, recognizing that clean water is crucial to the Ocean State.

- *Maintaining a Presence on the World Wide Web (**www.narrabay.com**)* - To further improve communications with our customers, the NBC continued to enhance its website. Performance Statistics relating to the NBC Combined Sewer Overflow (CSO) and wind turbine projects are regularly updated on the site. Full documentation of the re-evaluation stakeholders process for Phase III of the CSO Project was published on the website as well. The NBC continued weekly updates of its award-winning water quality website "Snapshot of Upper Narragansett Bay". This website contains fact sheets, monitoring and data reports regarding water quality. The public is able to easily download all NBC receiving water monitoring data. The NBC also continued populating its Facebook page and Twitter and Instagram feeds and joined other organizations across the globe to "Imagine a Day Without Water" on October 12, 2017 with a web-based video on the importance of clean water infrastructure in our daily lives.

- *Advocacy for Clean Water* - In 2017, the NBC worked with over 1,600 wastewater treatment facilities nationwide to advocate for federal funding for clean water infrastructure. The NBC Executive Director completed his term as President of the National Association of Clean Water Agencies (NACWA), giving the NBC a unique opportunity to communicate directly with the Rhode Island Congressional delegation, presenting the municipal perspective on infrastructure needs for the next two decades and the importance of an affordable and sustainable solution to our clean water requirements.

- *Teaching Children About Water Conservation and Wastewater Treatment* - During 2017, the NBC continued to work with area schools to educate children about the impacts of pollution on water quality. During the year the NBC worked with twelve schools and 700 students. The program named NBC Watershed Explorers Program, involved monthly classroom visits, journal writing and awarding student achievement badges. In 2007, the program won a national public education award from the NACWA.

- *Celebrating the Importance of Narragansett Bay* - For the twenty-third year, the NBC sponsored its annual poster contest for elementary school students in kindergarten through sixth grade. Over 600 students enthusiastically illustrated clean water themes with colorful, original depictions of the importance of our water resources. Winners received a prize and had their artwork showcased in a 2018 calendar. In addition, the winning posters were exhibited at the Fields Point WWTF Education Center.

- *Recognizing Students for Environmental Awareness* - For the twenty-fifth consecutive year, the NBC has participated in the Rhode Island State Science and Technology Fair and presented prizes to those junior and senior high school students who best demonstrate how to achieve a cleaner Narragansett Bay.

- *Student Internships* - The NBC continued its tradition of opening its doors to provide experiential education opportunities for local high school and college students. This year, students gained practical hands-on experience in areas as diverse as wastewater treatment operations, planning, and environmental monitoring and data analysis.

- *Career Opportunities Outreach* - Through the efforts of the NBC Affirmative Action Committee, the NBC delivered career day presentations to students in Cumberland and Providence.

- *Supporting Community Programs* - Each year, the NBC solicits funding ideas from employees and the public for the monies collected from environmental violators. This year, 17 community organizations were awarded Earth Day clean-up grant funds to support local efforts.

- *Honoring Industrial and Commercial Users for Environmental Performance* - This year, the NBC recognized seventeen companies in the service district with Environmental Merit Awards for Perfect Compliance Awards with regulatory requirements. The environmental strides made by these companies were honored at a special breakfast. Additional information regarding this program is provided in CHAPTER VII.

- *Keeping Our Stakeholders Informed* - The NBC Facebook page, Twitter feed and Instagram continue to offer up-to-the-minute information on construction, water quality monitoring, and public events. In addition, the NBC continued to make available its 22-minute DVD about the CSO Project, entitled *The Biggest Project You'll Never See* and the 30-minute DVD about the NBC *Environmentalism at Work.* The DVDs are available free to the public.

- *Celebrating the Connection Between Clean Water and Green Energy* – In 2017, the three NBC 1.5 megawatt wind turbines produced 47% of the power needed to operate the Field's Point Wastewater Treatment Facility. The 365-foot tall turbines serve as a visual reminder to all Rhode Islanders of the NBC leadership in sustainable energy and clean water. Also during 2016, the NBC purchased three additional 1.5 MV wind turbines. These turbines are remotely located off NBC property in Coventry, Rhode Island.

- *Bi-lingual Information* – During 2017, the NBC continued distributing Spanish language versions of its billing and collections information.

- *Casual Days* - Throughout the year, the NBC continued to participate in a casual day program. The proceeds benefited various local and state organizations, such as the Wounded Warriors Project and The Red Cross.

- *State Employee Charitable Appeal* - NBC employees participated in the 2017 State Employees Charitable Appeal (SECA) and raised over $17,000 for a host of worthwhile, appreciative charitable organizations.

- *Residential Grease Control Program* – In 2017, the NBC created a campaign to educate school children on the impacts of cooking grease on the sewer system and how to dispose of it. The campaign introduced a super hero, Mr. Can. He can be seen keeping a watch on the NBC sewer system to prevent the grease beasts wreaking havoc. A short video can been seen on YouTube. In addition, promotional materials such as pins, coloring books and posters were created. All of these materials are available in both English and Spanish.

NBC Speakers Bureau

The NBC has a well-established Speakers Bureau to address the many requests received to speak at schools, workshops and meetings, both locally and nationally. During 2017, NBC personnel gave many presentations to educate public and professional organizations about the NBC and its many programs and accomplishments. The following paragraphs detail these activities:

Pretreatment Presentations

~National Association of Clean Water Agencies (NACWA) Pretreatment & Pollution Prevention Conference

The 2017 NACWA Pretreatment and Pollution Conference was held in San Antonio, TX on May 16 through 19, 2017, Kerry Britt, Pretreatment Manager, served as a facilitator for panel and roundtable discussions during the conference.

~New England Regional Pretreatment Coordinators Association (NERPCA) Conference

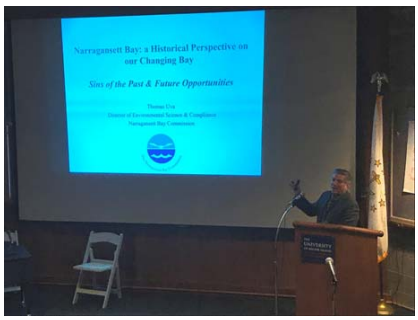
The 2017 NERPCA Conference was held in Chelmsford, MA on October 25 and 26, 2017. On October 25, 2017 Kerry Britt, Pretreatment Manager gave a presentation on Categorizing & Permitting Companies. In addition she conducted the annual NERPCA business meeting.

Water Quality Presentations

~University of Rhode Island (URI) – Applied Coastal Ecology

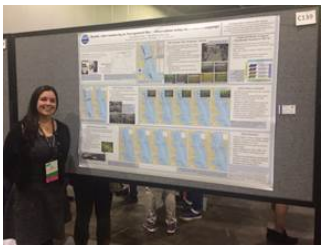
On March 21, 2017 Christine Comeau and Eliza Moore, Environmental Scientists gave presentations during an Applied Coastal Ecology course of URI. Christine Comeau presented on the CSO Abatement Project and Impacts on Water Quality. Eliza Moore presented on WWTF Efforts on Reducing Nitrogen Loading to Narragansett Bay.

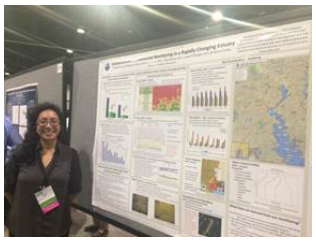
~16th Annual Ronald C. Baird Sea Grant Symposium



On December 6, 2017, Tom Uva, Director of Environmental Science & Compliance gave a presentation at the 16th Annual Ronald C. Baird Sea Grant Symposium: *Changes in Narragansett Bay: A Conversation Among Citizens & Scientists.* His presentation was entitled "Narragansett Bay: *A Historical Perspective on Our Changing Bay: Sins of the Past & Future Opportunities"*.

~Coastal & Estuarine Research Federation (CERF) Conference





The 2017 CERF Conference was held in Providence, RI on November 5 through 9, 2017. Several NBC staff member presented in formation during the conference Christine Comeau, Environmental Scientist, gave a presentation entitled "Receiving Waters Monitoring Following WWTF Upgrades to Reduce Nitrogen Loading". Sarah Flickinger, Environmental Scientist, gave a presentation entitled "Upper Narragansett Bay Phytoplankton Community Post WWTF Nitrogen Load Reductions. Eliza Moore, Environmental Scientist, presented a poster entitled "Benthic Video Monitoring in Narragansett Bay – Observations Using the CMECS Language". Karen Cortes, Environmental Data Analyst, presented a poster entitled "Comprehensive Environmental Monitoring in a Rapidly Changing Estuary".

Energy Presentations

~Brown University

On May 5, 2017, Barry Wenskowicz, Sustainability Engineer, gave a presentation on the NBC wind turbines to Brown University Students during a tour of the Field's Point facility.

~National Association of Clean Water Agencies (NACWA)

On September 2017, Tom Uva, Director of Environmental Science & Compliance, gave an update of the NBC Energy Programs to NACWA.

~Water Environment Federation (WEF)

On October 2, 2017 Jim McCaughey, Environmental Safety & Technical Assistance Manager, gave a presentation on NBC Efforts to Achieve Net Zero Electricity Demand from the Grid using local Renewable Energy Resources at the 2017 WEFTEC Conference held in Chicago, IL.

Educational Presentations

~School Presentations

During the month of February 2017, Nora Lough, Biologist, gave a presentation to students from Green School and Moses Brown.

~Water Conservation Education Programs

The NBC makes great efforts to educate its users about water conservation. The NBC has a Non-Regulatory Water Audit and Technical Assistance Program, which is available free to its commercial and industrial sewer users. Additional information about this program is provided in CHAPTER VII.

Due to the success of the pilot program, the NBC expanded the What's in Your River program in the fall of 2003 to accommodate the overwhelming school response. The NBC improves the program each year. In 2005, What's In Your River became the Woon Watershed Explorers Program, and an expanded version of the program continued throughout 2014. The program was re-branded in 2015 as the NBC Watershed Explorers and includes several new components including classroom visits once a month, student achievement badges and journal writing. Over seventeen schools and 6,000 students have participated. The most impressive characteristic of the program is the extreme diversity represented in each school. Some students have never taken a field trip to their local river, while others live adjacent to one.

The program encourages each school to take ownership of their local rivers and to pass on messages about clean water to their fellow students, families and neighbors. The Narragansett Bay Commission considers this program to be imperative to its success in its relentless pursuit of public outreach and education. Twelve schools and over 700 students participated in the program in 2017.

Citizen's Advisory Committee

The NBC has a permanent Citizens Advisory Committee (CAC) established as part of its organizational structure. The CAC meets monthly and is routinely informed of NBC activities by staff. The CAC serves to advise and assist the NBC in its dealings with the public. Its members consist of representatives of the industrial community, environmental advocacy groups, and concerned citizens.

Professional Affiliations

The NBC has affiliated itself with many professional groups and organizations, both locally and nationally, to learn from these groups and to educate them about the NBC. The NBC is a member of the Providence Chamber of Commerce, the Northern Rhode Island Private Industry Council, the National Association of Clean Water Agencies (NACWA), New England Water Environment Association (NEWEA), the Water Environment Federation, American Electroplaters & Surface Finishers Society, and the American Academy of Environmental Engineers, to name a few. Various NBC staff routinely attends association meetings and conferences and often are speakers at such events.

III. INDUSTRIAL AND COMMERCIAL USERS, PERMITS, AND INSPECTIONS

User Classification System

Since the inception of the Pretreatment Program, the NBC has identified and inspected 10,637 different industrial and commercial users located within the two NBC sewer districts. During 2017 the Pretreatment staff identified and entered information on 214 previously unknown users into the NBC Pretreatment database. Pretreatment users are categorized according to the classification system shown in TABLE 8. This classification system categorizes users in nine general categories. Each class of users is subdivided into more specific classes of users. Firms classified by the Pretreatment Section as industrial facilities may be listed in Categories 1 through 7, while commercial facilities can be classified in Categories 5 through 9. Users in Categories 1, 2 and 3 are of primary concern to the NBC Pretreatment Section as their discharges contain toxic and conventional pollutants that can have an impact on NBC facilities. Category 4 consists of users with the potential to discharge toxics. Category 5 users may have non-toxic discharges such as cooling water. Category 6 users have no discharges or potential for discharge to the sewer and Category 7 users have gone out of business or moved out of the district. Commercial users with the potential to discharge conventional pollutants are classified in Category 8, while commercial users with the potential to discharge toxic or prohibited pollutants are listed in Category 9.

Significant Industrial Users

In 1995, the NBC standardized its definition of Significant Industrial User (SIU) in both districts by modifying the NBC Rules and Regulations. This definition was essentially an adoption of the Field's Point SIU definition, and classifies a SIU as any industrial user that satisfies any one of the following criteria:

- Firm is subject to Federal EPA categorical standards;
- Firm discharges an average of 5,000 or more gallons per day of process waste water;
- Firm contributes a process waste stream which makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the NBC's Treatment Plant;
- Firm is designated as significant by the NBC on the basis that the user has reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement.

TABLE 8
NBC User Classification System
Industrial User Categories

Category 1: Industries subject to Federal EPA Categorical Standards.

10. Other Categorical Users
11. Electroplaters, Metal Finishers
12. Metal Molding and Casting
13. Organic/Inorganic Chemical Manufacturers
14. Pharmaceutical Manufacturers
15. Metal Formers
16. Steam Electric Power Generators
17. For Future Use
18. Centralized Waste Treatment Facilities
19. Transportation Equipment Cleaning

Category 2: Industries discharging toxic and/or prohibited pollutants, but who are not subject to Federal EPA Categorical Standards.

20. For Future Use
21. Tubbing/Vibratory/Mass Finishing
22. Chemical Transporters, Refiners, Recyclers, Manufacturers
23. Textile Firms
24. Printers
25. Industrial Laundries
26. Machine Shops/Machinery Rebuilding
27. Other Facilities discharging toxic and/or prohibited pollutants
28. Central Treatment Facilities - Hazardous Waste
29. Central Treatment Facilities - Non-Hazardous Waste

Category 3: Industries discharging or having the potential to discharge conventional pollutant (BOD, TSS, pH, oil and grease, fecal coliforms) loads in sufficient quantities to cause violation of RIPDES permit or local discharge limitations.

30. For Future Use
31. For Future Use
32. For Future Use
33. For Future Use
34. Manufacturers with high BOD/TSS waste
35. Other Facilities Discharging Conventional Pollutants
36. For Future Use
37. Automotive Maintenance/Service Facilities
38. For Future Use
39. For Future Use

TABLE 8
(Continued)
NBC User Classification System
Industrial User Categories

Category 4: Industries with sanitary or non-toxic discharges using solvents, toxic and/or hazardous chemicals that could potentially be discharged to the sewer.

40. Groundwater Remediation/Excavation Projects
41. Recycled or Disconnected Electroplating or Chemical Processes
42. Other Process Operations that are Disconnected or Recycled
43. Recycle Electroplating or Chemical Processes with Non-contact Cooling Water or Boiler Discharges
44. Other Recycled or Disconnected Processes with Cooling Water, Boiler, or other Discharges
45. For Future Use
46. Cooling Water Discharges with Solvents, Toxic and/or Hazardous Chemicals on site
47. For Future Use
48. For Future Use
49. Other Discharges with Solvents, Toxic and/or Hazardous Chemicals on site

Category 5: Industries discharging only sanitary wastes and/or non-toxic discharges.

50. For Future Use
51. Cooling Water
52. Boiler Blowdown/Condensate Discharges
53. Cooling Tower Discharges
54. For Future Use
55. For Future Use
56. For Future Use
57. For Future Use
58. For Future Use
59. Other Non-Toxic Industrial Discharges

Category 6: Dry industries with no wastewater discharges to the sewer using solvents, toxics and/or hazardous chemicals.

60. All users

TABLE 8
(Continued)
NBC User Classification System
Commercial User Categories

Category 7: Industries with no waste discharges to the sewer.

70. Septic System Discharger
71. Out of Business
72. Moved out of the District
73. Permit Expired/Not Renewed or Reissued
74. Proposed Discharges - Permit Not Issued
75. Accidental Discharges/Spills/Non-Permitted Discharge

Category 8: Commercial Users with the potential to discharge conventional pollutants (BOD, TSS, pH, oil and grease, fecal coliforms) loads in sufficient quantities to cause violation of RIPDES permit or local discharge limits.

80. Septage Haulers/Dischargers
81. Food/Fish/Meat Produce Processing (Wholesale)
82. Supermarkets (Retail Food Processing)
83. Parking Garages/Lots
84. Cooling Water/Groundwater/Boiler Discharges
85. Restaurants/Food Preparation Facilities
86. Commercial Buildings with Cafeteria and/or Laundry Operations
87. For Future Use
88. For Future Use
89. Other Commercial Facilities with Potential to Discharge Conventional Pollutants

Category 9: Commercial Users with the potential to discharge toxic substances, prohibited pollutants and/or conventional pollutants.

90. Hospitals
91. Cooling Water/Groundwater/Boiler Discharges
92. Laundromats/Dry Cleaners
93. Photo Processing
94. X-Ray Processing
95. Clinical, Medical, and Analytical Laboratories
96. Funeral Homes/Embalming
97. Motor Vehicle Service/Washing
98. For Future Use
99. Other Commercial Users with Potential to Discharge Toxic, Prohibited and/or Conventional Pollutants.

A list of the industrial and commercial users, separated by district, is provided in ATTACHMENT VOLUME II, SECTION 1. The users' category and designation as significant or non-significant is also provided in this listing. As of the date of submission of this report 10,637 industrial and commercial users have been identified through user surveys, 5,768 are still conducting business in the NBC service areas and 73 were classified as SIUs sometime during 2017. Of the 73 SIUs reported for 2017, there were 45 classified as categorical industries which are subject to both NBC and EPA regulations, and 28 significant non-categorical industrial users of the NBC sewer system. During this reporting period, five SIUs were reclassified to non-significant due to operational changes implemented within their facilities. These operational changes may range from installation of a wastewater recycle pretreatment system to the firm going out of business or moving out of the NBC district. Four firms were newly classified as significant during 2017. A listing of these firms, detailing the specific reason for reclassification, is provided in CHAPTER I.

Wastewater Discharge Permits

As of the date of this submission, the NBC has 1,788 Wastewater Discharge Permits in effect, which were issued to facilities located in the Field's Point and Bucklin Point drainage districts. Presently, 1,213 permits are in effect for users in the Field's Point district, while 575 permits are in effect in the Bucklin Point district. Discharge permits which are no longer in effect may have been terminated for one of the following reasons:

- The permit expired, was revised, and reissued.
- The firm has gone out of business (Category 71).
- The firm has moved out of the NBC District (Category 72).
- The firm's Wastewater Discharge Permit was terminated and reissued in a new classification to reflect operational changes.
- The firm has ceased process discharge to the sewer system (Categories 41, 42, 43, 44, 60 or 73).

TABLE 8 provides a summary of the number of permits issued and presently in effect by category of user for each district. Permits have been issued and are in effect for industries classified in 41 of the 77 categories listed in TABLE 8. During this reporting period, Pretreatment staff issued 351 permits to users located in the two districts. Of the 351 permits issued during 2017, there were 87 new permits issued to new commercial and industrial users and 264 permits were reissued to existing users because the old permit expired or the firm changed process operations. A listing of the permits issued in 2017 is provided in ATTACHMENT VOLUME II, SECTION 2.

TABLE 9
Narragansett Bay Commission
Summary of Wastewater Discharge Permits in Effect

Category	Company	Field's Point District	Bucklin Point District	Total Permits In Effect
11	Electroplaters, Metal Finishers	25	15	40
12	Metal Molding And Casting	0	0	0
13	Organic Chemical Manufacturer	0	0	0
14	Pharmaceuticals	0	2	2
15	Metal Formers	0	1	1
16	Steam Electric Power Generating	0	1	1
18	Centralized Waste Treatment Facilities	0	0	0
19	Transportation Equipment Cleaning	0	0	0
21	Tubbing/Vibratory/Mass Finishing	3	4	7
22	Chemical Transporters, Refiners, Recyclers, Manufacturers	4	2	6
23	Textile Firms	1	8	9
24	Printers	7	7	14
25	Industrial Laundries	1	3	4
26	Machine Shops/Machinery Rebuilding	2	2	4
27	Other Firms Discharging Toxics	9	11	20
28	Central Treatment Facilities, Hazardous	0	0	0
29	Central Treatment Facility, Non-Hazardous	0	0	0
34	Manufacturers With High BOD/TSS	3	2	5
35	Firms Discharging Conventional Pollutants	2	3	5
37	Automotive Maintenance/Service Facilities	17	4	21
40	Groundwater Remediation/Excavation Projects	2	2	4
41	Regulated Electroplating Or Chemical Processes Disconnected Or Recycled	10	2	12
42	Other Regulated Processes That Are Disconnected Or Recycled	18	24	42
43	Recycle Electroplating Or Chemical Processes With Cooling Water Or Boiler Discharges	9	0	9
44	Other Recycle Processes With Non-contact Cooling Water Or Boiler Discharges	3	6	9
46	Cooling Water With Solvents/Toxics On Site	4	2	6
49	Firms With Solvents, Toxics, Etc. On Site	1	1	2
51	Cooling Water	3	1	4
52	Boiler Blowdown/Condensate Discharges	9	2	11
53	Cooling Tower Discharges	7	5	12
59	Other Nontoxic Discharges	2	5	7
80	Septage Haulers/Dischargers	1	12	13
81	Food/Meat/Fish Produce Processing (Wholesale)	48	30	78
82	Supermarkets (Retail Food Processing)	23	11	34
83	Parking Garages/Lots	1	0	1

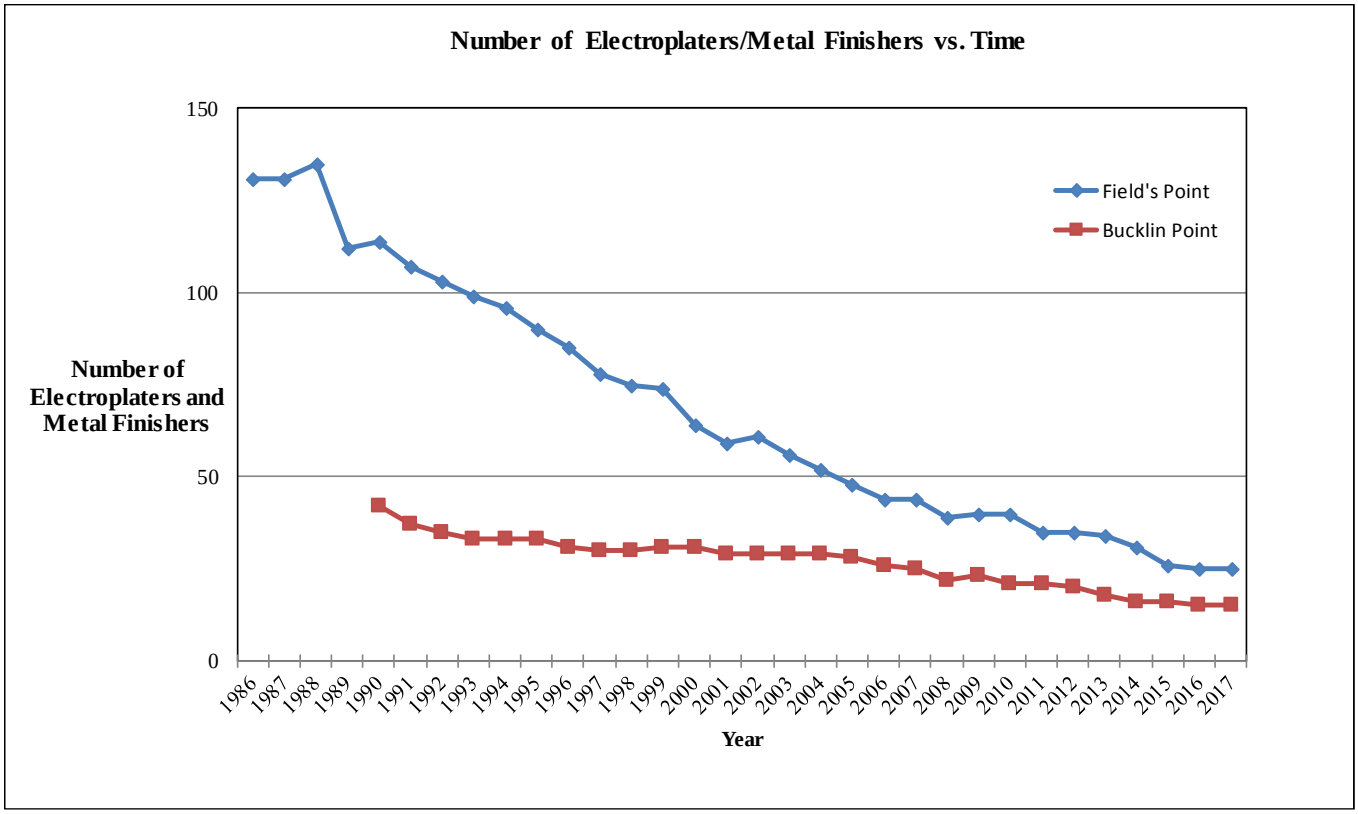
TABLE 9
(Continued)
Narragansett Bay Commission
Summary of Wastewater Discharge Permits in Effect

Category	Company	Field's Point District	Bucklin Point District	Total Permits In Effect
84	Cooling Water/Groundwater/Boiler Discharges	10	0	10
85	Restaurants/Food Preparation Facilities	598	247	845
86	Comm. Buildings With Cafeteria/Laundry	153	42	195
89	Other Commercial Users With Potential to Discharge - Conventional Pollutants	14	8	22
90	Hospitals	10	1	11
91	Cooling Water/Ground Water/Boiler Discharges	0	0	0
92	Laundromats/Dry Cleaners	49	26	75
93	Photo Processing	4	1	5
94	X-Ray Processing	52	34	86
95	Clinical, Medical, And Analytical Laboratories	31	5	36
96	Funeral Homes/Embalming	13	9	22
97	Motor Vehicle Service/Washing	39	18	57
99	Other Commercial Users With Potential To Discharge Toxic Or Conventional Pollutants	25	16	41
	Total Permits in Effect	**1,213**	**575**	**1,788**

There were 20 permits revised and reissued to SIUs in the two districts during 2017, while four new permit were issued to this class of users. Eighteen of the 20 revised permits were issued to categorical users during 2017, while the two remaining revised permits were issued to significant non-categorical users.

As can be seen from TABLE 9, the largest number of permits in effect are issued to the commercial restaurant and food preparation facilities classified in Category 85, followed by Category 86 permits which are issued to commercial buildings with cafeterias and/or laundry facilities. The next largest category of permitted users are the x-ray processing and dental facilities in Category 94. Facilities classified in Category 11 are the industrial users that contribute the majority of the toxic metal and cyanide loadings to the NBC treatment facilities due to the nature of the electroplating operations they conduct. The dramatic decline of electroplaters and metal finishers in the Field's Point district since 1984 and in Bucklin Point since 1990 is clearly detailed in FIGURE 4. During 2017 the number of electroplaters and metal finishers in both districts remained the same as the number from 2016.

FIGURE 4



The NBC issues Wastewater Discharge Permits to all sewer users that discharge non-domestic wastewater into the NBC system and is presently in the process of permitting the remaining non-significant commercial users located throughout the two NBC drainage districts. Copies of the various typical Wastewater Discharge Permits issued by the NBC are provided in ATTACHMENT VOLUME I, SECTION 2.

Permits issued by the NBC typically include the following conditions and requirements:

- A requirement that the user meet local and federal discharge standards at all times.
- Maintenance of a logbook requiring record keeping regarding the operation and maintenance of the pretreatment system, quantity of sludge generated, completed manifest forms, a list of all batch discharges, quantity of chemicals used to provide pretreatment, etc.
- Self-monitoring requirements regarding monitoring and reporting of effluent characteristics and concentrations.
- Reporting requirements for accidental discharges to the sewer system. The user is required to immediately notify the NBC of a spill into the sewer system and is required to file a written report within five (5) days of the incident.

- Submission of a Spill and Slug Prevention Control Plan and a Toxic Organic/Solvent Management Plan. The user is required to contain all spills within the facility as part of the Spill and Slug Control Plan. The Toxic Organic/Solvent Management Plan requires the user to detail process operations, perform a mass balance on the quantity of solvents used in the facility, to sample the waste stream to verify that no solvents are being discharged to the sewer system, and to provide containment of all solvents in case of a spill. Copies of these documents are provided in ATTACHMENT VOLUME I, SECTION 3.

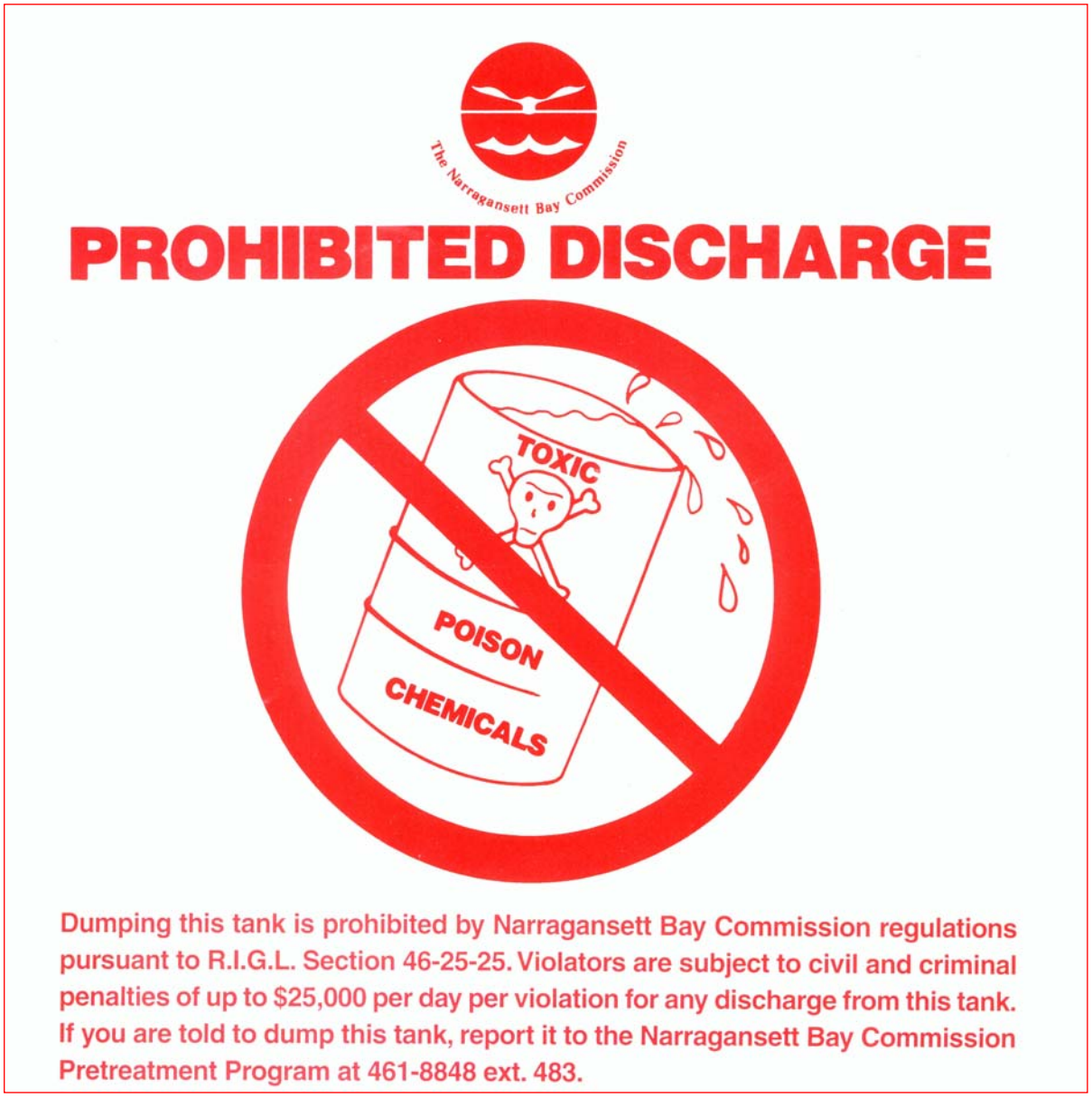
- A prohibition against batch discharges without prior written approval from the NBC to prevent the discharge of concentrated solutions to the sewer system. The NBC developed the prohibited discharge sticker shown in FIGURE 5. This sticker is affixed to all tanks which the industrial user is prohibited from discharging.

- Administrative provisions regarding inspection powers, retention of records, civil and criminal liability and associated penalties, selling the facility, revocation and transferability of the permit, etc.

Tanks at a shutdown plating shop are stickered "PROHIBITED DISCHARGE"

FIGURE 5

PROHIBITED DISCHARGE STICKER



Most permits are issued for a five-year period, but may be issued for shorter periods of time. Permits may be revoked, after notice and hearing, for violations of the NBC Rules and Regulations. On June 30, 2003, the Public Utilities Commission approved a rate structure for NBC wastewater discharge permit fees. Permit fees range from $217 to $14,492 per year. Rates are standardized in both NBC districts and many categories are also flow dependent to encourage water conservation. The existing NBC wastewater discharge permit fee rate structure is provided in TABLE 10.

TABLE 10
Narragansett Bay Commission
Pretreatment Permit Fee Rate Structure

User Category Number	User Classification	Permit Fee
10	**Other Categorical Users**	$1,087.00
11	**Electroplater/Metal Finisher**	
	Flow < 2,500 GPD	$1,811.00
	2,500 ≤ Flow < 10,000 GPD	$3,623.00
	10,000 ≤ Flow < 50,000 GPD	$7,246.00
	50,000 ≤ Flow < 100,000 GPD	$10,144.00
	Flow ≥ 100,000 GPD	$10,869.00
12	**Metal Molding and Casting**	$1,087.00
13	**Organic Chemical Manufacturers**	$7,246.00
14	**Pharmaceuticals**	$1,087.00
15	**Metal Formers**	$5,797.00
16	**Steam Electric Power Generating**	$1,087.00
18	**Centralized Waste Treatment Facilities**	
19	**Transportation Equipment Cleaning**	$1,087.00
21	**Tubbing/Vibratory/Mass Finishing**	
	Flow < 5,000 GPD	$725.00
	Flow ≥ 5,000 GPD	$1,449.00
22	**Chemical Transporters, Refiners, Recyclers, Manufacturers**	$2,898.00
23	**Textile Processing Firms**	
	Flow < 2,500 GPD	$1,449.00
	2,500 ≤ Flow < 10,000 GPD	$3,768.00
	10,000 ≤ Flow < 50,000 GPD	$5,072.00
	Flow ≥ 50,000 GPD	$7,246.00
24	**Printers**	
	Gravure	$3,623.00
	Other Flow ≥ 2,500 GPD	$1,087.00
	Other Flow < 2,500 GPD	$725.00

TABLE 10
(Continued)
Narragansett Bay Commission
Pretreatment Permit Fee Rate Structure

User Category Number	User Classification	Permit Fee
25	**Industrial Laundries**	$3,623.00
26	**Machine Shops/Machinery Rebuilders**	$1,449.00
27	**Other firms discharging toxics and/or prohibited pollutants**	
	Flow ≥ 10,000 GPD	$2,898.00
	2,500 ≤ Flow < 10,000 GPD	$1,449.00
	Flow < 2,500 GPD	$725.00
28	**Central Treatment Facilities - Hazardous Waste**	$14,492.00
29	**Central Treatment Facilities - Non-Hazardous Waste**	$4,348.00
34	**Manufacturers with high BOD/TSS wastestreams**	
	Flow ≥ 100,000 GPD	$5,797.00
	50,000 GPD ≤ Flow < 100,000 GPD	$3,623.00
	10,000 GPD ≤ Flow < 50,000 GPD	$1,811.00
	Flow < 10,000 GPD	$1,087.00
35	**Other facilities discharging conventional pollutants**	
	Flow ≥ 10,000 GPD	$1,449.00
	Flow < 10,000 GPD	$725.00
37	**Automotive Maintenance/Service Facilities**	
	Small ≤ 2 Bays	$435.00
	Large ≥ 3 Bays	$1,449.00
40	**Groundwater Remediation/Excavation Projects**	
	Flow ≥ 10,000 GPD	$1,449.00
	Flow < 10,000 GPD	$725.00
41	**Recycle or Disconnected Electroplating or Chemical Processes**	$725.00
42	**Other Process Operations Disconnected or Recycled**	$290.00
43	**Recycle or Disconnected Electroplating or Chemical Processes with Cooling Water or Boiler Discharges**	$870.00
44	**Other Recycled or Disconnected Process Operations with Cooling Water or Boiler Discharges**	$362.00
46	**Cooling Water with Solvent, Toxic and/or Hazardous Chemicals on Site**	$362.00
49	**Other Discharges with Solvents, Toxics and/or Hazardous Chemicals on Site**	
	Flow ≥ 10,000 GPD	$1,087.00
	Flow < 10,000 GPD	$725.00

TABLE 10
(Continued)
Narragansett Bay Commission
Pretreatment Permit Fee Rate Structure

User Category Number	User Classification	Permit Fee
51	**Cooling Water with No Solvents, Toxic or Hazardous Chemicals on Site**	$362.00
52	**Boiler Blowdown/Condensate Discharges**	$362.00
53	**Cooling Tower Discharges**	$362.00
59	**Other Non-Toxic Industrial Discharges**	
	Flow ≥ 5,000 GPD	$725.00
	Flow < 5,000 GPD	$362.00
80	**Septage Haulers/Dischargers**	$435.00
81	**Food/Fish/Meat/Produce Processing (wholesale)**	
	Flow < 1,000 GPD	$362.00
	1,000 GPD ≤ Flow < 10,000 GPD	$725.00
	Flow ≥ 10,000 GPD	$1,449.00
82	**Supermarkets (Retail Food Processing)**	$725.00
83	**Parking Garages/Lots**	$725.00
84	**Cooling Water/Groundwater/Boiler Discharges with Potential to Discharge Conventional Pollutants**	$362.00
85	**Restaurants**	
	< 50 seats	$217.00
	≥ 50 seats < 100 seats	$435.00
	≥ 100 seats of fast food (2 or more fryolators and/or drive through window)	$580.00
86	**Commercial Buildings with Cafeteria and/or laundry operations**	$725.00
89	**Other Commercial Facilities with Potential to Discharge Conventional Pollutants**	
	Flow < 2,500 GPD	$362.00
	Flow ≥ 2,500 GPD	$725.00
90	**Hospitals**	$3,623.00
91	**Cooling Water/Groundwater/ Boiler Discharges with Potential to Discharge Toxic, Prohibited and/or Conventional Pollutants**	$362.00
92	**Laundries/Dry Cleaners**	
	Laundromats	$725.00
	Dry Cleaners with 1 washer or less	$362.00
	Dry Cleaners with ≥ 2 washers	$725.00
93	**Photo Processing**	
	Flow < 1,000 GPD	$362.00
	1,000 GPD ≤ Flow < 2,500 GPD	$725.00
	2,500 GPD ≤ Flow < 5,000 GPD	$1,087.00
	Flow ≥ 5,000 GPD	$1,449.00

TABLE 10
(Continued)
Narragansett Bay Commission
Pretreatment Permit Fee Rate Structure

User Category Number	User Classification	Permit Fee
94	**X-Ray Processing**	
	≤ 2 processors	$362.00
	3 - 4 processors	$725.00
	5 - 9 processors	$1,087.00
	≥ 10 processors	$1449.00
95	**Clinical, Medical and Analytical Laboratories**	$725.00
96	**Funeral Homes/Embalming Operations**	$362.00
97	**Motor Vehicle Service/Washing Operations**	
	rate per tunnel	$725.00
	rate per bay	$217.00
	maximum rate per facility	$1,449.00
99	**Other Commercial Users with Potential to Discharge Toxic, Prohibited and/or Conventional Pollutants**	
	Flow < 2,500 GPD	$362.00
	Flow ≥ 2,500 GPD	$725.00

Zero Process Discharge Wastewater Systems

During 2017, there were 72 users in the two NBC districts operating facilities which have eliminated or significantly reduced their process discharges to the sewer system through the installation of closed loop or zero discharge systems. Although still conducting operations which generate wastewater containing toxic materials, this wastewater is treated and reused in the process operation, resulting in no discharge of industrial process wastewater, or in some cases, insignificant discharges to the sewer system consisting primarily of boiler condensate or non-contact cooling wastestreams. Once Pretreatment staff has verified that the process wastewater discharge has been eliminated or significantly reduced, the user is reclassified into Category 41 through 44 depending upon the type of recycle process operations conducted.

Part of an Ion Exchange System at a Permitted Zero Discharge Facility

Although an industrial user may cease discharging process wastewater into the sewer system by installing a wastewater recycle system, the firm will still be permitted and inspected by Pretreatment staff. Since the facility has sanitary sewer connections, it could still be a potential source of pollutant discharges into the NBC sewer system which could potentially contribute to a plant upset or a pass-through situation. For this reason, the Pretreatment Section routinely issues Zero Process Wastewater-Sanitary Discharge Permits to category 41 and 42 industries. Fifty-four facilities are presently classified in categories 41 and 42 and do not discharge process wastewater to the sewer system. Users with recycle process operations but still discharge condensate, boiler or cooling water wastestreams are issued discharge permits. There are 18 of these users which are classified in categories 43 and 44. Of the 72 users classified in categories 41 through 44, 40 facilities are permitted to operate zero process discharge wastewater recycle systems in the Field's Point district, while 32 users in the Bucklin Point district are permitted to perform zero discharge recycle operations. Prior to the issuance of a Zero Process Wastewater-Sanitary Discharge Permit, the NBC thoroughly notifies the industrial users of all DEM and RCRA requirements and the user must satisfy the following NBC requirements:

- Submit a Zero Discharge Permit Application.
- Submit a Facility Sewer Access Site Plan showing all sewer connections.
- Submit Process Operation Plans.
- Submit Pretreatment System Plans.

- Submit a Spill and Slug Prevention Control Plan.

- Seal all floor drains and cap off all process sewer access locations.

- Install prohibited dumping signs at all sanitary sewer connections.

Once all the aforementioned tasks have been completed by the user, the facility is inspected, and the Zero Process Wastewater-Sanitary Discharge Permit is issued. The Zero Discharge Permit requires the user to submit a written certification either monthly or biannually, depending upon facility process operations, listing water meter readings and certifying that no process discharges have occurred. Pretreatment staff use this water meter data to routinely calculate daily water usage. Deviations from the expected zero discharge water usage are promptly investigated by pretreatment staff. In addition, unannounced inspections of every zero discharge firm are conducted at least twice annually. A copy of the Zero Process Wastewater-Sanitary Discharge Permit can be found in ATTACHMENT VOLUME I, SECTION 2.

User Survey Methods

The Pretreatment Program utilizes many methods to identify and locate new and previously unknown users of the sewer system. These NBC methods have been very successful at maintaining an accurate inventory of non-domestic regulated users and at ensuring that modifications to existing user facilities are quickly discovered. The following is a summary of the survey methods:

- *Newspaper Reviews* - The local newspapers are routinely reviewed to identify and locate new or previously unknown and unpermitted users. Review of the classified, business and new corporation sections of the local newspapers have allowed the NBC to successfully identify many new sewer users over the years. Form letters are issued to new corporations to alert them to NBC Rules and Regulations and permitting requirements. Routine reviews of the bankruptcy and auction sections of the newspaper alert Pretreatment staff to firms which may be in financial trouble or ceasing operations. This allows Pretreatment staff to be proactive at preventing illegal discharges from financially troubled firms. Such firms are promptly inspected, inventoried and required to comply with a rigid facility shutdown procedure. The NBC will often seal the sewer connections at these firms once operations have ceased to ensure that hazardous waste and chemicals are not illegally discharged into the sewer system.

- *Business Listing Website Reviews* - Pretreatment staff reviews business listing websites such as www.whitepages.com and www.yellowpages.com to identify new industrial and commercial users that may require regulation. Particular attention is given to reviewing categorically regulated user categories such as electroplaters, metal finishers, metal formers, etc.

- *Social Media Reviews* – Pretreatment staff routinely reviews social media websites such as Facebook and Yelp to identify any previously unknown industrial and commercial users. This survey method is particularly useful in identifying new food service establishments.

- *Intra-Governmental Agency, Building and Sewer Connection Permit Referrals* - The Pretreatment Section becomes aware of many new facilities through the building permit issuance process. New facilities under construction in the NBC districts must obtain a sewer connection permit and a discharge permit, if necessary, prior to beginning construction and/or process operations. Firms performing construction modifications to their buildings are referred to the NBC by the local building inspectors and must obtain NBC approval in order to obtain the necessary city or town building permit or certificate of occupancy. Local building inspectors, plumbing inspectors and inspectors from the Department of Health, DEM and EPA New England refer information to the Pretreatment staff regarding new or unpermitted users. This cooperative work effort has resulted in the permitting of many users over the years.

- *Mill Complex and Industrial Park Inspection Program* - Regular inspections of industrial mill complexes within the NBC service district are performed to identify new and possibly transient users of the NBC facilities. Each staff member is assigned several mill complexes and industrial areas located throughout the NBC districts. Staff members are required to inspect at least one mill complex or industrial area per month to identify potential new nondomestic users of the NBC sewer system. During the mill complex and industrial area inspections, staff members compile a listing of all unpermitted facilities located within the mill or area, and systematically inspect each unpermitted facility to determine whether a wastewater discharge permit is necessary based upon the operations performed, wastewater generated and discharged to the sewer system. A listing of each facility, the type of operations performed, and whether or not a wastewater discharge permit is necessary is maintained for each mill complex and industrial area and filed by the mill complex street address or by the streets forming the boundaries of the industrial area. This procedure enables the NBC to track changes within individual mills and prevents duplication of efforts by ensuring that this information is continually updated. Industrial areas are routinely driven through and all industrial facilities in the area are cross-checked against the NBC Pretreatment database. Unknown or unpermitted users are promptly inspected and permitted, if necessary.

- *Public Information Programs* - Over the years, the NBC has routinely published public notices to alert NBC users of the need to obtain a wastewater discharge permit if specific operations are conducted. The NBC has participated in the annual "We Mean Business" Expo sponsored by the RI Secretary of State to assist prospective business owners understand the NBC Rules and Regulations.

The NBC has also met with various user groups and held workshops that focused on educating any new class of users required to obtain a discharge permit. In 2017 NBC staff participated in a LEAN permitting program developed by RI Commerce Corporation. The purpose of this program is to make it easier to open a business in Rhode Island. A portal is being developed to allow perspective business owner gather information on the requirements of the agencies pertinent to the business and apply for all permits online.

NBC User Inspection Programs

One of the main objectives of the Pretreatment Program is to protect the NBC wastewater treatment plants from toxic discharges which could result in pass through to the receiving waters or interference with their proper operation, as outlined in 40CFR§403.5. In addition, Pretreatment staff ensure that federal, state and local pretreatment regulations pertaining to the Clean Water Act are met. The strategy the NBC adopted and implemented to satisfy these objectives includes developing local discharge limitations to protect the treatment facilities and public health, permitting of industrial and commercial facilities to control the discharge of toxics, inspecting and sampling nondomestic facilities to ensure user compliance, and the development and implementation of extensive user education programs. The extensive user education efforts implemented by the NBC as part of routine inspections have been very effective at improving user compliance rates. ESTA staff educates users of the many pollution prevention alternatives available instead of discharging toxics into the sewer system, while Pretreatment staff incorporates user education into every regulatory inspection.

- **Innovative and Effective Inspection Techniques** - Pretreatment staff employs many effective and innovative inspection techniques to aid in achieving the objectives of the NBC to control and reduce pollutant loadings to the treatment plants and hence Narragansett Bay. These techniques range from implementing simple internal procedures to standardize inspection activities to forming partnerships with the regulated industrial community. The following is a summary of these highly effective and innovative techniques and programs:

    ~ *Standardization of User Inspection Activities and Documents* - The Pretreatment Section has made great efforts to thoroughly standardize all aspects of the inspection process from inspection scheduling to writing the inspection report and letter. Annual inspection checklists have been standardized and customized for various classes of users, including for SIUs, non-significant industrial users, restaurants, dental facilities, septage haulers, etc. Pretreatment has also developed form letters to schedule the annual SIU inspection and to summarize and transmit the results of facility inspections for various user classes. The various inspection checklists ensure Pretreatment staff inspect and review all items of importance at a particular type of facility in a uniform, clear, and concise manner consistent with NBC and EPA protocols. The annual inspection checklist for SIUs has been developed to ensure full NBC compliance with all

EPA regulations and to ensure uniform inspections of all SIUs, irrespective of the inspector conducting the facility inspection. The inspection summary form letters may be a Notice of Violation (NOV) or a "Job Well Done" letter. The NOV has all routine deficiencies clearly listed. The inspector can then quickly check off the violations observed, add any special facility requirements and the letter can be promptly prepared and issued. In addition to citing the deficiency, the letter explains in an educational manner the reason for the regulation and the importance for ensuring compliance. The standardization of inspection documents has resulted in speedy completion and issuance of uniform inspection reports and summary letters to the user. An inspection report and summary letter are issued for each and every user inspection, typically within fourteen (14) days from the site visit.

Throughout 2017 Pretreatment staff continued to utilize additional inspection checklists that were developed to be used on iPads. These checklists allow staff to begin filling in checklists electronically in the office, complete it in the field, then download and print it back in the office. The iPads also allow staff to take pictures in the field and attach them directly to the inspection memo.

~ *Specialized and Innovative Inspector Training Programs* – The NBC provides extensive training to new employees and continued training to existing staff. Pretreatment, EMDA, and ESTA staff receive training in all aspects of their positions. On an annual basis, the NBC conducts its own training or contracts outside vendors for the training in the following areas:

- Confined Space Entry Training
- 40 Hour OSHA HAZWOPER Training
- 8 Hour OSHA HAZWOPER Recertification Training
- OSHA Right to Know Training
- CPR/AED Training
- First Aid Training
- Spill Tracking Training
- Emergency Response Training
- Boom Deployment

The NBC stresses consistency to Pretreatment staff in regulating industrial and commercial users. Pretreatment staff are continually being trained to be consistent. The following is a list of the methods used to ensure consistency:

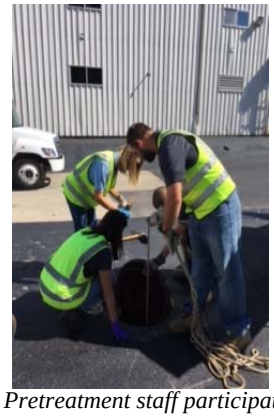
- In-box reviews of staff
- Weekly Plan Review Meetings consisting of all technical staff
- Supervisors accompany staff members on inspections
- Supervisors review staff letters, memos, and permits

In addition to the forementioned methods used to ensure consistency, Senior Pretreatment staff conduct training sessions on Pretreatment procedures. The training includes the following topics:

- Rules & Regulations
- Permit Writing
- Letter and Memo Writing
- Process Operations
- Pretreatment Technologies
- Spill Response and Tracking
- Map Reading
- Permitted User Flow Data

Pretreatment staff also routinely attend technical seminars to further their knowledge and productivity. The Pretreatment Section has developed several innovative employee-training programs which resulted in more efficient inspection procedures. Supervisory staff work very closely with the engineers and technicians charged with performing the daily user inspections. New staff members are closely supervised by senior staff members to ensure that they properly learn the standard operating procedures.

In-box reviews are conducted of staff to ensure that they understand user requests and what response is required and monthly in-box reviews are conducted of all staff members to ensure standardization of methods and conformance with work schedules. Senior staff members accompany new staff members on their inspections to help them become familiar with NBC user education presentations, process operations, pretreatment systems, and permit requirements. In addition, senior staff routinely conduct inspections with veteran inspectors to ensure continued conformity with NBC inspection policies and protocols.



Pretreatment staff participate in the annual Spill Response and Tracking Drill

Feedback, detailing what aspects of the inspection were done well and what aspects need improvement, is provided to the inspector verbally as well as in writing. The Pretreatment Inspector Feedback Form was developed for this purpose. The feedback form consists of several sections which cover all aspects of the facility inspection process, including pre-inspection preparation, inspection interaction with the user, user education, facility inspection observational abilities, inspection documentation, professionalism, self-confidence, etc. New employees are not permitted to conduct inspections alone until all aspects of a good inspection, as noted on the feedback form, are satisfactory.

Another innovative training program implemented the annual Spill Response and Tracking Drill. Staff participate in a classroom presentation which includes tabletop exercises simulating unusual discharges to the treatment plant and spills occurring in the sewer system. In addition, staff participate in training exercises in the field. Senior staff establish a source of "illegal discharge" and identify key manholes for the staff to follow. Senior staff assign a team leader to head the mock investigation to track the "illegal discharge" to the source. For the training drill, a newer employee is typically chosen to be the team leader.

The mock spill is tracked through the sewer system in an attempt to identify the source, where a thorough facility inspection is conducted. Inspectors are trained to collect evidentiary samples necessary for a good enforcement action. This annual tracking, evidence gathering and inspection drill has greatly improved the awareness and inspection abilities of all NBC Pretreatment staff.

~ *Pollution Prevention Referral Program* – During all Pretreatment regulatory inspections, Pretreatment staff routinely refer the user to the ESTA Section for free technical assistance. All NOVs also advise users to obtain the free expertise of the ESTA Section. These referrals have resulted in improved compliance rates and non-compliant users achieving compliance more quickly.

~ *Inspection Educational Efforts* – User education is by far the single most important aspect of any user inspection. During the annual inspection, industrial users are educated regarding all aspects of the NBC including the NBC Mission Statement, the purpose and types of all NBC inspections, and SNC criteria. The inspector clearly explains what constitutes SNC, the importance of maintaining full compliance and all permit requirements are explained to the user in detail. NBC inspection summary letters are also very educational in nature. Instead of simply requiring a user to perform a task, the letter educates the user regarding the reason for the imposed requirement. This often results in quick user compliance with the imposed requirements. These extensive user education efforts have been very effective at encouraging user compliance. The SIU rate of SNC was impressively reduced in the Field's Point District from a high of 39.0% in 1992 to 5.4% in 2017, while the SIU Rate of SNC for Bucklin Point was reduced from a high of 44.8% in 1994 to 2.8% in 2017. The overall rate of SNC for all NBC SIUs for 2016 was 4.1%, a decrease from 7.0% observed in 2016. This is well within the EPA level of 10% recommended for EPA Pretreatment Program Excellence recognition. These impressive reductions in the Rate of SIU SNC are clearly attributable to improved user education, prompt resampling requirements for any effluent violation and proactive communication with users to encourage correcting the violation before being in SNC.

- **Types of Pretreatment Inspections** - The NBC conducts six types of inspections of industrial and commercial users. The following is a summary of the inspection types utilized by the NBC:

~ *Initial Inspection* – The initial inspection can be an announced or unannounced inspection and is performed to determine if the user is regulated under pretreatment regulations and to inform the user of pretreatment requirements.

~ *Annual Inspection* – An annual inspection is a thorough, announced inspection of the facility and the user's records to determine if the firm is complying with all NBC and permit requirements. This inspection is done once per 12 month period for SIUs and covers all the items shown in the Annual Inspection Checklist which is provided in ATTACHMENT VOLUME I, SECTION 3. The annual inspection consists of an extensive review of paperwork, processes, pretreatment systems, treatment procedures, sampling procedures, spill containment measures, and chemical/waste storage areas.

~ *Follow-up Inspection* – This inspection may be an announced or unannounced inspection to determine if specific items noted in an annual inspection were completed as required. Follow-up inspections may be conducted to view work in progress, work completed, or discuss problems that the firm may be having in complying with or understanding NBC or Pretreatment Program requirements.

~ *Sampling Inspection* – The sampling inspection is an unannounced inspection which must be conducted of every SIU at least once every 12 months, as required by EPA regulations. The NBC typically conducts sampling of each SIU twice every 12 months.

~ *Emergency Response or Special Investigation Inspection* – This is an immediate unannounced inspection initiated in response to a complaint or spill to determine the source of problems occurring in the sewer system. These problems or complaints are typically reported by NBC employees, local authorities or by district residents.

~ *Facility Shutdown Inspection* – This is typically an announced inspection to conduct an inventory of all chemicals and solutions on-site, to observe facility decontamination procedures, to seal sewer connections to prevent illegal discharges to the sewer, and to install prohibited discharge stickers on all tanks.

Facility Shutdown Inspection of an electroplating facility that is no longer in operation.

Follow-up inspection of the same facility to verify that the firm has disposed of all solutions and complied with NBC Shutdown Procedures.

From January 1, 2017 through December 31, 2017, Pretreatment staff conducted 2,045 inspections of users, not including sampling visits. Of the 2,045 non-sampling inspections conducted by the Pretreatment staff, 293 were inspections of SIUs and 1,752 were inspections of non-significant users. Pretreatment staff conducted 194 facility inspections of categorical users and 99 inspections of significant non-categorical industrial users in both districts, excluding sampling visits. Pretreatment staff conducted 37 regulatory compliance meetings with users during 2017.

Pretreatment staff inspected all companies but one classified as SIUs at least twice during the 12 month review period. The SIU that was only inspected once in 2017, Orbit Energy Rhode Island, LLC, will conduct food waste to energy operations. This company anticipated beginning operations in 2017. However, construction had not been completed. The company now anticipates to begin operations in mid 2018. An inspection of the site was conducted in late 2017. The Pretreatment Section satisfied and exceeded EPA requirements to inspect every SIU at least once every twelve month period.

During 2017, EMDA staff conducted 182 industrial user sampling inspections of 77 industrial user facilities resulting in the collection of 1,627 composite and grab samples. These 1,627 samples translated to 182 user monitoring reports. Of the 182 monitoring reports, 169 were issued to significant user and 13 were issued to non-significant users. There were 93 sampling inspections of 45 categorical industries and 59 sampling inspections of 26 significant non-categorical users.

All facilities classified as SIUs were sampled by EMDA at least twice in 2017 with the exception of two. One of the SIUs that was unable to be sampled, Tanury Industries PVD, Inc. discharges on a batch basis. During 2017, the company collected all process wastewater and shipped it off-site for disposal. This was verified by Pretreatment staff during inspections. EMDA staff regularly contacted the company to inquire if a batch was to be discharged to the sewer. The other SIU that was unable to be sampled in 2017, was Orbit Energy Rhode Island, LLC. This company anticipated beginning operations in 2017. However, construction had not been completed. Therefore, discharges to the sewer system did not occur.

TABLE 11 summarizes the status of each company that was inspected or sampled by the NBC at least twice in 2017.

TABLE 11
Summary of SIUs Inspected or Sampled Less than Twice in 2017

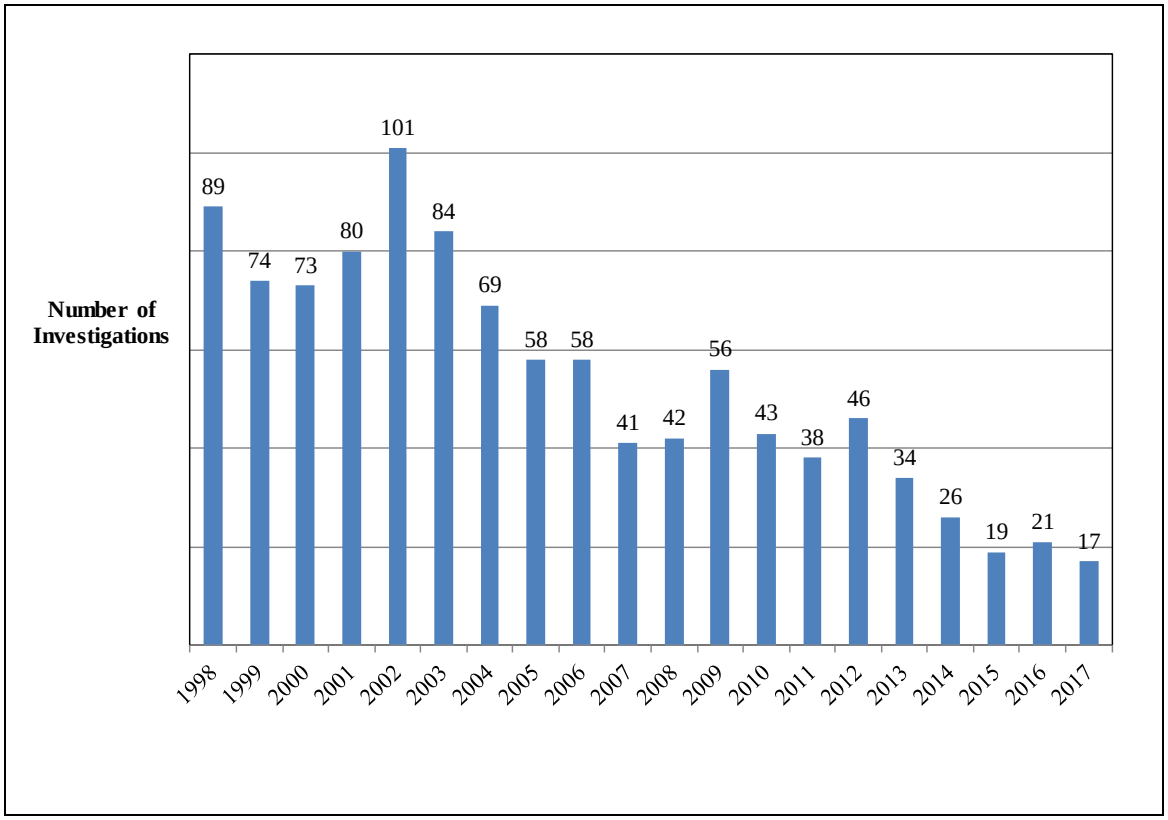
Company Name	2017 Inspection Sample Summary	Explanation
	Field's Point	
Orbit Energy Rhode Island, LLC	1 Inspection only No Samples	Facility under construction – no process wastewater discharged
	Bucklin Point	
Tanury Industries PVD, Inc.	No Samples	Firm shipped all process wastewater off-site

A summary of the number of types of inspections performed by the NBC this reporting period is provided in TABLES 3 and 5, the Pretreatment Performance Summary Sheets, which are contained in CHAPTER I of this report. A list of each NBC sampling and nonsampling user inspection and the inspection date is provided in ATTACHMENT VOLUME II, SECTION 2.

Emergency or Special Investigations

During 2017, Pretreatment staff investigated 17 reports of spills, odors, blockages, unusual plant influents, and illegal discharges to the sewer system within the Field's Point and Bucklin Point service areas. A listing of 2017 emergency or special investigations is provided in ATTACHMENT VOLUME II, SECTION 4. FIGURE 6 is a graphical trend analysis detailing the number of pretreatment investigations conducted annually since 1995.

FIGURE 6
Number of Special Investigations per Year

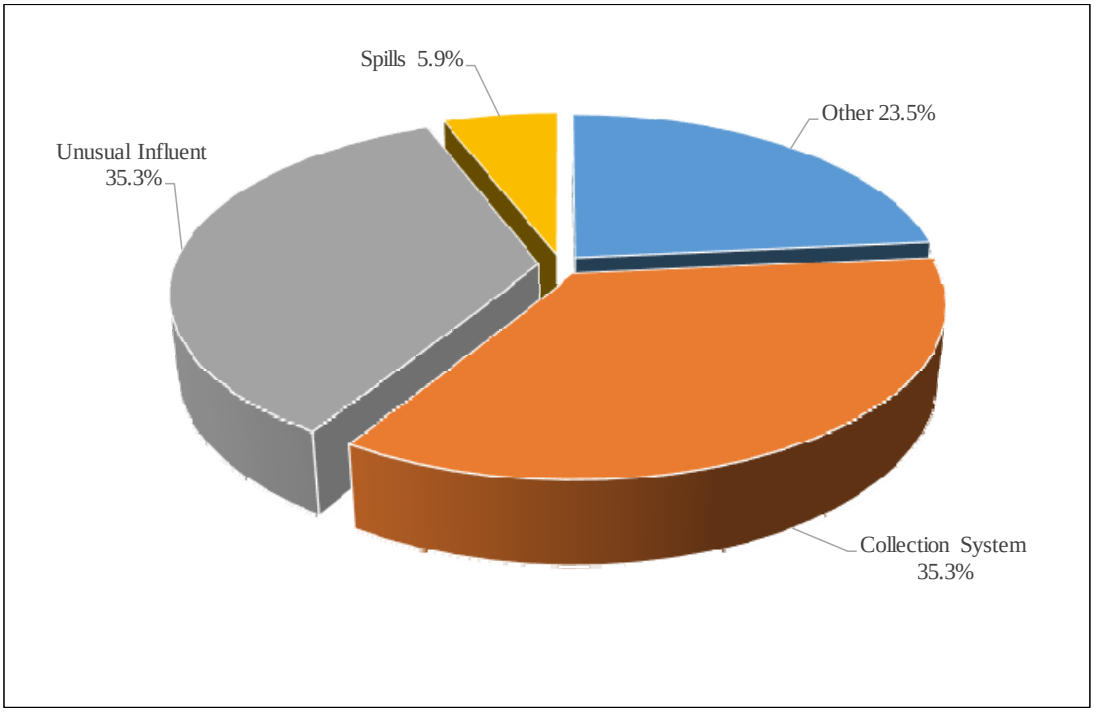


As can be seen from FIGURE 6, the number of investigations and spill response activities fluctuates from year to year, but has been significantly reduced from the number of investigations conducted in the late 1990s. The number of emergency and special investigations conducted in 2017, 17, is the lowest number on record. This is attributed to better education of users regarding spill prevention practices, overall environmental awareness by industry and the decline of SIU manufacturing facilities in the district.

FIGURE 7 graphically depicts the breakdown of the types of investigations that occurred in 2017. As can be seen from the chart, the majority of the investigations resulted primarily from problems in the collection system and reports of unusual influent including color, which accounted for six investigations each. The breakdown of the remaining investigations is as follows: spills accounted for one investigation, illegal discharges to combined sewer outfalls accounted for three investigations and a report of a train derailment accounted for one investigation responded to by staff.

These investigations often require frequent follow-up activities, subsequent inspections and clean-up activities, and may result in the initiation of enforcement actions by the NBC. Numerous follow-up inspections were required as a result of these initial 17 investigations. Those NBC investigations of major concern and interest to the NBC over the past year are described in the following paragraphs.

FIGURE 7
Breakdown of 2017 Investigations



Spill Investigations

During 2017, Pretreatment staff conducted one investigation in response to a report of a spill. The spill occurred in the Field's Point district on the Rhode Island Hospital campus. The report stated that a vehicle belonging to a contractor had leaked diesel fuel on to pavement and impacted two catch basins in the area. Hospital staff applied absorbent material to the pavement and Pretreatment staff placed absorbent pads in the catch basins. Rhode Island Hospital hired an environmental response contractor to clean up the area and pump out the affected catch basins. The NBC sewer system was not impacted.

Unusual Influent Investigations

Pretreatment staff investigates all reports of unusual influent at both treatment facilities. During 2017, Pretreatment staff investigated six reports of unusual influent. All six reports were from the Bucklin Point plant. Three of the reports of unusual influent stated the influent from the Blackstone Valley Interceptor (BVI) was red in color. All three incidents were short in duration and could not be tracked. All companies with the potential to impact the plant with colored wastewater were contacted and required to submit their color logs for each incident. The review of the color logs revealed a potential source for only one of the incidents. The company indicated it was discharging the color in question at a time when it could impact the plant. It was issued a letter stating it contributed to the colored influent. Potential sources for the remaining two incidents could not be identified.

Two of the remaining reports of unusual influent stated the influent from BVI was foamy and had a low pH. Both incidents were short in duration. By the time Pretreatment staff arrived at the plant the foam dissipated and the pH returned to normal. Pretreatment staff did attempt to track the unusual influent prior to arriving at the plant by collecting samples from BVI upstream of the plant. The pH ranged from 6.0 standard unit (s.u.) to 6.2 s.u. and there was no evidence of foam in any of the samples. The final report of unusual influent stated there were strong kerosene odors in the Screen and Grit Building. It was stated there was no sheen on the influent from BVI or the East Providence Interceptor (EPI). However there was a faint fuel odor coming from BVI as well as in the building when Pretreatment staff arrived at the plant. The odor could not be tracked since it was of a short duration. The treatment plant and Seekonk River were not adversely impacted by any of these unusual influents.

Food Preparation Related Grease Investigations

During 2017 Pretreatment staff conducted five grease related investigations. All five investigations occurred in the Field's Point district. Two of investigations occurred in the Federal Hill section of Providence. The first investigation was downstream of five food service establishments (FSE). Four of the FSEs were permitted at the time of the investigation. Three of the four FSE were complying with their permit as their grease removal equipment and logbook were being maintained. The fourth permitted facility was maintaining its grease removal equipment but did not have a logbook available for review. This facility was issued a Notice of Violation. The final facility in this area was not permitted at the time of the investigation. It was maintaining a passive grease interceptor. This FSE has since applied for and obtained a Wastewater Discharge Permit. The second report in the Federal Hill area was of a grease build up in a line running through Depasquale Square. All of the FSEs in this area were permitted and were were properly maintaining the grease removal equipment and logbooks. Pretreatment staff inspect the FSEs in this area frequently to minimize grease impacts. The third report of grease stated there was grease being dumped in a catch basin from a food truck in Providence. An inspection of area showed that the address in question was a multifamily residence. There was no food truck in area but a fryolator and boxes of fryolator oil were observed through an open garage bay door. The owner of the building was issued a letter informing him of NBC requirements and proper grease disposal. There was no evidence of grease in any of the catch basins in the area.

The final two grease investigations occurred in Johnston. The first Johnston report of grease stated that grease was building up in a line on Killingly Street. The area upstream of the impacted line was inspected and it was determined there were four permitted FSEs upstream. Two of the facilities were in compliance with their permits. One of the other facilities was maintaining its grease removal unit but not the required logbook. The remaining facility was not maintaining its passive grease interceptor or logbook. Both of these facilities were issued Notices of Violation. The remaining grease investigation in Johnston occurred on Hartford Avenue. An inspection of the area revealed it to be primarily residential. There was one FSE slightly downstream of the affected area. The facility was inspected the grease removal unit and logbook were being properly maintained.

Illegal Dumping & Unpermitted Discharges

Pretreatment staff investigates all reports of illegal dumping and unpermitted discharges to the sewer system, storm drains and/or NBC receiving waters. In 2017 Pretreatment staff investigated three reports of illegal dumping or unpermitted discharges. All three reports were regarding discharges to or from NBC combined sewer outfalls (CSO). Two of the reports occurred in the Field's Point district and one occurred in the Bucklin Point district.

The first report in the Field's Point district was from the RI Department of Environmental Management stating there was oil discharging from an outfall on the Providence River at Dollar Street in Providence. It was determined that oil used to lubricate National Grid cables was discharging to the river through an outfall not owned by the NBC. National Grid hired an environmental response company to deploy boom and clean up the oil. The NBC sewer system or outfalls were not impacted by the oil. The second report was of a green color discharging from an outfall on India Street in Providence. An investigation of the area revealed there are three outfalls in close proximately of each other with only one owned by the NBC. The green color was not discharging from the NBC outfall. Pretreatment attempted to track the green color but could not find the source. Staff returned to the outfall and the green discharge had dissipated. The NBC sewer system or outfall were not impacted. The final investigation of illegal dumping or unpermitted discharge occurred in the Bucklin Point district. The report came from the NBC Interceptor Maintenance (IM) section and stated there was an unusual grit in a sump associated with outfall 106 in Central Falls. The area upstream of the sump was inspected. There are four facilities in this area and all four do not discharge process wastewater to the sewer. Each facility was inspected and all appeared to be in order. A nearby construction site was inspected and there were no yard drains on the site. An inspection of the surrounding area found no unusual operations. IM removed the grit from the sump and the receiving waters was not impacted.

Pass-through and Interference

During 2017 the Pretreatment Section conducted 17 special or emergency investigations within the Field's Point and Bucklin Point districts. All reports of spills, dumping activities, unusual influents, and other related incidents during 2017 were thoroughly investigated. It is not known at the onset of an unusual influent report if the influent pollutant will cause interference with either mechanical equipment or with the microbial organisms utilized at the treatment facilities to break down the sanitary waste. Nonetheless, each report must be investigated to ensure that the unusual influent does not cause interference with NBC operations, pass through the facility into the receiving waters, or cause a discoloration of the receiving body of water, all of which would result in NBC being in violation of its RIPDES permits. None of the unusual influent incidents, dumping reports or spills investigated during 2017 resulted in interference or pass-through situations at either of the NBC wastewater treatment facilities. This is a testament to the excellent job done daily by the NBC to control the discharge of toxic and nuisance pollutants.

IV. COMPLIANCE MONITORING

Compliance Monitoring

The Narragansett Bay Commission utilizes two types of industrial and commercial user monitoring to determine compliance with effluent discharge limitations. These are:

- User Self-Monitoring;
- Compliance monitoring conducted by NBC personnel.

A description of both types of monitoring is provided in the following sections.

User Self-Monitoring

User self-monitoring is sampling conducted by an industrial or commercial user in accordance with the terms of their permit. The frequency of self-monitoring required by the permit may vary from once every twelve months (one time per year) to once per month (twelve times per year) depending on the nature and volume of the wastewater discharges. In some cases, permits may require compliance monitoring of each facility discharge. The frequency of self-monitoring is automatically increased to weekly when a user fails to meet discharge limitations by self-monitoring or by NBC sampling results. Once the user has demonstrated full compliance during four consecutive sampling events, the user is returned to the monitoring frequency specified in the permit.

User self-monitoring must be conducted in accordance with federal pretreatment requirements as specified in 40CFR§403 and analytical techniques specified in 40CFR§136. A Certification of Analysis (COA) detailing the results must be submitted with a properly completed Self-Monitoring Compliance Report (SMCR) form and Chain of Custody (COC) documentation. The SMCR requires the user to review the analytical results prior to submittal, to notify the NBC of any violation within twenty-four (24) hours of becoming aware of the violation and to enter the analytical report identification number on the SMCR. The SMCR notifies the users of the NBC requirement to resample their wastewater for any parameters violating standards. This resampling must be done and results submitted within thirty (30) days of becoming aware of the violation. The SMCR also requires the user to notify the NBC of the reasons for the violation and the steps and time frame necessary to correct the violations. This form must be signed by an authorized agent of the company. A sample SMCR is provided in ATTACHMENT VOLUME I, SECTION 3.

In 1993, Pretreatment staff developed the 24 Hour Violation Notification Fax form so that the user could quickly report an effluent violation to the NBC. This form also provides a good file record that the proper NBC violation notification requirement was satisfied by the user. A sample 24 Hour Violation Notification Fax form is provided in ATTACHMENT VOLUME I, SECTION 3.

Samples collected by industrial and commercial users can be either composite samples or grab samples. Composite samples consist of a number of samples taken over a period of time that are combined. Most permit sampling consists of composite samples.

Grab samples consist of a single sample taken at one point in time. This type of sample is typically used to monitor the pollutant concentrations of batch discharges from facilities and to ensure that wastewater discharged on a batch basis is receiving proper pretreatment. A batch discharge usually occurs from one tank over a short period of time.

Many users are required to perform both composite and grab sampling of their discharges. Composite samples are collected from the continuous final effluent and grab samples are collected from batch treatment tanks and/or small process tanks that are batch discharged to the final discharge point. Composite sample results are evaluated for compliance with the NBC discharge limitations shown in TABLE 12. This table indicates the discharge standards that must be maintained by users located in the Field's Point and Bucklin Point districts. Batch discharges are evaluated for compliance by means of a concentrated discharge formula. This formula is based on the allowable mass loading from a facility and is essentially equivalent to the EPA combined wastestream formula.

In addition to regular wastewater sampling, many industrial users, including all electroplaters and metal finishers, are required to continuously record the pH of the effluent discharged from their firm. These users are required to submit a monthly pH Monitoring Report summarizing the maximum, minimum, and average pH values for each day of operation. The pH Monitoring Report form requires the user to certify that the data reported to the NBC was taken directly from the pH recording chart and is reported to an accuracy of 0.1 standard units. Firms that discharge wastewater on a batch basis must record the final pH of the batch prior to discharge. This data must also be reported monthly. The NBC Batch and Continuous pH Monitoring Report forms are provided in ATTACHMENT VOLUME I, SECTION 3.

NBC Industrial User Sampling Program

EMDA staff conducts compliance monitoring of industrial and commercial facilities to assess users compliance status and to verify the validity of user self-monitoring results. Sampling is conducted inside the facility and is random and unannounced. A chain of custody procedure is used which includes completion of a chain of custody document. Sample bottles are sealed with bottle sealing tape to prevent tampering after sampling and preservation has been completed. A sample submission sheet is completed by EMDA staff conducting the sampling and specifies the exact sampling procedure to be implemented, the laboratory analysis requested to be conducted, facility water consumption data, sample preservation documentation and a certification of split sample acceptance or refusal signed by the user. Copies of these sampling and chain of custody documents are provided in ATTACHMENT VOLUME I, SECTION 3.

TABLE 12

NBC FIELD'S POINT EFFLUENT DISCHARGE LIMITATIONS*
(Providence, North Providence, Johnston, small sections of Lincoln and Cranston)

Parameter	Maximum Daily (Composite daily for 1 day)	Average (10 day)
Cadmium (Total)	0.11	0.07
Chromium (Total)	2.77	1.71
Copper (Total)	1.20	1.20
Cyanide (Total)	0.58	0.58
Lead (Total)	0.60	0.40
Mercury (Total)	0.005	0.005
Nickel (Total)	1.62	1.62
Silver (Total)	0.43	0.24
Zinc (Total)	2.61	1.48

Parameter	Limitation (Max.)
Total Toxic Organics (TTO)	2.13
Biochemical Oxygen Demand (BOD)	300.00**
Total Suspended Solids (TSS)	300.00**
Total Oil and Grease (Fats, Oil and Grease)	125.00
Oil and Grease (Mineral Origin)	25.00
Oil and Grease (Animal/Vegetable Origin)	100.00
pH range (at all times)	5.0 - 11.0 standard units

NBC BUCKLIN POINT EFFLUENT DISCHARGE LIMITATIONS*
(Pawtucket, Central Falls, Lincoln, Cumberland, Rumford Section of East Providence, and the Eastern Section of Smithfield)

Parameter	Maximum Daily (Concentration Limit mg/l)	Monthly Average (Concentration mg/l)
Arsenic (Total)	0.20	0.10
Cadmium(Total)	0.11	0.07
Chromium (Total)	2.77	1.63
Copper (Total)	1.20	1.20
Cyanide (Total)	0.50	0.50
Lead (Total)	0.69	0.29
Mercury (Total)	0.06	0.03
Nickel (Total)	1.62	1.62
Selenium (Total)	0.40	0.20
Silver (Total)	0.40	0.20
Tin (Total)	4.00	2.00
Zinc (Total)	1.67	1.39

Parameter	Limitation (Max.)
Total Toxic Organics (TTO)	2.13
Biochemical Oxygen Demand (BOD)	300.00**
Total Suspended Solids (TSS)	300.00**
Total Oil and Grease (Fats, Oil and Grease)	125.00
Oil and Grease (Mineral Origin)	25.00
Oil and Grease (Animal/Vegetable Origin)	100.00
pH range (at all times)	5.0 - 11.0 standard units

***** **All limitations are in units of mg/l unless otherwise specified.**

****** **Exceeding these limitations may be permitted but exceedance may be subject to surcharge in accordance with rates approved by the Public Utilities Commission and R.I.G.L. §39-1-1-1 et seq.**

EMDA utilizes many controls to insure the legal integrity of the samples collected for compliance and enforcement monitoring. Quality Assurance and Quality Control (QA/QC) begins with the purchase of materials. The sample bottles purchased are high quality and pre-cleaned. New bottles are purchased and utilized for each sampling event and all old bottles are discarded. Only the bottles used in automatic samplers and cyanide sample bottles are washed and reused by NBC staff. Preservatives purchased are reagent grade with ultra low levels of impurities.

Standard Operating Procedures (SOP) have been established for glassware and equipment cleaning. These were developed in accordance with EPA established protocols. A copy of the SOP Manual is kept in each EMDA field laboratory at all times for reference. The procedures include specific information relative to the types of chemicals used, such as phosphate free detergents, deionized water, types and strengths of acids, and solvents. EMDA sampling equipment and protocols were modified to satisfy EPA Clean Sampling requirements.

A logbook is maintained for each automatic sampler to document all usage, cleaning and repairs, as well as all preventive maintenance. All sample lines are prepared in the same manner as sample containers. Acids used in this process are also periodically analyzed for contaminants. A blank water sample of the sampler hose and pump lines is collected and preserved upon completion of the cleaning process. This blank is submitted to the laboratory with the samples that are collected with that sampler. In addition, the deionized water system used by EMDA is checked each week at the ppb level to ensure the integrity of the final deionized water rinse.

Whenever the NBC conducts user sampling, the user is offered a replicate sample that they may have analyzed by an independent laboratory for comparison with the NBC results. The user is notified of the NBC results as soon as they are reported by the NBC Laboratory.

In addition to compliance monitoring inside the industrial and commercial user facilities, the NBC also monitors manholes strategically located throughout the sewer system on a regular basis. The purpose of this manhole monitoring is to track spills, concentrated or non-compliant discharges, and to monitor users without them being aware that sampling is being conducted.

NBC Laboratory Building

The majority of samples collected in 2017 by EMDA were analyzed at NBC Laboratory facilities at Field's Point. The NBC laboratory utilizes state of the art wastewater analytical equipment that is able to comply with the most stringent EPA and RI Department of Health (DOH) regulations that call for sensitive detection of various materials contained in wastewater.

During 2016 the NBC completed construction of the Water Quality Science Building (WQSB). This is a state of the art building that houses the EMDA and Laboratory sections. These two sections work together to ensure that samples are collected and processed in accordance with all EPA protocols.

Water Quality Science Building

EMDA Lab Area

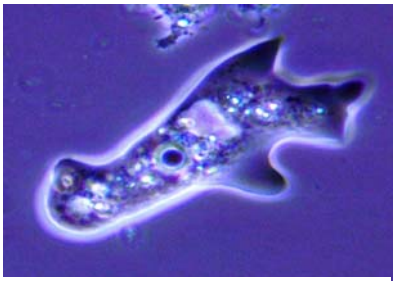
The EMDA laboratory section of the building has been designed to include separate areas for plant sampling work, industry and manhole sampling, nutrient sampling and, fixed site sonde maintenance work. Preparation and cleaning of sampling equipment and bottles for these different sampling initiatives is performed in segregated areas to minimize the risk of equipment cross contamination. In addition, EMDA staff has work stations in order to prepare required paperwork for sample collection.

Analytical Laboratory

The EPA has outlined several analyses that require ultra low level detection. These analyses are for trace metals utilizing an inductively coupled plasma/mass spectrometer (ICP/MS), mercury using a cold vapor atomic fluorescence spectrometer, and cyanide. To achieve these ultra low levels, the instruments must be kept in an environment free of contaminants. The major contaminant of concern is metals. The WQSB has been designed to allow for samples to flow smoothly through the lab. The WSQB has been equipped with state of the art instrumentation. The building is equipped with an advanced class 10,000 clean room. The class 10,000 clean room is used to process ultra low level metal samples and ultra low level mercury samples. Fume hoods in the lab clean room are clean classified as approaching Class 1000 Clean Room Criteria. This means that there is very minimal exposed metal in this area. Everything in this area from the light fixtures to the door jambs are coated or made of a non-metallic material and all air is processed through HEPA filters. The biology labs have also expanded. There are now two labs utilized for microbiology analysis. This expanded area will allow the NBC to process the enterococcus samples required by the new RIPDES permits.

ICP used at the NBC Laboratory

There are separate areas of the laboratory designated for digestion of metals, metals analysis on the ICP and metals analysis on the mercury analyzer. The mercury analyzer uses EPA Method 245.7 and currently has a detection limit of 1.0 parts per trillion (ppt). This detection limit is expected to improve as protocols for this equipment are further refined. The ultimate goal is to use EPA Method 1631 for the measurement of total mercury, with an estimated method detection limit of 0.05 ppt and minimum reporting limit (ML) of 0.2 ppt. The ICP/MS is used for ultra-trace multi-elemental analysis. The method used is EPA Method 200.8 for trace metals at EPA Water Quality Criteria levels.



Amoeba

The Laboratory has a microbiology department dedicated to enterococcus, fecal coliform and various other bacterial analysis. A microscope, camera, and monitor are some of the tools used in the “Micro” room. There is also a room specifically used for making media, which is the material used to promote bacteria growth. The use of a separate room for media preparation is important to control contamination. To accommodate the projects conducted by NBC and to satisfy EPA regulations, it is vital to properly maintain and continuously improve the NBC Laboratory.

The WQSB has been designed with features that conserve energy and promote work efficiencies. The ventilation fume hoods function by increasing in velocity as the enclosure sashes are opened and decreasing in velocity as the enclosure sashes are closed. Other design features include motion sensor lighting in all areas, relative humidity control, and a temperature monitoring system to monitor biological sample and preserved analytical sample temperatures.

Between the period of January 1, 2017 through December 31, 2017, NBC personnel conducted 163 sampling inspections of industries located within the Field's Point and Bucklin Point districts, resulting in the collection of 1,627 composite and grab samples. These 1,627 samples translated to 182 monitoring reports. Of these 182 monitoring reports, 168 were in full compliance with the NBC standards and 14 were not in compliance, resulting in a user compliance rate of 92.3% based upon NBC analyses. This is an increase from the 90.2% rate of compliance reported for 2016 NBC monitoring results.

The NBC conducted sampling of 71 SIUs and six non-significant user facilities in the two NBC districts during 2017. Of the 77 facilities sampled by the NBC, 44 facilities were classified as categorical industries at the time of the sampling event. There were 27 firms classified as significant non-categorical facilities when sampled by the NBC during 2017.

Computer printouts of the 2017 sampling results for significant and non-significant users, separated by district, are provided in ATTACHMENT VOLUME II, SECTIONS 5 and 6 respectively. NBC analyses are indicated by a "Y" in the printout. These printouts list cadmium, chromium, copper, lead, nickel, silver, zinc, cyanide, BOD, TSS, Oil and Grease, and other categorical parameters specific to the user. The compliance status of each result is also indicated.

Analysis of Monitoring Results

NBC permits required industrial and commercial users to submit 1,846 wastewater monitoring reports for the period from January 1, 2017 through December 31, 2017. For this period, the industrial and commercial users actually submitted 2,337 sample results, 2,244 of which were in full compliance with NBC and EPA standards. This is a user self monitoring report rate of compliance of 96.0%. The users submitted 26.6% more analyses than required by permits due to the NBC requirement to conduct weekly sampling once non-compliance has occurred.

TABLE 13 provides a summary of the batch and non-batch compliance monitoring results for categorical and non-categorical industries located in both NBC districts for the period from January 1, 2017 through December 31, 2017. TABLE 14 provides a summary of the batch and non-batch compliance monitoring results for the significant and non-significant industrial users. The data reported in TABLES 13 and 14 is shown graphically in FIGURES 8 and 9. TABLE 15 is a comparison of the percent compliance for both self-monitoring and NBC sampling results for the aforementioned period. This table indicates that there may be inconsistencies between NBC and user sampling results. While user self-monitoring compliance reports submitted by significant users indicate a compliance rate of 97.1%, NBC results indicate a compliance rate of 91.7% for this class of users.

TABLE 13

Narragansett Bay Commission
Field's Point and Bucklin Point Districts

Summary of All Compliance Monitoring Results for Categorical and Non-Categorical Users

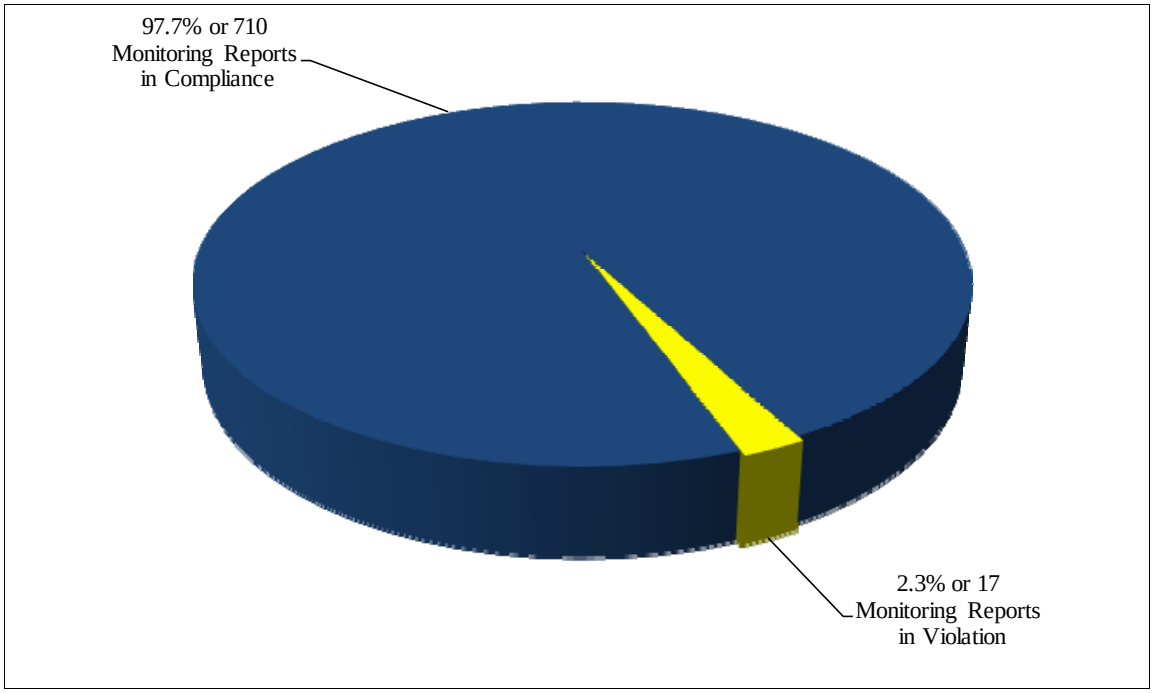
January 1, 2017 - December 31, 2017

User Self-Monitoring Results	**Categorical**	**Non-Categorical**	**Totals**
Total Monitoring Reports Required	**551**	**1,295**	**1,846**
Total Monitoring Reports Submitted	**626**	**1,711**	**2,337**
Total Monitoring Reports In Compliance	**615**	**1,629**	**2,244**
Total Monitoring Reports Not In Compliance	**11**	**82**	**93**
NBC Monitoring Results			
Total Monitoring Reports Collected	**101**	**81**	**182**
Total Monitoring Reports In Compliance	**95**	**73**	**168**
Total Monitoring Reports Not In Compliance	**6**	**8**	**14**
All Results			
Total Monitoring Reports Reviewed	**727**	**1,792**	**2,519**
Total Monitoring Reports With Violations	**17**	**90**	**107**
Total Monitoring Reports In Compliance	**710**	**1,702**	**2,412**
Total Users Sampled	**44**	**496**	**540**
Total Users With Violations	**12**	**41**	**53**
Total Users Without Violations	**32**	**455**	**487**

FIGURE 8

2017 Rates of Compliance for Categorical and Non-Categorical Users Field's Point & Bucklin Point Districts

Categorical User Analyses
Total Number of Monitoring Reports = 727



Non-Categorical User Analyses
Total Number of Monitoring Reports = 1,792

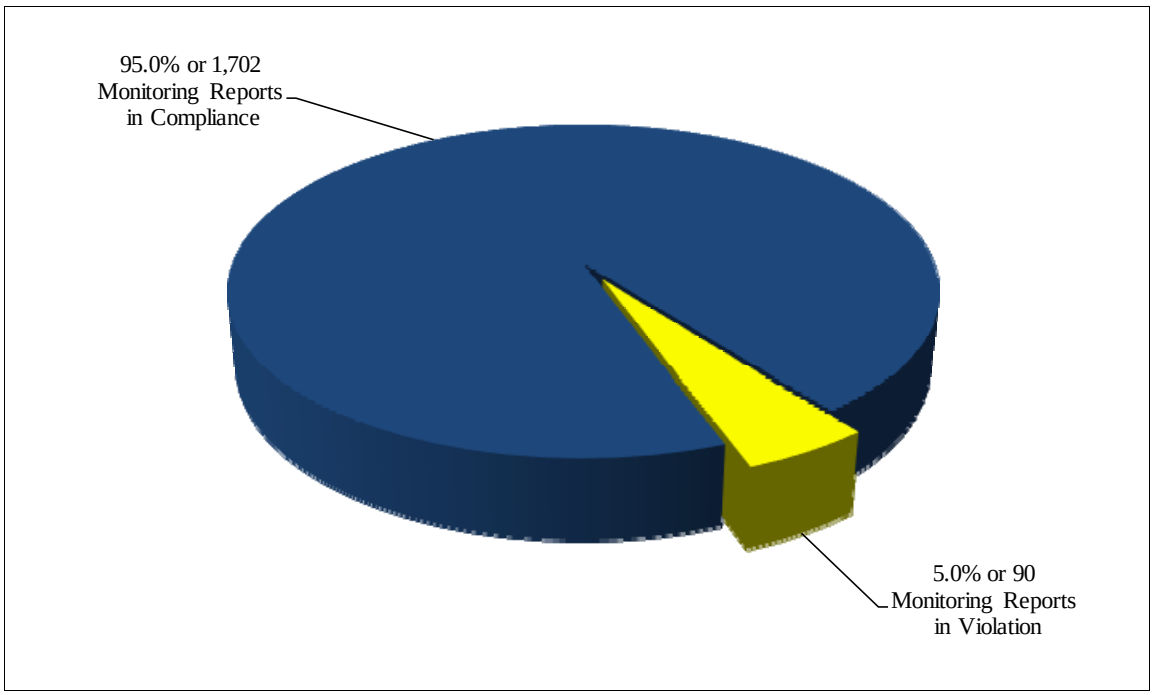


TABLE 14

Narragansett Bay Commission
Field's Point and Bucklin Point Districts

Summary of All Compliance Monitoring Results for Significant and Non-Significant Users

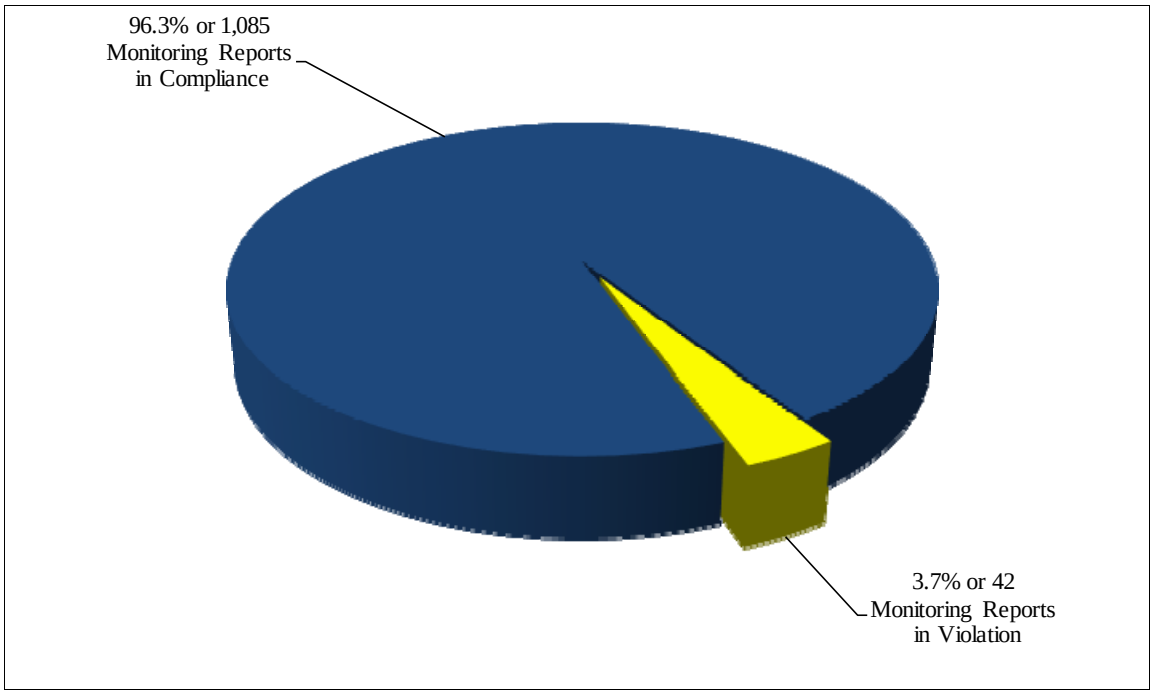
January 1, 2017 - December 31, 2017

User Self-Monitoring Results	Significant Users	Non-Significant Users	Totals
Total Monitoring Reports Required	**751**	**1,095**	**1,846**
Total Monitoring Reports Submitted	**958**	**1,379**	**2,337**
Total Monitoring Reports In Compliance	**930**	**1,314**	**2,244**
Total Monitoring Reports Not In Compliance	**28**	**65**	**93**
NBC Monitoring Results			
Total Monitoring Reports Collected	**169**	**13**	**182**
Total Monitoring Reports In Compliance	**155**	**13**	**168**
Total Monitoring Reports Not In Compliance	**14**	**0**	**14**
All Results			
Total Monitoring Reports Reviewed	**1,127**	**1,392**	**2,519**
Total Monitoring Reports With Violations	**42**	**65**	**107**
Total Monitoring Reports In Compliance	**1,085**	**1,327**	**2,412**
Total Users Sampled	**71**	**469**	**540**
Total Users With Violations	**21**	**32**	**53**
Total Users Without Violations	**50**	**437**	**487**

FIGURE 9

2017 Rates of Compliance for Significant and Non-Significant Users
Field's Point & Bucklin Point Districts

Significant User Analyses
Total Number of Monitoring Reports = 1,127



Non-Significant User Analyses
Total Number of Monitoring Reports = 1,392

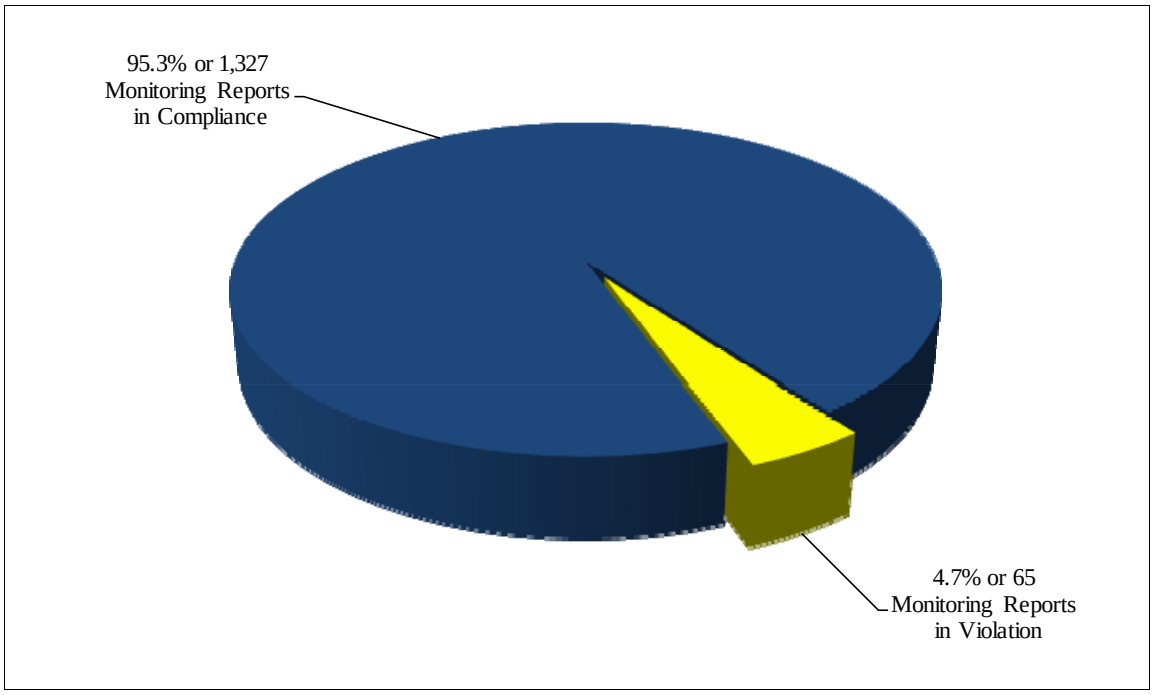


TABLE 15

Narragansett Bay Commission
Field's Point and Bucklin Point Districts

Comparison of Compliance Rates for Self-Monitoring and NBC Monitoring Reports

January 1, 2017 - December 31, 2017

	User Self-Monitoring	NBC Monitoring	All Results
Significant Users			
Compliance Rate	**97.1%**	**91.7%**	**96.3%**
Non-Compliance Rate	**2.9%**	**8.3%**	**3.7%**
Non-Significant Users			
Compliance Rate	**95.3%**	**100%**	**95.3%**
Non-Compliance Rate	**4.7%**	**0%**	**4.7%**
Categorical Users			
Compliance Rate	**98.2%**	**94.1%**	**97.7%**
Non-Compliance Rate	**1.8%**	**5.9%**	**2.3%**
Non-Categorical Users			
Compliance Rate	**95.2%**	**90.1%**	**95.0%**
Non-Compliance Rate	**4.8%**	**9.9%**	**5.0%**
All Users			
Compliance Rate	**96.0%**	**92.3%**	**95.8%**
Non-Compliance Rate	**4.0%**	**7.7%**	**4.2%**

This data review indicates the overall SIU compliance rate remained virtually unchanged based upon user monitoring and NBC results when compared to the previous reporting year, as the overall SIU rate of compliance was 94.2% in 2016 and 96.3% in 2017. There was only a 5.4% difference in significant industrial user compliance rates observed between user and NBC

sampling results. The difference in compliance rates observed for categorical users for these two types of effluent monitoring slightly less at 4.1%. User self monitoring reports submitted by categorical users indicated full compliance 98.2% of the time, while NBC monitoring found categorical users to be in compliance for only 94.1% of NBC sampling events. These differences in NBC and user monitoring compliance rates indicate that some users may not be properly collecting samples or reporting results that may not be truly representative of the quality of their effluent discharge and may even indicate that some firms may be falsifying monitoring reports. The NBC aggressively investigates these discrepancies through its industry and manhole sampling programs. It is important to note, however, that the rate of compliance for both monitoring methods is quite high. The comparison of compliance rates of the different classes of users for user self-monitoring and NBC monitoring reports is presented in FIGURE 10.

FIGURE 10
2017 Comparison of Compliance Rates for
Self-Monitoring and NBC Monitoring Reports

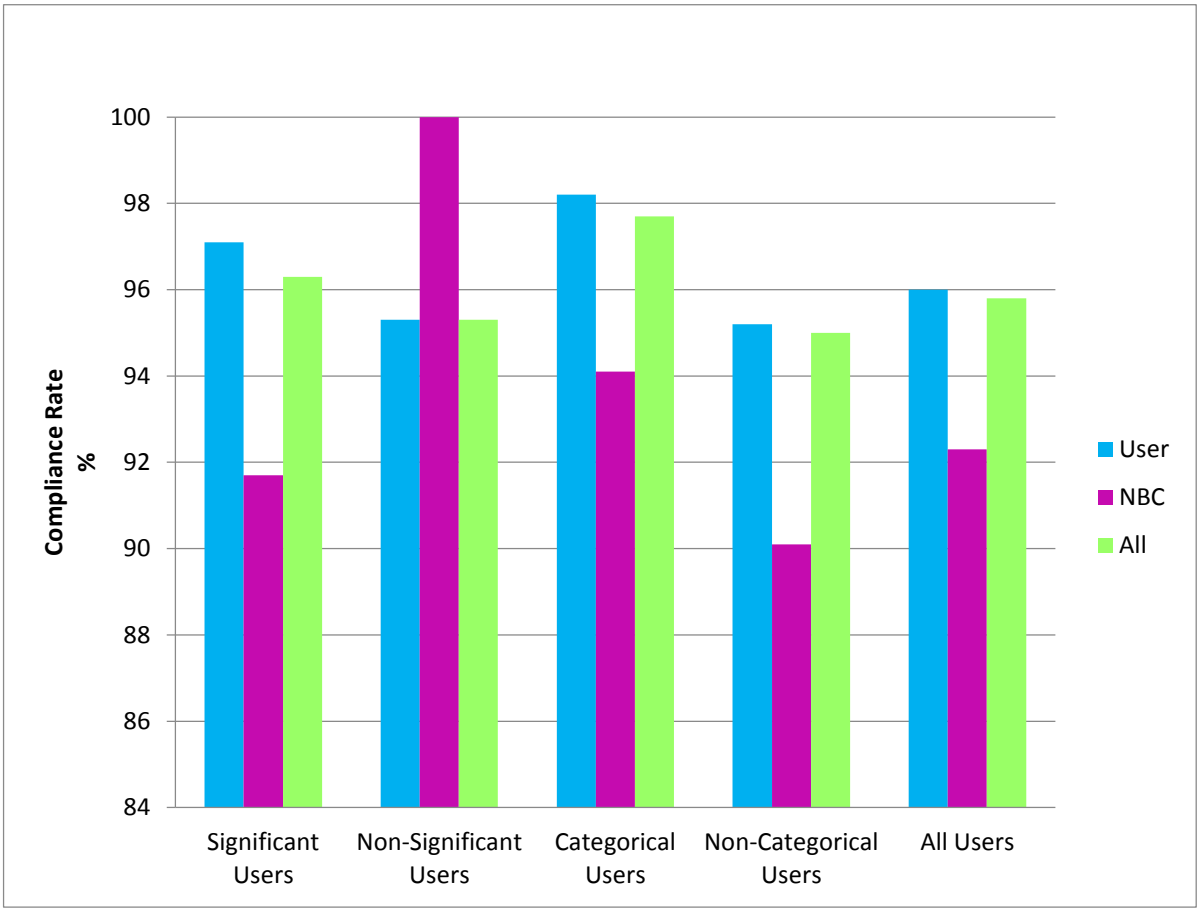


TABLE 16 provides a comparison of the compliance rates for different classes of users located in the Field's Point and Bucklin Point districts. The compliance rates for each class of users in both districts were similar. The overall rate of compliance for Field's Point users was 95.9%, while it was 95.5% in Bucklin Point.

The Field's Point categorical users were in full compliance for 97.1% of the sampling events at their facilities in 2017. This compliance rate is virtually the same as the 97.4% compliance rate in 2016. The Bucklin Point categorical users were in full compliance for 98.4% of the sampling event at their facilities in 2017. This compliance rate is an increase from the 96.3% in 2016. SIUs in the Field's Point district had a rate of compliance of 95.5%, slightly lower than the 97.1% SIU compliance rate observed in the Bucklin Point district.

As can be seen from TABLE 16, categorical users in Bucklin Point had the highest rate of compliance, 98.4%, while non-significant users located in the Bucklin Point district had the highest rate of non-compliance, 6.3%. The rate of user compliance for all users in both districts slightly increased to 95.8% in 2016 when compared to 2016, at 94.4%.

TABLE 16
Narragansett Bay Commission

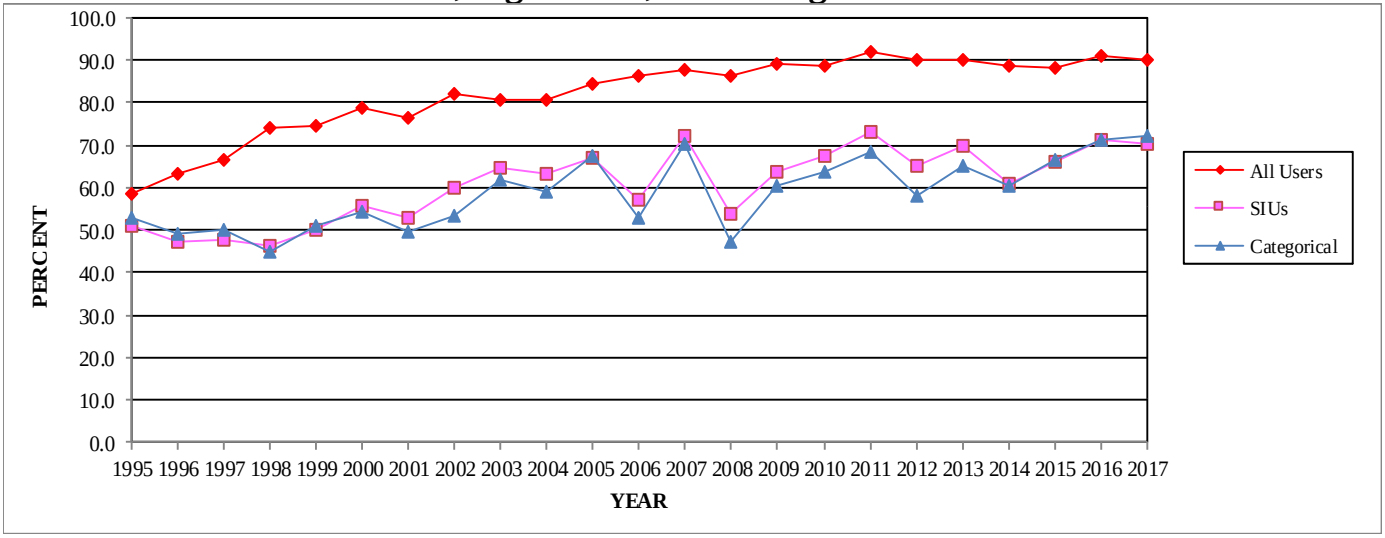
Comparison of Compliance Rates
Between Field's Point and Bucklin Point Districts
for All Monitoring Results

January 1, 2017 - December 31, 2017

	Field's Point District	Bucklin Point District	Both Districts
Significant Users			
Compliance Rate	**95.5%**	**97.1%**	**96.3%**
Non-Compliance Rate	**4.5%**	**2.9%**	**3.7%**
Non-Significant Users			
Compliance Rate	**96.2%**	**93.7%**	**95.3%**
Non-Compliance Rate	**3.8%**	**6.3%**	**4.7%**
Categorical Users			
Compliance Rate	**97.1%**	**98.4%**	**97.7%**
Non-Compliance Rate	**2.9%**	**1.6%**	**2.3%**
Non-Categorical Users			
Compliance Rate	**95.5%**	**94.2%**	**95.0%**
Non-Compliance Rate	**4.5%**	**5.8%**	**5.0%**
All Users			
Compliance Rate	**95.9%**	**95.5%**	**95.8%**
Non-Compliance Rate	**4.1%**	**4.5%**	**4.2%**

TABLE 17 provides an analysis of the percentage of firms in each user class with perfect compliance records for effluent monitoring occurring during 2017. This analysis indicates that 72.3% of categorical users and 70.4% of significant users had perfect compliance records for all effluent parameters and sampling events. The compliance rates for both of these user classes virtually the same when compared to 2017, which were 71.1% and 71.4% respectively. Non-significant users had the highest percentage of firms with perfect compliance records, 93.2%. During 2017, of the 540 firms that sampled their waste stream, 487 firms or 90.2% of users were in full compliance with NBC and EPA discharge standards. This analysis excludes the pH parameter and only reviews compliance with toxic pollutant discharge parameters. The perfect compliance rate for each year since 1995 is presented in FIGURE 11. The rate of all users with perfect compliance for effluent monitoring has shown marked improvement over the years. In 1995 the overall rate of compliance for all users was 58.7% compared with 90.2% in 2017.

FIGURE 11
Rate of Perfect Compliance with Effluent Parameters for All Users, Significant, and Categorical Users



The increase in user compliance rates from 1995 through 2017 can be attributed to NBC resampling requirements, open and prompt communications with users and to educational efforts by the Pretreatment and ESTA staff regarding EPA and NBC requirements. In addition to educating users, ESTA staff offer free assistance to companies to resolve compliance issues. The NBC user education and technical assistance programs have resulted in significantly improved rates of compliance by NBC users.

TABLE 17

Narragansett Bay Commission

Analysis of Percentage of Firms With and Without Effluent Violations* for Various User Classes Field's Point and Bucklin Point Districts

January 1, 2017 - December 31, 2017

	% Firms Without Effluent Violations*	% Firms With Effluent Violations
Categorical Users	**72.3%**	**27.3%**
Non-Categorical Users	**91.7%**	**8.3%**
Significant Users	**70.4%**	**29.6%**
Non-Significant Users	**93.2%**	**6.8%**
All Users	**90.2%**	**9.8%**

***Excludes pH Parameter Violations.**

Of the 2,519 analytical reports reviewed during 2017, there were 107 reports that indicated non-compliance with one or more of the NBC or EPA effluent parameters (excluding pH). Of these 107 non-compliant sample reports, 42 were of samples collected from 21 SIU facilities and 65 non-compliant samples were collected from 32 non-significant facilities.

Two of the 21 SIUs that had effluent violations during 2017 had five or more effluent parameter violations during the report period. In fact, of the 4,715 various pollutant parameters tested for by SIUs, these two firms were responsible for 18 parameter violations out of a total of 42 parameter violations reported by all significant users during 2017. These two firms accounted for 42.8% of all SIU parameter violations over the past year. As required by the EPA and DEM, the NBC has initiated some type of enforcement action against each of these firms. A listing of these two firms and the current status of each of these users is provided in TABLE 18.

TABLE 18

Narragansett Bay Commission

Status of Significant Users With 5 or More Parameter Violations

January 1, 2017 - December 31, 2017

Company Name	Number of Parameter Violations	User Status
DiFruscia Industries, Inc.	6	This Field's Point metal finishing firm experienced one copper violation, one nickel violation and four zinc violations. The firm attributed the violations to a faulty flocculent pump. The equipment has been repaired. In addition the firm is replacing the controls on their pretreatment system. One copper violation and two zinc violations were the result of NBC sampling events. The firm has completed resampling and is now in compliance with NBC discharge limitations.
Providence Specialty Products	12	This Field's Point cheese manufacturing firm experienced twelve total oil and grease violations. The firm attributed the violations to increased production and not recapturing usable byproducts that are high in milk fats. The firm is currently evaluating methods to collect the byproducts and use them in the process. The firm has continued to exceed the total oil and grease limitation.

2017 Industrial User Compliance Status Summary

During 2017, the NBC continued to monitor and track the compliance status of all industrial users in both the Field's Point and Bucklin Point districts. Notices of Violation (NOV) were issued for all instances of non-compliance. A total of 1,664 NOV were issued in 2017. A table detailing each type of NOV issued to each firm can be found in ATTACHMENT VOLUME II, SECTION 8. A summary of the monthly compliance status for Significant Industrial Users can be found in ATTACHMENT VOLUME II, SECTION 5. A summary of NBC Enforcement Actions, including the penalties assessed, is also provided in CHAPTER VI.

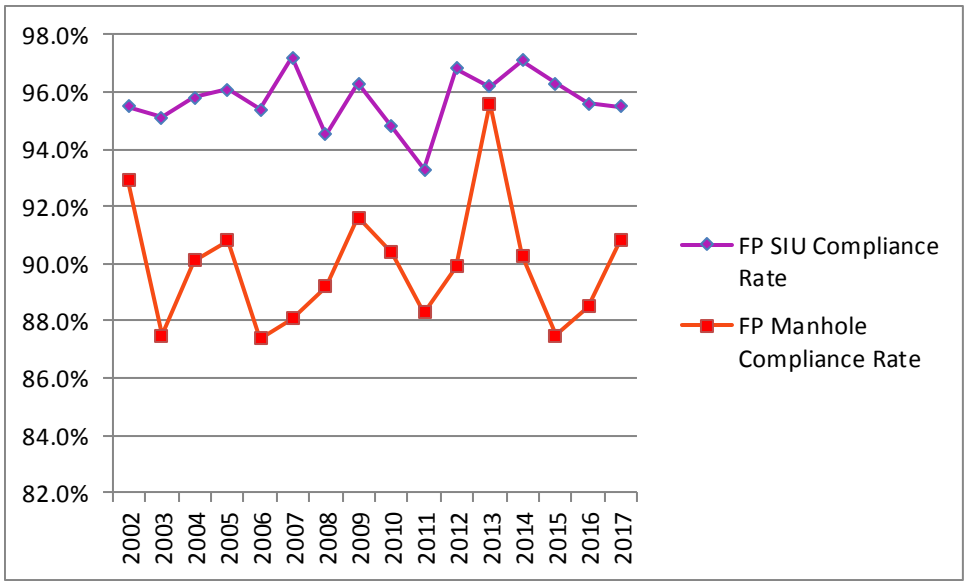
Industrial Surveillance Manhole Monitoring Program

During 2017, EMDA staff conducted sampling of an average of seven manholes each week. The automatic samplers for manholes are typically programmed to take a grab sample every 15 minutes over an approximately 24 hour period and utilize either one large bottle to obtain a single composite sample or a 24 bottle carrousel to obtain 24 discrete samples. For carrousel installations, 24 composite samples consisting of five grab samples per bottle are obtained over the 24 hour sampling period. EMDA staff analyzes each of the 24 sample bottles for pH and any unusual wastewater characteristics. Should any unusual conditions be observed, one or possibly all of the 24 samples would be analyzed separately. If no unusual characteristics are observed, an equal volume aliquot of each of the 24 samples is composited into two separate samples for laboratory analyses for metals and cyanide. After obtaining results indicating noncompliance, Pretreatment staff attempts to determine the potential source of these noncompliant discharges. Manhole monitoring results continue to indicate declines in the quantities of toxics discharged into the sewer system.

During 2017, the NBC successfully sampled a total of 313 industrial manhole sampling events at manholes located throughout the two districts. In addition to collecting industrial manhole samples, 39 sampling events were conducted at residential manholes. In addition, eleven additional manholes were attempted to be monitored in both Field's Point and Bucklin Point. However, due to flow conditions or mechanical problems, effluent could not be collected by the automatic samplers at these sites. A total of 363 monitoring events were conducted at manholes in 2017. This is an increase from the 336 monitoring events conducted at manholes in 2016.

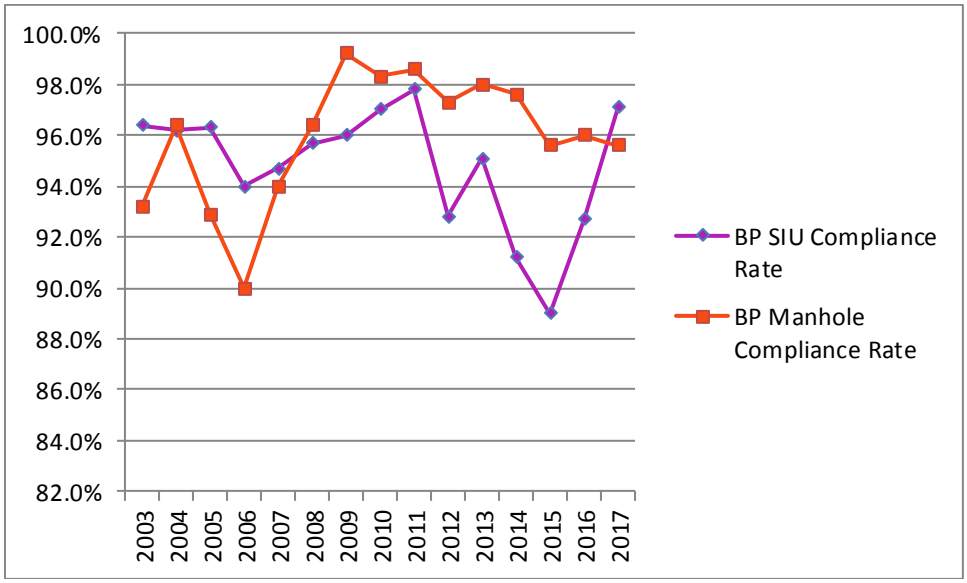
EMDA staff conducted 130 manhole monitoring events from industrial surveillance manholes in Field's Point during 2017. Of the 130 manhole monitoring events, 118 or 90.8% were in compliance with NBC discharge limitations. As can be seen in FIGURE 12 this compliance rate is slightly higher than the compliance rate for sampling within Field's Point SIU facilities in 2016, which was 88.5%. Although there is a difference in compliance rates, the two are comparable. The lower compliance rate in manhole monitoring may be due to multiple industrial inputs into manholes as well as the contributions from background inputs such as inflow and infiltration and residential sources.

FIGURE 12
Field's Point SIU vs Manhole Compliance Rates 2002 - 2017



EMDA staff conducted 183 monitoring events from industrial surveillance manholes in Bucklin Point during 2017. Of the 183 manhole monitoring events, 175 or 95.6% of the events were in compliance with NBC discharge limitations. As can be seen in FIGURE 13 this compliance rate is about the same as the compliance rate for samples collected within Bucklin Point SIU facilities in 2016, which was 96.0%.

FIGURE 13
Bucklin Point SIU vs Manhole Compliance Rates 2002 – 2017



A discussion of the results of sanitary monitoring is provided in CHAPTER V of this report and a discussion of the manholes with elevated concentrations of toxics is provided in the following paragraphs. Industrial surveillance and sanitary manhole monitoring results for 2017 are provided in ATTACHMENT VOLUME II, SECTION 7.

INDUSTRIAL SURVEILLANCE MANHOLE VIOLATIONS

FIELD'S POINT DISTRICT

Industrial Surveillance Manhole 07

Industrial Surveillance Manhole 07 is located on Ellenfield Street in Providence. The manhole is located downstream of the Ellenfield industrial area which includes many electroplating and metal finishing firms. On June 8, 2017 the concentration of copper was in excess of the NBC discharge limitation of 1.20 ppm. On December 21, 2017 the concentrations of copper, nickel, and cyanide were in excess of the NBC discharge limitation of 1.20 ppm, 1.62 ppm, and 0.58 ppm respectively. Companies in the area were inspected to determine the potential source. Continued industrial manhole monitoring will be conducted by NBC personnel in 2018 to monitor the compliance status of this area.

Industrial Surveillance Manholes 08A & 08B

Industrial Surveillance Manholes 08A and 08B are located on Toronto Street in Providence downstream and upstream of Ira Green, Inc., which conducts metal finishing operations. On December 7, 2017 the concentration of copper in Industrial Surveillance Manhole 08A was in excess of the NBC discharge limitation of 1.20 ppm. The firm was inspected. In addition, the firm was issued a Notice of Violation which required a report detailing the cause of the high copper concentration to be submitted. The firm indicated that it could not determine a cause for the copper concentration. Continued industrial manhole monitoring will be conducted by NBC personnel in 2018 to monitor the compliance status of this company.

Industrial Surveillance Manholes 23A & 23B

Industrial Surveillance Manholes 23A and 23B are located on Public Street in Providence downstream and upstream of Ideal Plating & Polishing Company, Inc., which conducts metal finishing operations. On September 14, 2017 the concentrations of nickel and zinc in Industrial Surveillance Manhole 23A were in excess of the NBC discharge limitations of 1.62 ppm and 2.61 ppm respectively. The firm was issued a Notice of Violation which required a report detailing the cause of the high metals concentrations to be submitted. The firm cited operator error as the cause and indicated that its employees would be retrained. Continued industrial manhole monitoring will be conducted by NBC personnel in 2018 to monitor the compliance status of this company.

Industrial Surveillance Manhole 48B

Industrial Surveillance Manhole 48B is located on Niantic Avenue in Providence upstream of Alloy Holdings, LLC, which conducts zero discharge metal forming operations. On August 19, 2017 the concentrations of copper, lead, and zinc were in excess of the NBC discharge limitations of 1.20 ppm, 0.60 ppm, and 2.61 ppm. Alloy Holdings, LLC and the area upstream of the facility were inspected and nothing unusual was found. Continued industrial manhole monitoring will be conducted by NBC personnel in 2018 to monitor the compliance status of this manhole.

Industrial Surveillance Manholes 70A, 70B & 70C

Industrial Surveillance Manholes 70A, 70B and 70C are located on River Avenue in Providence downstream and upstream of A & F Plating Company and Universal Plating Company, Inc., both of which conduct metal finishing operations. Industrial Surveillance Manhole 70C is located upstream of Universal Plating Company, Inc. and downstream of A&F Plating Company. On May 25, 2017 the concentrations of copper and zinc in Industrial Surveillance Manhole 70C were in excess of the NBC discharge limitations of 1.20 ppm, and 2.61 ppm respectively. A & F Plating Company was issued a Notice of Violation requiring a report detailing the cause of the high metals concentrations be submitted. The firm indicated the cause to be from operator error and indicated employees would be monitored more closely. Continued industrial manhole monitoring and more frequent inspections will be conducted by NBC personnel in 2018 to monitor the compliance status of these companies.

Industrial Surveillance Manholes 123A & 123B

Industrial Surveillance Manholes 123A and 123B are located on Starr Street in Johnston downstream and upstream of DiFruscia Industries, Inc., which conducts metal finishing operations. On August 2, 2017 the concentrations of nickel and zinc in Industrial Surveillance Manhole 123A were in excess of the NBC discharge limitations of 1.62 ppm and 2.61 ppm respectively. The firm was issued a Notice of Violation which required a report detailing the cause of the metals concentrations to be submitted. The firm attributed the violation to malfunctioning pretreatment equipment causing inadequate treatment. On November 16, 2017 both the firm and Industrial Surveillance Manholes 123A and 123B were sampled. The sampling indicated the firm was discharging zinc in excess of the discharge limitation of 2.61 ppm. The firm was inspected and issued a Notice of Violation. During the inspection, the firm stated additional process controls would be implemented to minimize zinc discharges to the sewer. Continued industrial manhole monitoring will be conducted by NBC personnel in 2018 to monitor the compliance status of this company.

Industrial Surveillance Manholes 204A & 204B

Industrial Surveillance Manholes 204A and 204B are located on Aldrich Street in Providence downstream and upstream of Metallurgical Solutions Inc., which conducts metal finishing operations. On March 23, 2017 the concentration of zinc in Industrial Surveillance Manhole 204B was in excess of the NBC discharge limitation of 2.61 ppm. On October 5, 2017 the concentration of silver was in excess of the NBC discharge limitation of 0.43 ppm. Since the manhole is located upstream of the firm, Notices of Violation were not issued as the firm was determined to not be the source. The area upstream has been investigated and no potential

sources could be identified. Continued industrial manhole monitoring will be conducted by NBC personnel in 2018 to monitor the compliance status of this manhole.

BUCKLIN POINT DISTRICT

Industrial Surveillance Manholes 14A & 14B

Industrial Surveillance Manholes 14A and 14B are located on Dexter Street in East Providence, upstream and downstream of Aspen Aerogels Rhode Island, LLC, which manufactures aerogel insulation. On January 7, 2017 the concentration of zinc in Industrial Surveillance Manhole 14A was in excess of the NBC discharge limitation of 1.67 ppm. Since the manhole is located upstream of the firm, a Notice of Violation was not issued as the firm was determined to not be the source. The area upstream was investigated and no potential sources of the zinc could be identified. Continued industrial manhole monitoring will be conducted by NBC personnel in 2018 to monitor the compliance status of this area.

Industrial Surveillance Manholes 41A & 41B

Industrial Surveillance Manholes 41A and 41B are located on Bacon Street in Pawtucket upstream and downstream of Bliss Manufacturing, which conducts metal finishing operations. On October 19, 2017 the concentration of zinc in Industrial Surveillance Manhole 41B was in excess of the NBC discharge limitations of 1.67 ppm. The firm was issued a Notice of Violation which required the submittal of report detailing the cause of the high zinc concentration. The firm indicated it could not determine the cause for the elevated zinc and that its routine self-monitoring showed compliance. Continued industrial manhole monitoring will be conducted by NBC personnel in 2018 to monitor the compliance status of this company.

Industrial Surveillance Manholes 92A & 92B

Industrial Surveillance Manholes 92A and 92B are located on New England Way in Lincoln upstream and downstream of Tanury Industries, which conducts metal finishing operations. On May 18, 2017 the concentrations of chromium, copper, nickel and cyanide in Industrial Surveillance Manhole 92B were in excess of the NBC discharge limitations of 2.77 ppm, 1.20 ppm, 1.62 ppm, and 0.50 ppm respectively. The firm was issued a Notice of Violation which required a report detailing the cause of the high metals and cyanide concentrations to be submitted. The report stated that their cyanide collection pit overflowed at the same time their center trench was being pumped so their treatment system was overwhelmed. Employees were retrained on what to do in the event of an overflow and procedures were put into place to prevent a similar future occurrence. Continued industrial manhole monitoring will be conducted by NBC personnel in 2018 to monitor the compliance status of this company.

Industrial Surveillance Manholes 92B & 92C

Industrial Surveillance Manholes 92B and 92C are located on New England Way in Lincoln upstream and downstream of Chemart Company, which conducts metal finishing operations. On June 28, 2017 the concentrations of copper and nickel in Industrial Surveillance Manhole 92C were in excess of the NBC discharge limitations of 1.20 ppm and 1.62 ppm respectively. The firm was issued a Notice of Violation which required a report detailing the cause of the high metals concentrations to be submitted. The firm had indicated that it was testing a new stripping chemical that proved to be too aggressive and decided to cease using it. Continued industrial manhole monitoring will be conducted by NBC personnel in 2018 to monitor the compliance status of this company.

Industrial Surveillance Manhole 96

Industrial Surveillance Manhole 96 is located on Crownmark Drive in Lincoln downstream of Liquid Blue, which conducts textile dyeing operations. On March 30, 2017 the concentration of copper in Industrial Surveillance Manhole 96 was in excess of the NBC discharge limitation of 1.20 ppm. The firm was issued a Notice of Violation which required a report detailing the cause of the copper concentrations to be submitted. The report stated that they believe it was a type of turquoise dye used and they would monitor in the future to ensure excess amounts are not able to enter the sewer. Continued industrial manhole monitoring will be conducted by NBC personnel in 2018 to monitor the compliance status of this company.

SURVEILLANCE MANHOLE MONITORING CONCLUSIONS

The NBC conducts surveillance manhole monitoring throughout the sewer districts on a routine basis. These manholes are located up and down stream of significant industrial users and zero discharge facilities as well as in residential areas. Pretreatment staff reviews the analytical data from all manhole monitoring events. Pretreatment and EMDA staff work together to find the source when the results indicate non-compliance with NBC discharge limitations. In 2017, Pretreatment staff investigated all incidents of non-compliant manhole results. Companies which discharge to the manhole were inspected and Notices of Violation letters were issued to companies found to be the source of the noncompliant wastewater. This aggressive manhole monitoring program will continue in 2018.

V. NBC IMPACT OF PRETREATMENT PROGRAM ON CONTROL OF TOXICS AND INCOMPATIBLE WASTE

NBC Impact on the Control of Toxics and Incompatible Wastes

The continuing goal of the NBC is to improve receiving water quality by meeting and exceeding compliance with RIPDES discharge standards thereby limiting the impact wastewater treatment facility effluent has on Narragansett Bay. To this end, influent and effluent metals and cyanide loading data are evaluated to provide a measure of the amount of industrial waste being discharged to the sewer system, as well as a means of quantifying the effectiveness of the NBC in controlling and reducing the discharge of toxic pollutants into the collection system. The NBC has analyzed and tracked the toxic pollutant loading trends at its treatment facilities since the creation of the agency.

The data and analyses presented in this chapter summarize the 2017 monitoring initiatives performed by EMDA, including monitoring of the treatment facilities, the collection system, industrial and commercial users, and the receiving waters of Narragansett Bay. The Pretreatment Section works in conjunction with the EMDA, Laboratory, Operations and Engineering sections to control toxics from entering and impacting the sewer system. EMDA conducts sampling of wastewater from all discharge sources into the NBC system, throughout the collection and treatment systems, and ultimately to its final fate as either sludge or as treated effluent discharged into Narragansett Bay.

NBC RIPDES Permit Requirements

On September 29, 2017, the DEM issued new RIPDES permits to the Field's Point, RI0100315, and Bucklin Point, RI0100072, treatment facilities. These permits became effective on December 1, 2017. Of significant interest was the removal and addition of several pollutants to the monitoring requirement imposed by the permits. TABLE 19 below details the changes in pollutants to be monitored for each facility:

TABLE 19
Pollutant Changes in 2017 RIPDES Permits

Field's Point	
Pollutant Added	**Pollutant Removed**
Aluminum	Silver
Arsenic	Mercury
Cadmium	Biochemical Oxygen Demand (BOD)
Hexavalent Chrome	Wet Weather Outfall BOD
Lead	Wet Weather Outfall pH
Carbonaceous Biochemical Oxygen Demand (CBOD)	
Enterococci	
Wet Weather Outfall CBOD	
Wet Weather Outfall Enterococci	

TABLE 19
Pollutant Changes in 2017 RIPDES Permits (continued)

Bucklin Point	
Pollutant Added	**Pollutant Removed**
Aluminum	Silver
Cadmium	Mercury
CBOD	BOD
Enterococci	Wet Weather Outfall BOD
Lead	Wet Weather Outfall pH
Wet Weather Outfall CBOD	
Wet Weather Outfall Enterococci	

The removal of a parameter from a RIPDES permit, or a change to "monitor only" status, can be directly attributed to effective efforts by Pretreatment, ESTA, Laboratory, Operations and EMDA staff. The timely collection of samples by EMDA, low-level trace analysis by the Laboratory, effective regulation of industry by Pretreatment, technical assistance provided to industry by ESTA, and effective treatment performed by Operations are the key components of an efficient wastewater treatment organization.

The new permits included many limitations that were significantly lower than the interim limitations currently in place which the NBC could not reliably attain. The NBC appealed several conditions of both the RIPDES permits. These appeals are currently under negotiation. However, stays of new limitations imposed by these permits were granted for the following parameters:

Field's Point:

- CBOD Seasonal Concentration, Season Loading, and Daily Maximum Loading
- TSS Seasonal Concentration, Seasonal Loading, and Daily Maximum Loading
- Copper
- Wet Weather Enterococci
- Wet Weather Total Residual Chlorine

Bucklin Point:

- CBOD Seasonal Concentration, Seasonal Loading, and Daily Maximum Loading
- TSS Seasonal Concentration, Seasonal Loading, and Daily Maximum Loading
- Copper
- Nickel
- Wet Weather Enterococci
- Wet Weather Total Residual Chlorine

Sample Collection at the Wastewater Treatment Facilities

All sample collection, preservation, and storage at the NBC treatment facilities is performed with strict adherence to EPA protocols. As detailed in the RIPDES permits, the Field's Point and Bucklin Point treatment facilities are required to sample the influent and effluent for toxic and conventional pollutants on a regular basis.

Toxic pollutant monitoring requirements include 24-hour composite sample collections for the analysis of chromium, copper, lead, mercury, nickel, silver, and zinc in the influent and effluent. Metals and cyanide measurements are required twice per week at both plants. During 2017, EMDA staff collected all permit-required composite samples of the waste streams at the two treatment facilities.

Field's Point influent samples are collected at the single interceptor that feeds the facility, after bar screening and prior to the grit removal tanks. At Bucklin Point, influent composite samples are collected from the Blackstone Valley (BVI) and East Providence (EPI) interceptors that bring wastewater to the plant. These samples are combined based upon the flow percentages for the sample collection period.

Influent cyanide samples are collected twice per week from the two Bucklin Point interceptor locations and consist of nine separate grab samples from each location. These samples are combined flow proportionally in the same way as the metals and conventional pollutant composite collections.

Final effluent sample collections at both facilities are downstream of all treatment processes. Composite effluent samples are analyzed by the Laboratory for conventional pollutants and metals including copper, lead, mercury, nickel, silver, and zinc, as well as nutrients. The nutrients analyzed include nitrite, nitrate, ammonia, TKN, and total phosphorus. Nitrate is determined by difference from a combined nitrite+nitrate measurement and a nitrite measurement. The Laboratory has two state-of-the-art nutrient auto-analyzers, one to process treatment plant samples and one to process saltwater samples. These instruments have improved analysis efficiency for nutrient measurements, and analytical results from this equipment continue to produce better precision and accuracy than previous analyses.

Other required sample collections for plant monitoring include daily fecal coliform bacteria, BOD, TSS, pH, and total residual chlorine (TRC). Effluent samples are collected and analyzed for dissolved metals and oil and grease at both facilities on a monthly basis. Whole effluent bioassay toxicity tests are also conducted quarterly at both facilities.

Clean Sampling Implementation

As of January 1, 2000, all treatment facility sampling is performed with methods outlined in *US-EPA Method 1669 – Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels*. As laboratory detection limits continue to be lowered, EMDA is constantly evaluating its sample collection and handling procedures to ensure that contamination will not significantly affect the data results. EMDA adopted and is adhering to ultra-clean sampling methodology developed by Hampton Roads Sanitation District of Virginia via participation in a National Association of Clean Water Agencies (NACWA) mercury study. This methodology uses sample bottles, tubing, and pumps that allow sample collection and transfer without opening bottle tops, eliminating many potential sources of contamination. The experience gained in this study assisted EMDA in determining the best ways to improve the performance-based clean sampling methods.

EMDA has implemented a plant sampling quality assurance program to evaluate the success of its current clean sampling program in limiting contamination in nutrient and metals composite sampling of the influent and effluent at the treatment facilities. The program defines a strict protocol for cleaning the 10 and 15 liter HDPE composite carboys used in sampling. In short, this procedure involves dishwasher cleaning with laboratory-grade soap, followed by acid-cleaning with nitric acid. Carboys are then acid-cleaned using hydrochloric acid and rinsed with distilled, de-ionized (DI) water that has been treated with a Barnstead Nano Pure four cartridge filtration system to a purity minimum of 15 mega ohms per centimeter resistivity. Another key element of the plant sampling quality assurance program is the regular cleaning of the suction pump tubing used in drawing the waste stream sample into the composite carboy. This cleaning follows the same steps as the carboy cleaning. The success of the carboy and tubing cleaning is evaluated with the collection of blank samples. For these blank samples DI water is added to cleaned carboys and held for a minimum of 12 hours to simulate normal sample holding times. This water is then analyzed for the same parameters as the wastewater sample. Tube cleaning is evaluated by drawing DI water through the tubing into pre-cleaned containers. Results from these samples have helped EMDA, in conjunction with the Laboratory, determine the steps needed to continue to be reduced through improved laboratory procedures and instrumentation.

Field's Point Special Sampling Activities

The following summarizes the special sampling activities conducted at Field's Point during 2017:

- In an effort to learn more about the concentrations of bacteria in the treated effluent, the NBC instituted monitoring of the effluent for enterococcus bacteria. The monitoring began in May 2010 and continued throughout 2017. The data has not shown a strong correlation between fecal coliform concentrations and enterococcus concentrations. The RIPDES permit, which became effective on December 1, 2017, imposes enterococcus limitations. The data from this sampling has allowed Operations to optimize the disinfection process prior to the limit taking effect.

- EMDA staff assisted ESTA and URI staff with collecting samples for a study of greenhouse gas emissions from the treatment plant. Samples were collected from select unit operations and analyzed by the Laboratory for various nutrient parameters. URI scientists were monitoring the emissions for greenhouse gases. Monitoring was performed approximately monthly during 2017.

- In anticipation of future limitations on arsenic discharges at Field's Point, monitoring was conducted of the arsenic species discharged from an industrial user, the plant influent and effluent.

Bucklin Point Special Sampling Activities

The following summarizes special sampling activities conducted at Bucklin Point during 2017:

- In an effort to learn more about the concentrations of bacteria in the treated effluent, the NBC instituted monitoring of the effluent for enterococcus bacteria. The monitoring began in June 2010 and continued throughout 2017. The data has not shown a strong correlation between fecal coliform concentrations and enterococcus concentrations. The RIPDES permit, which became effective on December 1, 2017, imposes enterococcus limitations. The data from this sampling has allowed Operations to optimize the disinfection process prior to the limit taking effect.

- In anticipation of future limitations on arsenic discharges at Bucklin Point, monitoring was conducted of the arsenic species discharged from an industrial user, the plant influent and effluent.

Analysis of Influent Loading Data

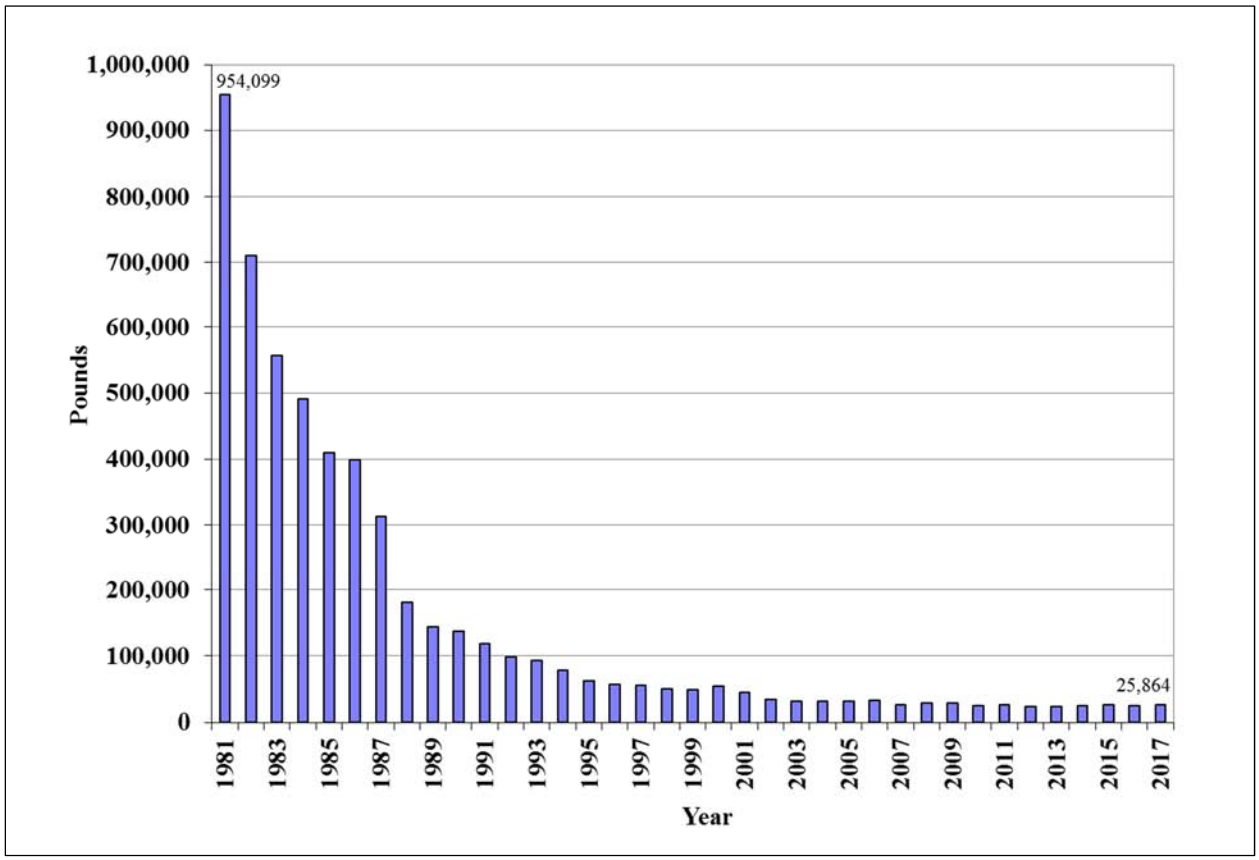
Comparing recent and historical influent loading data is useful for evaluating the success of the Pretreatment Program in controlling the quality of industrial wastewater discharge to the collection system. Analysis of historical toxic pollutant loadings to the two NBC wastewater treatment facilities has indicated a downward trend.

Records of data for metals and cyanide in the Field's Point collection system have been collected and analyzed since 1981. Significantly less historical loading data are available for Bucklin Point, which was acquired by the NBC in 1992. The historical Bucklin Point data presented in this chapter cover the period from 1994 to present for metals, and 1991 to present for cyanide.

Field's Point District – Influent Loading Analysis

FIGURES 14 and 15 depict the reduction in metals and cyanide loadings to Field's Point between 1981, the year before the NBC assumed ownership and operation of the Field's Point treatment facility and portions of the metropolitan Providence sewer system, and the present.

FIGURE 14
Field's Point Total Metals Influent Loading Trend Analysis



Over the past 34 years, there has been a significant downward trend in the total loadings of metals as can be seen in FIGURE 14. Total metals loading is defined as the sum of cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc loadings. These loadings have shown a decrease of 97.3% since 1981. In fact the total metals loadings to Field's Point have been below the Maximum Allowable Headworks Loadings (MAHL) of 140,233 pounds since the early 1990s. Since 2002 the total metals loading has been consistent with minor fluctuations during this time period. Influent metals loadings in 2017 increased by 1,458.3 pounds, or 6.0% from 2016.

Cyanide loading data for the same time period indicates a similar overall downward trend, as can be seen in FIGURE 15, with a dramatic 98.3% decrease in loading between 1981 and 2017. Between 2016 and 2017 there was a 218.1 pound, or 19.3% increase in cyanide influent loading into Field's Point. The achievement in reducing the metal and cyanide inputs to the treatment facility is largely due to the efforts and success of the Pretreatment and ESTA programs.

FIGURE 15
Field's Point Cyanide Influent Loading Trend Analysis

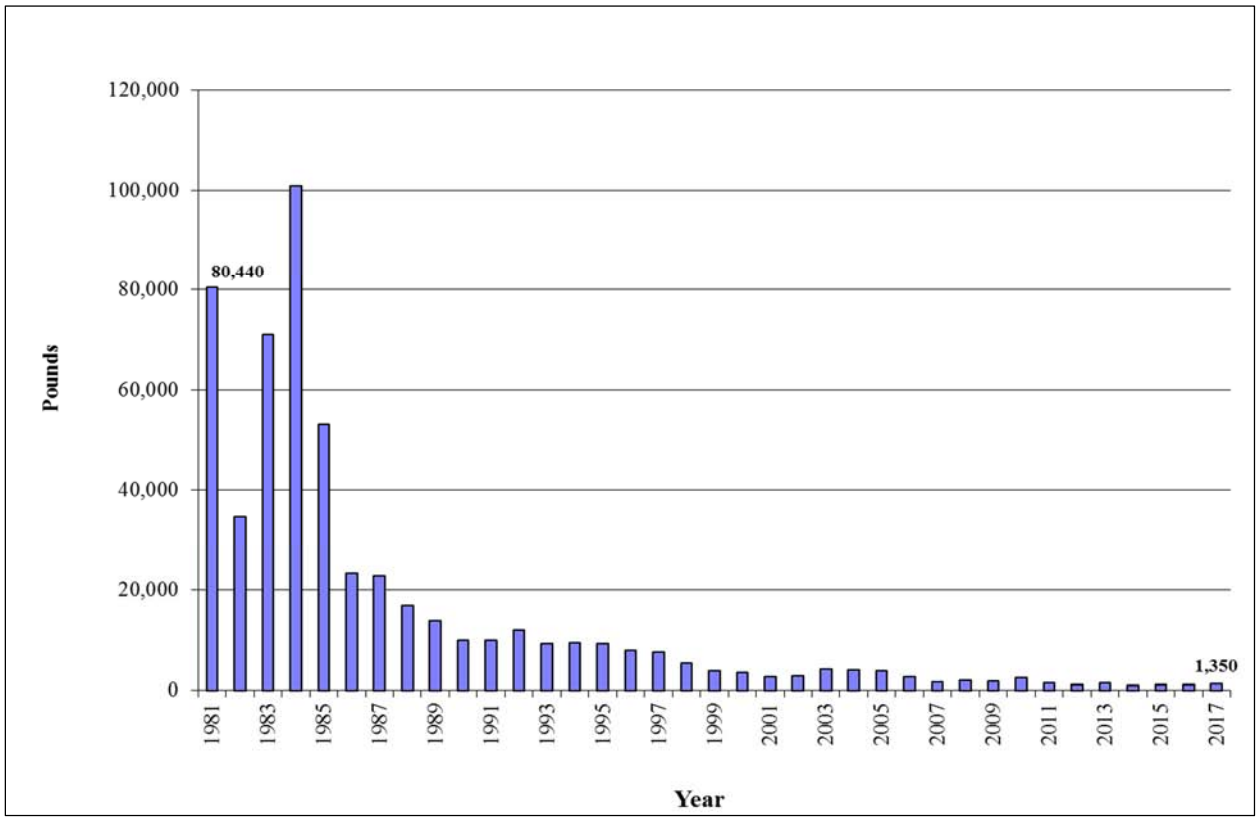


TABLE 20 provides a comparison of the 2016 and 2017 metals and cyanide loadings to Field's Point. Loading figures were calculated based on monthly averages of concentration and flow. As illustrated in TABLE 20, the annual influent loading for all metals showed an increase of 6.0%, or 1,458.3 pounds in 2017 when compared to 2016. Of the eight metals used to calculate the total metals loadings, six metals showed an increase, while two metals decreased in 2017. The largest percent decrease was seen in nickel which decreased by 9.7%, followed by mercury with a 4.0% decrease. The largest percent increase was seen in lead, which increased by 21.9%, followed by chromium, which increased by 20.0%. Cyanide also had an increase of 19.3% or 218.1 pounds from 2016 to 2017. Overall, the loading of metals remains low due to strict regulation by Pretreatment, the NBC educational efforts and the proactive approach to pollution prevention. The decreases since the NBC has taken over the operation of Field's Point demonstrate the continued commitment to vigilant enforcement and continued encouragement to users to implement pollution prevention measures. Influent flow into Field's Point was on average 4.3 MG a day higher in 2017 than it was in 2016 with the average daily influent flow of 42.4 MGD in 2017 versus 38.1 MGD in 2016. There was also a decrease of 104,830 gallons per day in industrial flow to Field's Point in 2017.

TABLE 20
Comparison of 2016 – 2017 Annual Loadings to Field's Point

Pollutant	2016 (Pounds)	2017 (Pounds)	Total Pound change	% Change
Total Cadmium	290.9	302.8	11.9	4.1%
Total Chromium	1,251.8	1,502.3	250.5	20.0%
Total Copper	5,047.7	5,288.1	240.4	4.8%
Total Lead	1,348.2	1,643.8	295.6	21.9%
Total Mercury	5.0	4.8	-0.2	-4.0%
Total Nickel	2,955.8	2,667.8	-288.0	-9.7%
Total Silver	469.2	487.7	18.5	3.9%
Total Zinc	13,036.7	13,966.3	929.6	7.1%
Total Metals	24,405.3	25,863.6	1,458.3	6.0%
Total Cyanide	1,132.3	1,350.4	218.1	19.3%

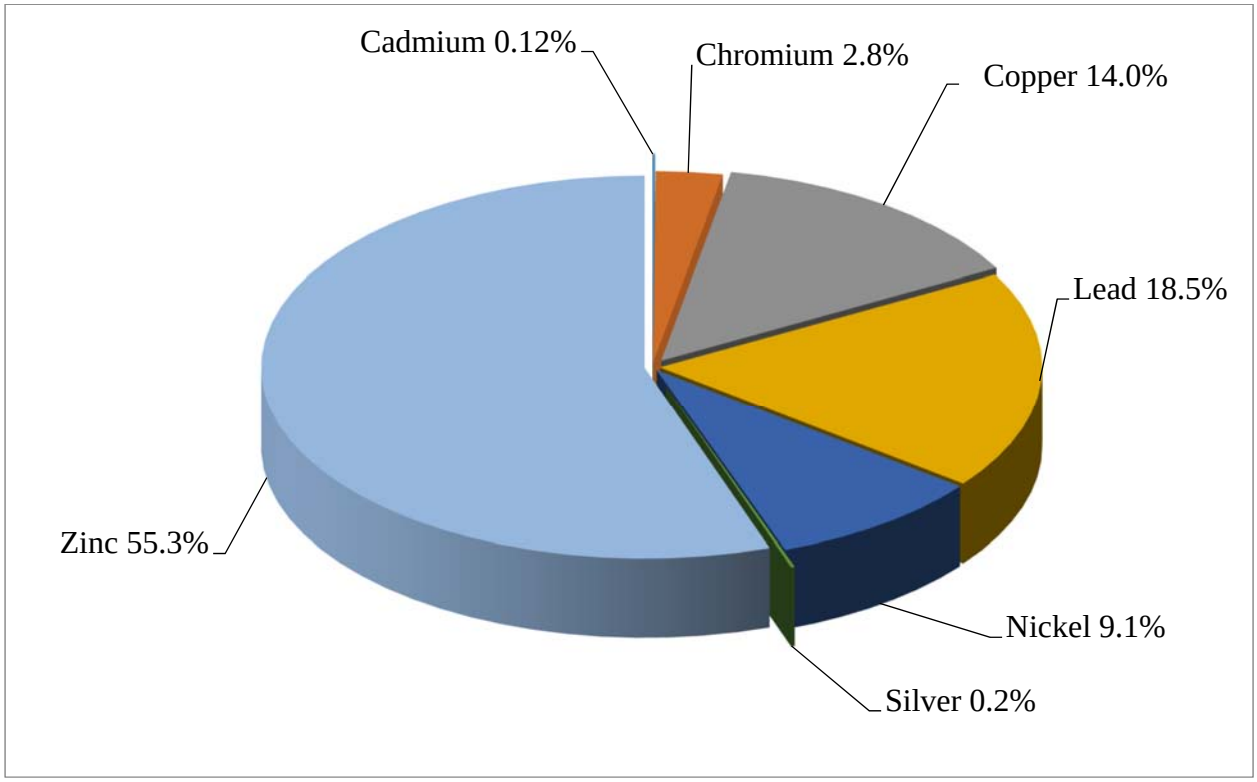
In 2017, the Field's Point facility provided secondary treatment to an additional 1.24 billion gallons of flow that was captured in the CSO Tunnel, approximately 209 million gallons more than in 2016. Sample results of the tunnel effluent in 2017 has shown that the metals in the tunnel effluent make up approximately 6.0% of the total plant influent metals loading, ranging from 0.5% to 17.5% of the total plant influent metals loading depending upon the metal. As can be seen in TABLE 21, for the majority of metals, tunnel effluent does not make up a considerable portion of the influent loading, less than 6.0%. However, for lead, tunnel effluent is estimated to be 17.5% of the Field's Point loading.

TABLE 21
Comparison of 2017 Annual Loadings
Tunnel Effluent Loadings to Field's Point Influent Loadings

Pollutant	Annual Influent Loading (lbs) 2017	Annual Tunnel Effluent Loading (lbs) 2017	Percent of Influent
Cadmium	302.8	1.9	0.6%
Chromium	1,502.3	43.7	2.9%
Copper	5,288.1	218.7	4.1%
Lead	1,643.8	288.1	17.5%
Nickel	2,667.8	141.3	5.3%
Silver	487.7	2.4	0.5%
Zinc	13,966.3	860.4	6.2%
Total	25,858.8	1,556.5	6.0%

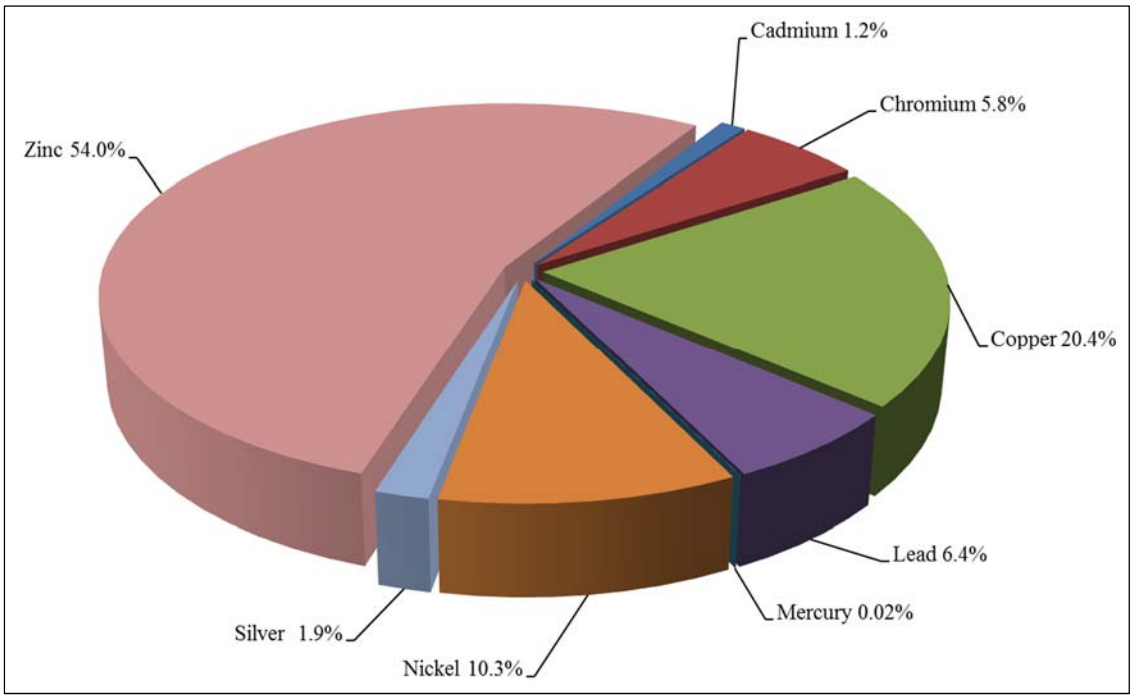
A percentage breakdown of the various metals discharged to Field's Point via the CSO Tunnel is provided in FIGURE 16. As shown in FIGURE 16, the make-up of the CSO Tunnel effluent is similar to the typical influent with the notable exceptions of increased lead contribution and a decreased copper contribution. Lead often makes up a greater portion of metal pollutants found in storm water and with the tunnel receiving large amounts of storm water from the service district, lead input from the tunnel could be expected to be high.

FIGURE 16
Breakdown of Total Metals - CSO 2017 Tunnel Effluent Loading



A percentage breakdown of the various metals discharge to Field's Point is provided in FIGURE 17. The majority of metal loadings to Field's Point are from zinc, copper and nickel. These metals account for 84.8% of the total metal loadings, roughly equivalent to the relative contribution observed in 2016. The loading of total zinc in 2017 was 13,966.3 pounds, or 54.0%, the highest of any toxic pollutant impacting the Field's Point facility. As will be shown later in this chapter, the majority of zinc loadings are attributed to residential sources. Copper was the next highest pollutant load to Field's Point at 5,288.1 pounds, or 20.4%, followed by nickel at 2,667.8 pounds or 10.3%. The loadings levels of toxic pollutants to Field's Point in 2017 were all well within the MAHL levels for each pollutant of concern. This is a testament to the success of the NBC toxic reduction and control programs.

FIGURE 17
Breakdown of Total Metals – Field's Point 2017 Influent Loading



Oil and Grease Inputs to Field's Point

Monthly sampling of oil and grease inputs to Field's Point revealed low and consistent concentrations. Influent concentrations ranged from 8.4 ppm to 35.1 ppm during 2017. Effluent concentrations were significantly lower than influent with results of <4.0 ppm or not detectable, for all samples. Low inputs are the direct result of Pretreatment efforts to permit, inspect and monitor industrial and commercial establishments, including food service establishments, with the potential to impact the NBC with fats, oils, and grease. The NBC RIPDES permit requires monthly sampling, with three grab samples collected over the course of a 24-hour period, one grab per shift. The grab samples are analyzed separately and the maximum is reported. The RIPDES permit does not set a discharge limit for oil and grease. The 2017 oil and grease data is listed in ATTACHMENT VOLUME II SECTION 10.

Field's Point Influent and Effluent Organics

Volatile organic compounds (VOC) were monitored monthly in the influent and effluent at the Field's Point facility in 2017. These samples were collected as composite and grab samples. The analysis of 33 organic compounds using EPA method 624 is routinely performed to ensure that the amount of organics introduced to the facility is being adequately regulated by the Pretreatment Section. High levels of organics can be dangerous to the health and safety of NBC employees and can potentially pose a significant hazard to the microbial population that is responsible for the removal of organic carbon in the influent wastewater. Of the 396 analytical

results for influent and effluent samples obtained during 2017, 88.9% of all influent samples had non-detectable concentration levels of VOCs and 92.7% of the effluent VOC samples had non-detectable VOC concentration levels. The low levels of VOCs observed demonstrates the effectiveness of the Pretreatment efforts to reduce the amount of organic pollutants introduced to the NBC facilities, thereby dramatically reducing the potential for adverse impacts on NBC receiving waters.

Field's Point Influent and Effluent Nitrogen

In the RIPDES permit, Field's Point must meet seasonal May through October monthly average permit limits for total nitrogen of 5.0 mg/L for total nitrogen concentration and 2,711 pounds loading per day. Biological Nutrient Removal (BNR) processes ran extremely well in 2017 and monthly average permit limits were met in each month of the season under this permit limit. The May through October total effluent nitrogen concentration average was 3.7 mg/L with an average loading of 1,361 pounds/day. Field's Point had an average daily flow to the facility of 41.7 MGD in the May through October season, with an influent total nitrogen concentration average of 26.5 mg/L for May through October, resulting in an 86.0% removal rate of total nitrogen.

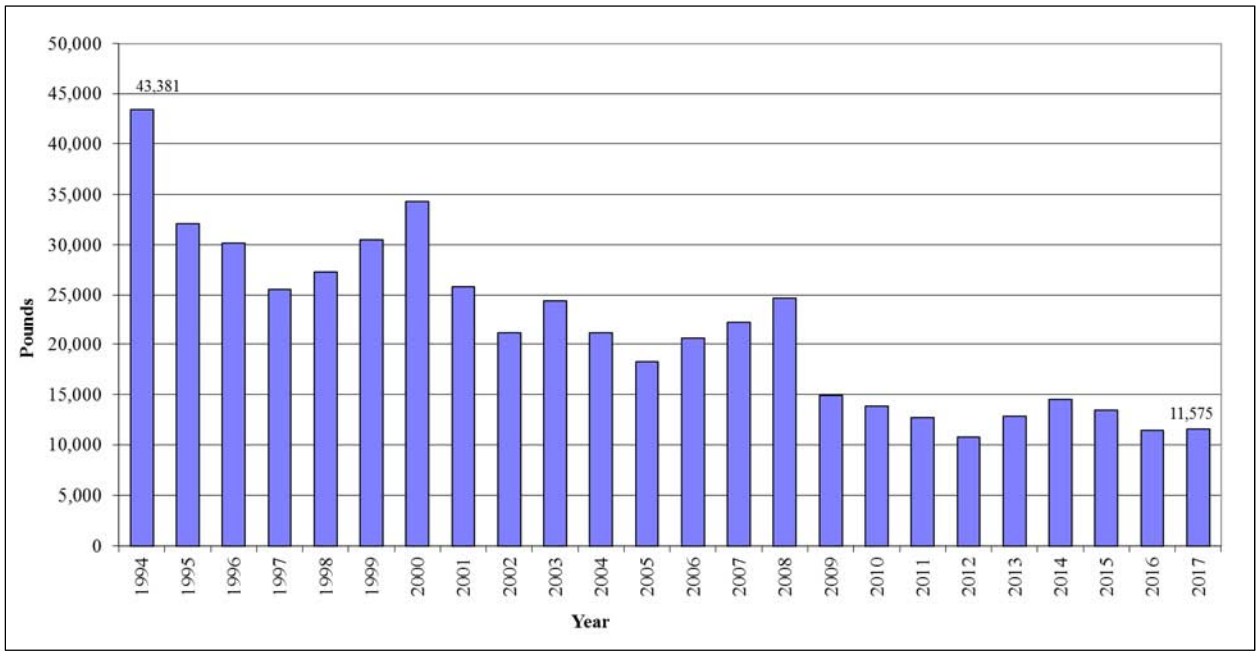
pH Variability at Field's Point: Influent and Effluent

The pH of the Field's Point influent is measured once per day by Laboratory staff on a high-precision Orion pH meter. Grab samples are collected by EMDA and immediately transferred to the lab for analysis. EMDA collected 364 influent pH samples during 2017. The pH range of the influent sample measurements was between 6.43 and 8.16 standard units (s.u.). The influent waste stream is also monitored with a continuous pH probe. This record shows a clear diurnal pattern with differences of approximately 1 s.u. No NBC wastewater treatment facility process was knowingly negatively impacted by influent pH fluctuations during the year. There were also no persistent excursions in influent pH during 2017 and no negative effect on normal plant operation process controls was noted. Effluent grab samples were collected twice per day, resulting in 699 samples collected in 2017. Over the year, the effluent pH ranged from 6.02 to 7.16 s.u. There were no effluent pH permit violations during 2017.

Bucklin Point District – Influent Loading Analysis

The Bucklin Point influent data demonstrated a downward trend in total metals loading between 1994 and 1997, followed by an upward trend between 1997 and 2000 as can be seen in FIGURE 18. Data from 2001 and 2002 showed reductions in influent metals loadings, while data from 2003 showed another increase, the majority coming from short-lived high chromium inputs that occurred from January 28, 2003 through June 3, 2003. The 2006 through 2008 data indicated another increase in metals loadings to Bucklin Point. Once again this increase was primarily due to an increase in chromium loading. Influent metals loadings since 2009 have remained lower, ranging between 10,000 and 15,000 pounds per year. In 2017, influent metals loading increased slightly, 1.2% or 136.2 pounds as compared to 2016. The 2017 total metals loading to Bucklin Point was well below the MAHL of 35,928 pounds and has been since 1995.

FIGURE 18
Bucklin Point Total Metals Influent Loading Trend



Cyanide loadings at Bucklin Point have also exhibited a dramatic historical decrease as can be seen in FIGURE 19. Since 1991, cyanide loading has decreased by 87.8%. In 2017, influent cyanide loading increased by 26.1% or 73.7 pounds as compared to 282.5 pounds in 2016. Loadings remain well below the MAHL level established to protect the treatment facility and the environment.

FIGURE 19
Bucklin Point Cyanide Influent Loading Trend

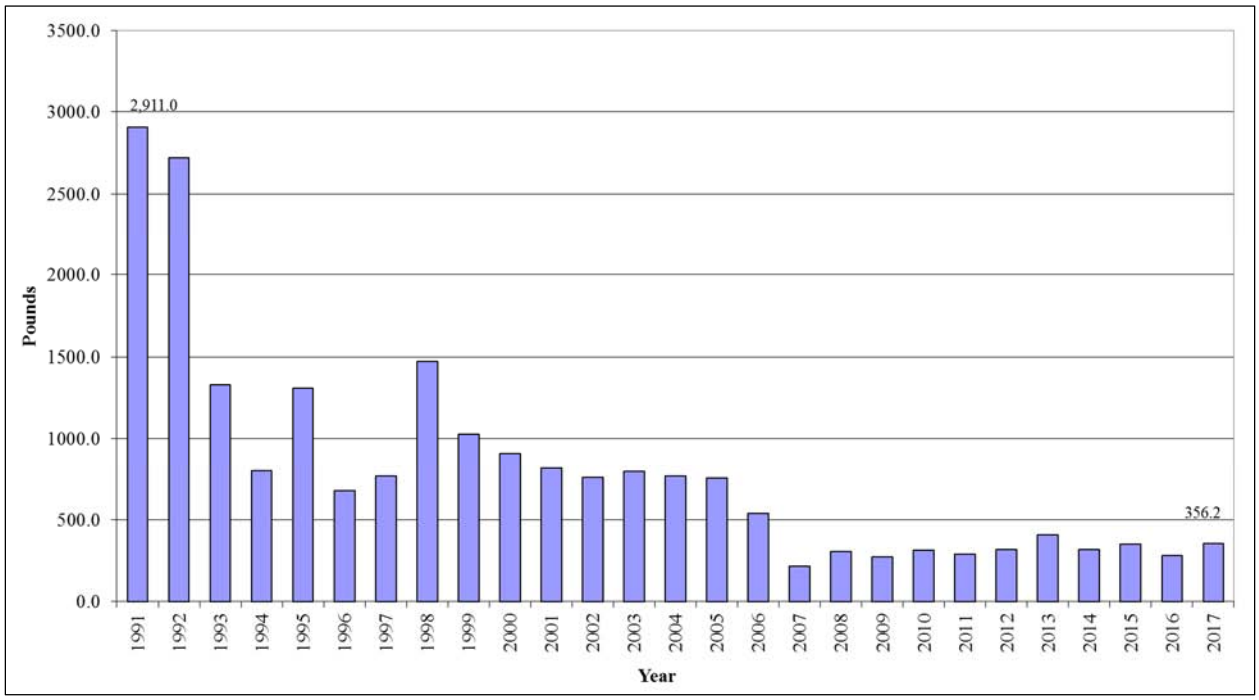


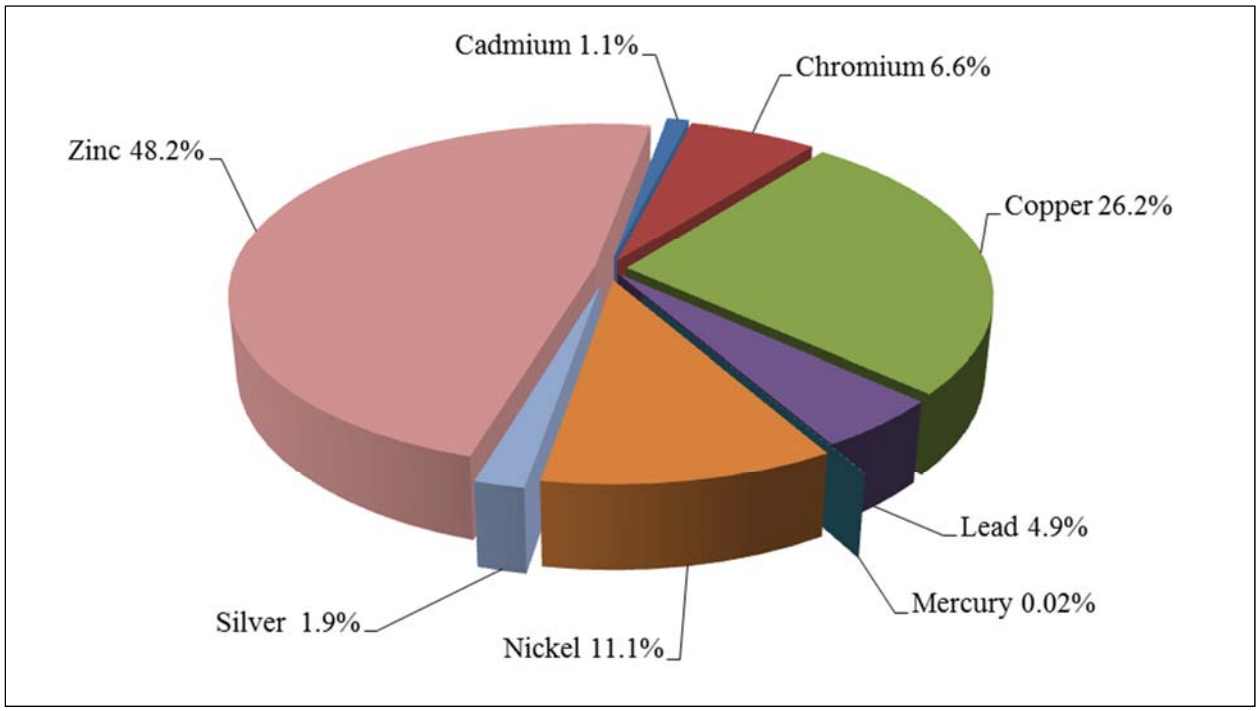
TABLE 22 shows the comparison of Bucklin Point metals and cyanide loadings from 2017 and the previous year. This year, five influent metals showed an increase in loading as compared to 2016. The largest increase was seen in nickel, which increased by 325.7 pounds, or 34.1%. The remaining three influent metals exhibited decreased loadings in 2017. The largest decrease was seen in copper, which decreased by 222.9 pounds, or 6.9%. The metal with the lowest relative change was mercury, which decreased by only 0.4% or 0.01 pounds. Overall, total metals loading to the Bucklin Point facility has decreased 73.3% between 1994 and 2017.

TABLE 22
Comparison of 2016 – 2017 Annual Loadings to Bucklin Point

Pollutant	2016 Pounds	2017 Pounds	Total Pound Change	% Change
Total Cadmium	124.0	133.1	9.1	7.3%
Total Chromium	607.5	767.9	160.4	26.4%
Total Copper	3,252.0	3,029.1	-222.9	-6.9%
Total Lead	508.7	567.6	58.9	11.6%
Total Mercury	2.37	2.36	-0.01	-0.4%
Total Nickel	954.6	1,280.3	325.7	34.1%
Total Silver	205.8	219.9	14.1	6.9%
Total Zinc	5,783.8	5,574.7	-209.1	-3.6%
Total Metals	11,438.8	11,575.0	136.2	1.2%
Total Cyanide	282.5	356.2	73.7	26.1%

FIGURE 20 provides a breakdown of the relative contribution of various metals discharged to Bucklin Point. As in previous years, zinc and copper were the largest contributors to total metal loading to Bucklin Point, accounting for 74.3% of the total. However, both of these metals did decrease slightly compared to the previous year. Total zinc decreased by 209.1 pounds in 2017 and made up 48.2% of the total metals loading to the facility. Copper decreased by 222.9 pounds and made up 26.2% of the total metal loadings to the facility. Other metals with substantial loadings included chromium, nickel, and lead, accounting for another 22.6% of the total percentage of metals loading.

FIGURE 20
Breakdown of Total Metals – Bucklin Point 2017 Influent Loadings



Oil and Grease Inputs to Bucklin Point

Monthly samples of oil and grease inputs to Bucklin Point revealed mostly low and consistent concentrations. During 2017, average influent concentrations ranged from 12.16 ppm to 43.19 ppm. Effluent concentrations were substantially lower than influent concentrations, with results of <4.0 ppm, or not detectable, for all samples. Low inputs are the direct result of Pretreatment efforts to permit, inspect, and monitor industrial and commercial facilities, including food service establishments, with the potential to impact NBC operations with fats, oils, and grease. The NBC RIPDES permit requires monthly effluent sampling of oil and grease, with three grab samples collected over the course of a 24-hour period, one grab per shift. The effluent grab samples are analyzed separately and the maximum is reported. The RIPDES permit does not set a discharge limit for oil and grease. The 2017 oil and grease data are listed in ATTACHMENT VOLUME II SECTION 10.

Bucklin Point Influent and Effluent Organics

Volatile organic compounds (VOC) were monitored monthly in both the influent and effluent at the Bucklin Point facility in 2017. The analysis of 33 organic compounds using EPA method 624 is routinely performed to ensure that the amount of organics introduced to the facility is being adequately regulated by the Pretreatment section. High levels of organics can be dangerous to the health and safety of NBC employees, and can potentially pose a significant hazard to the microbial population that is responsible for the removal of organic carbon in the

influent wastewater. Of the 396 analytical results for influent samples obtained in 2017, 90.9% of these were at non-detectable concentration levels. Of the 396 analytical results for effluent samples obtained in 2017, 99.7% of the results were at non-detectable concentration levels. The low concentrations of VOCs observed in both the influent and effluent demonstrates the effectiveness of Pretreatment efforts to reduce the amounts of organic pollutants introduced to the Bucklin Point facility, which are also therefore prevented from entering the receiving waters of the Bay.

Bucklin Point Influent and Effluent Nitrogen

In July 2014, biological nutrient removal (BNR) upgrades were completed at Bucklin Point in order to meet a new seasonal (i.e., May through October) total nitrogen concentration permit limit of 5.0 mg/L and loading limit of 1,293 pounds/day. These new permit limits went into effect on July 14, 2014.

Over the 2017 permit season, daily flow to the facility averaged 18.60 MGD and influent nitrogen concentration averaged 30.04 mg/L. Effluent total nitrogen concentrations averaged 4.60 mg/L, with loadings averaging 728.0 pounds/day.

There was a substantial disruption to the BNR process during July, when nitrification was temporarily lost in the system, leading to exceedances of ammonia and total nitrogen permit limits. The problems with BNR during this month were attributed to anaerobic conditions caused by septicity in the pre-anoxic zone of the four-stage BNR system. Instrumentation was installed to prevent a recurrence of such conditions, and following the recovery in July, BNR performed well for the rest of the season.

Despite the interruption during July, the 2017 May through October BNR season was successful, with an overall seasonal removal rate of 84.7% of the total nitrogen entering the plant in the influent.

Septage Loading to Bucklin Point

The NBC accepts residential-quality septage in the Bucklin Point district. Septage haulers discharge their loads at the Lincoln Septage Receiving Station, where solids are removed prior to the waste stream entering the collection system for final transport to the Bucklin Point plant for processing. A sample from each load is collected after the sample port is flushed thoroughly, usually after the load has discharged for approximately one minute. The sample from an individual truck is screened for pH, odor, and other unusual characteristics. If any anomaly is observed, the load may be rejected or the sample may be targeted for individual analysis. Otherwise each grab sample is combined with the delivery for the day and sent to the laboratory for analysis. This sampling protocol has helped to more quickly locate potential non-residential inputs to the collection system from septage haulers. Grit removal at the septage facility removes a portion of the metals loading prior to its introduction to the sewer system and the treatment plant.

FIGURE 21 details the change in septage flow and metals loadings from the septage between 1996 and 2017. The NBC received 7.68 million gallons of septage in 2017, representing decreases of 2.0% compared to 2016 and 47.9% compared to 1996. The graph shows septage flow peaked in 2000 at approximately 23 million gallons. As the economy took a downturn, septic tank pump out frequency declined, allowing solids, and the metals contained in the solids, to increase proportionally. From 2016 to 2017 there was a 12.4% increase in total metals loading from septage, or 137 pounds. The overall reduction in total metals from septage since 1996 is 53.4%. Despite the small overall flow of septage to Bucklin Point, the metals loading from septage is substantial. The septage contribution to total influent metals at Bucklin Point was 10.7% in 2017, slightly higher than the contribution of 9.7% in 2016.

FIGURE 21
Trend Analysis for Total Metals Loadings in Septage

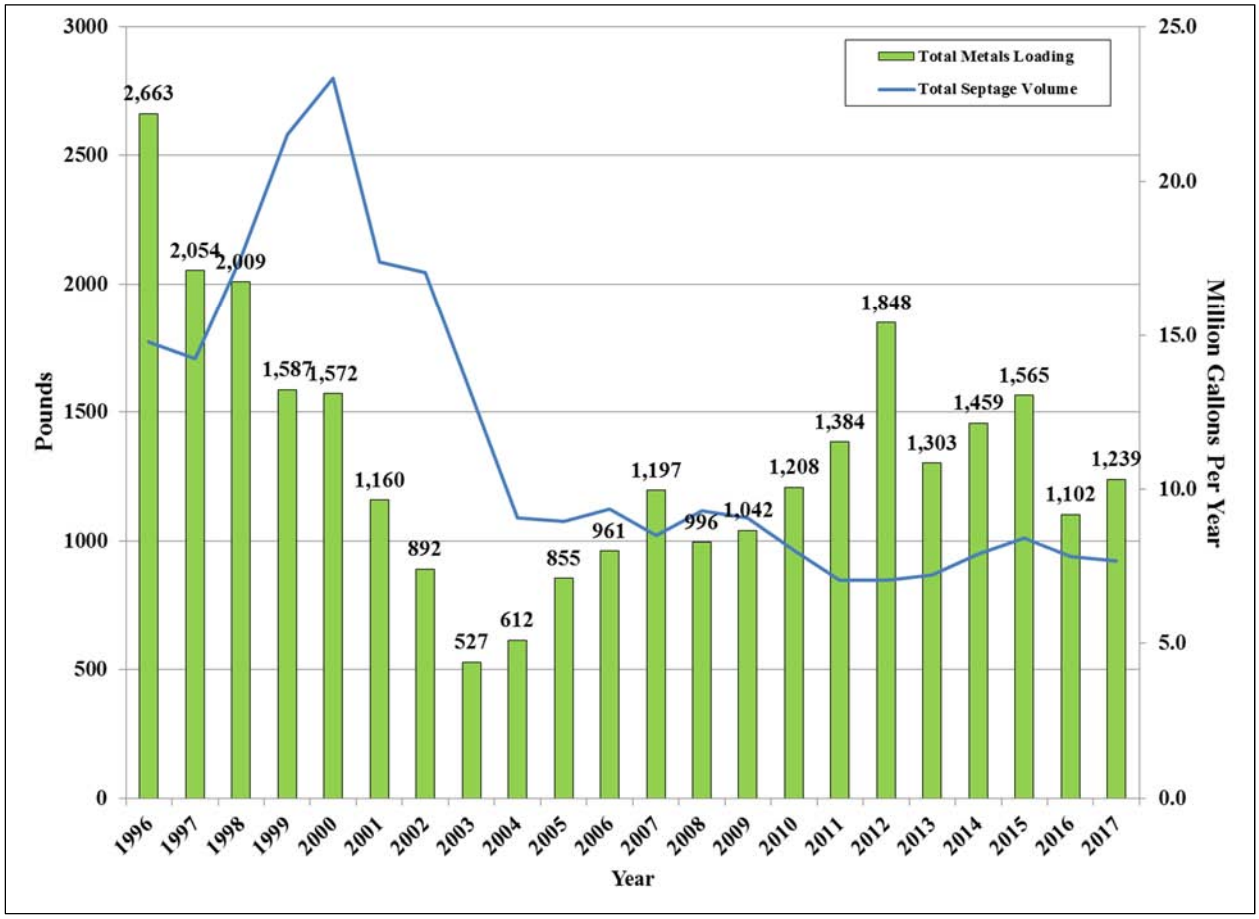
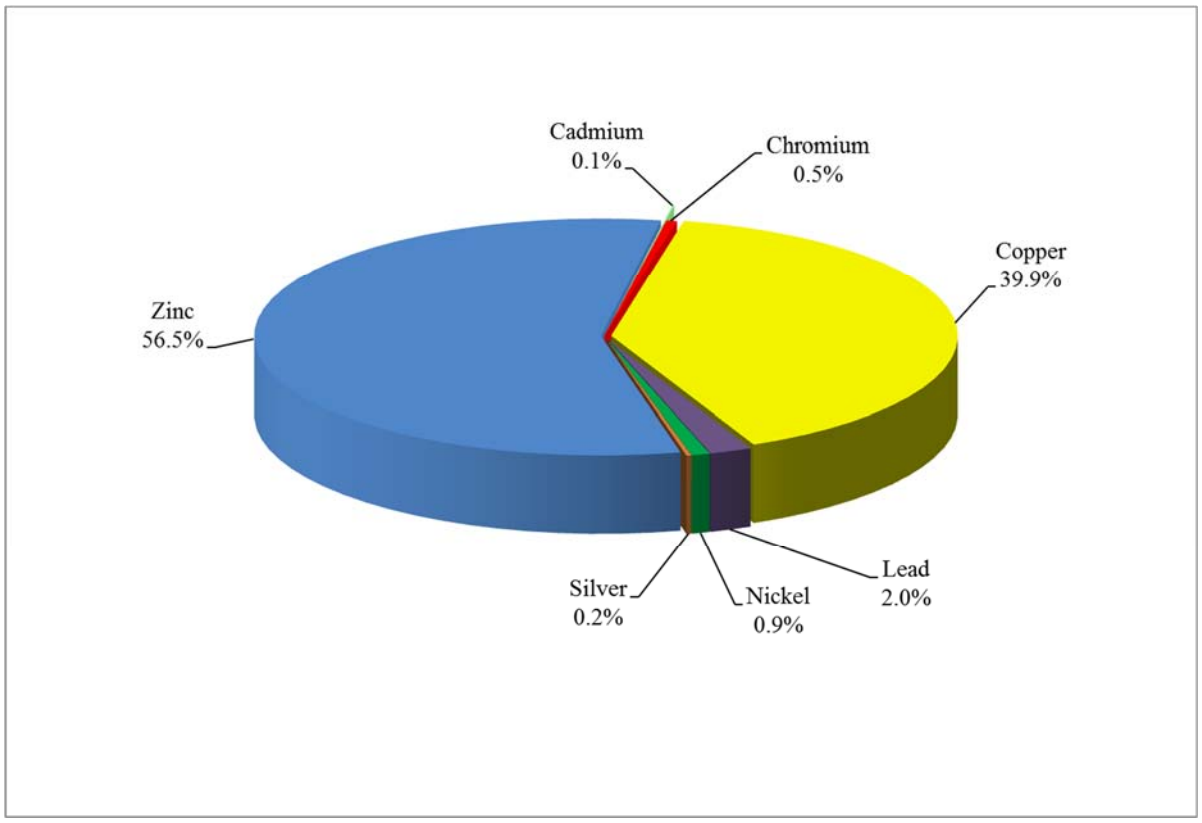


FIGURE 22 illustrates the average relative composition of metals in the septage received at the NBC facility in 2017. As in previous years, zinc and copper continue to make up the majority of metals loadings, 96.4%, within the septage, at 494 pounds of copper and 700 pounds of zinc in 2017. Zinc loading represented 12.5% of the total influent zinc loading to Bucklin Point during 2017. Copper from septage amounted to 16.3% of the total copper influent load. The substantial loadings for these metals from this residential-quality septage underscores the significance of uncontrolled sources of influent metals loadings to NBC facilities. The septage monitoring data generated during 2017 are provided in ATTACHMENT VOLUME II, SECTION 10.

FIGURE 22
2017 Breakdown of Total Metals in Septage



Background Sources of Metals to the Influent Load

Sewer Collections for Determining Non-Industrial Background Contributions to Influent Metals Loading

The NBC has studied background (i.e. non-industrial) sources contributing to the total metal influent loadings to the Bucklin Point and Field's Point facilities since 1993. Samples are collected from sanitary and combined sewers in residential neighborhoods, and results over the years have shown substantial levels of trace metals and other toxic pollutants coming from these uncontrolled sources. In May 2000, EMDA began sample collections using EPA-approved guidance on clean sampling techniques, further improving their ability to quantify background metals inputs to the NBC facilities.

During 2017, EMDA staff collected 39 samples in residential sanitary and combined sewers. Samples were collected as 24-hour composites in wet and dry weather conditions. TABLE 23 summarizes the results for the background sample collections for 2017 and compares them to influent concentrations and loading estimates at the NBC facilities. Permitted industrial and commercial sources account for only 5.4% of total flow into Bucklin Point and 3.6% of the total flow at Field's Point. This direct comparison of concentrations and loading estimates gives some approximation of the contributions of these pollutants from background sources. Detection limit values were entered for samples with concentrations at or below the laboratory detection limits. Average influent concentration values were determined, while geometric means were calculated for the background data in order to reduce the impact of highly variable data on the comparison. Results of samples taken from both collection districts were used to determine the background concentrations. Loadings were calculated using the average background concentrations and average daily non-industrial flow rates to each facility.

TABLE 23
Results from 2017 Background Metals and Cyanide Contribution Study

	Cd*	Cr*	Cu	Pb*	Hg	Ni	Ag*	Zn	CN*	As*	Se*	Sn	Mo
Background	0.18	1.93	34.75	7.61	0.03	3.36	0.21	135.55	4.72	0.74	1.09	5.00	1.01
FP Influent	0.32	6.45	42.19	6.59	0.04	21.18	0.78	111.54	9.77	1.96	2.51	NM	5.49
% of Influent at FP	56.3%	29.9%	82.4%	115.5%	75.0%	15.9%	26.9%	121.5%	48.3%	37.8%	43.4%	NM	18.4%
BP Influent	0.18	5.34	53.23	4.84	0.04	20.84	1.92	100.96	6.90	0.96	1.00	5.01	3.09
% of Influent at BP	100.0%	36.1%	65.3%	157.2%	75.0%	16.1%	10.9%	134.3%	68.4%	77.1%	109.0%	99.8%	32.7%
Loading (lbs/day)													
	Cd*	Cr*	Cu	Pb*	Hg	Ni	Ag*	Zn	CN*	As*	Se*	Sn	Mo
Background (FP District)	21.04	225.03	4054.74	887.93	2.97	391.79	24.87	15818.38	550.56	85.89	127.08	583.48	118.36
FP Influent	302.77	1502.26	5288.10	1643.83	4.79	2667.79	487.73	13966.29	1350.03	249.32	318.00	NM	688.42
% of Influent at FP	6.9%	15.0%	76.7%	54.0%	62.0%	14.7%	5.1%	113.3%	40.8%	34.4%	40.0%	NM	17.2%
Background (BP District)	9.66	103.28	1861.03	407.54	1.36	179.82	11.41	7260.25	252.69	39.42	58.33	267.80	54.33
BP Influent	133.06	767.87	3029.12	567.61	2.36	1280.26	219.86	5574.71	356.19	62.29	57.32	285.89	173.98
% of Influent at BP	7.3%	13.5%	61.4%	71.8%	57.8%	14.0%	5.2%	130.2%	70.9%	63.3%	101.8%	93.7%	31.2%

*These pollutants were regularly measured at or below the detection limit until a change in methods in December 2017. These influent averages are based on December 2017 data only.

In the past, several pollutants have been regularly measured at or below the detection limit in the plant influent as well as in the background sampling, which made it impossible to determine an accurate POTW loading percentage. In December of 2017, the method for the analysis of influent metals was changed to a more sensitive method with lower detection limits. This change markedly increased the detection of metals that previously had consistently been measured under at or below the detection limits, namely, cadmium, chromium, lead, selenium, and silver at both facilities as well as tin at Bucklin Point. Arsenic, selenium, tin, and cyanide are still often found at or below detection limit in the background source samples, therefore the percentage for background sources of these metals may be overestimated.

The direct comparison of concentrations and loading estimates gives some approximation of the contributions of these pollutants from background sources. Several aspects of the data analysis behind TABLE 23 should be noted. First, detection limit values were entered for samples with concentrations at or below the laboratory detection limits. This may lead to over estimation of concentrations and loadings from a particular source. Second, results of samples taken from both districts were used to determine the background concentrations. These concentrations were then multiplied by the average daily non-industrial flow rates to each facility to generate facility-specific loading estimates. In contrast, influent loadings are calculated based on both facility-specific influent concentration and influent flow. Lastly, average influent concentrations were determined, while geometric means were calculated for the background data in order to reduce the impact of highly variable data on the comparison. These analytical differences, as well as the inexact pairing of data collections temporally, may lead to background concentrations that account for more than 100% of influent concentrations as well as discrepancies in the percent contribution of background sources when comparing concentrations and loading estimates. Despite these differences, this comparison provides useful information regarding the magnitude of the contributions of these metals coming from uncontrolled sources.

From TABLE 23 it is evident that a major portion of the influent copper, mercury, and zinc loadings observed at both facilities are from background sources. The sources of these background loading contributions are likely discharges from domestic users, street runoff, leaching from residential plumbing piping, and contaminated soils. In particular, it is apparent that most zinc (the trace metal with the highest concentration at the treatment plants and septage loads) is coming from non-industrial sources, as over 90% of the loading and concentrations from each plant can be accounted for in the background sampling.

TABLE 24 below shows the geometric mean concentrations of all background metals and cyanide samples collected since 2002 in both NBC drainage areas. The lowest total metals concentration occurred in 2008, while the highest occurred in 2007. The total metals concentration of 183.61 ppb observed in 2017 was higher than the 148.85 ppb concentration in 2016.

TABLE 24
Historical Background Metals and Cyanide Results 2002-2017 (ppb)

	Cd	Cr	Cu	Pb	Hg	Ni	Ag	Zn	CN	As	Se	Sn	Mo	Total Metals*
2002	0.40	5.93	32.18	11.22		6.66	0.85	99.52	4.59					156.76
2003	0.45	6.31	29.48	8.77		8.13	0.89	105.04	6.49					159.07
2004	0.68	2.99	36.49	10.79	0.07	6.21	1.79	102.49	6.58	1.01	0.76	6.31		161.51
2005	0.17	3.61	23.55	7.87	0.07	5.39	0.36	84.22	6.75	0.64	0.65	1.75	0.75	125.24
2006	0.14	4.49	24.80	6.65	0.03	5.76	0.28	90.05	4.81	0.99	0.65	0.95	0.68	132.20
2007	0.14	9.70	38.13	8.86	0.04	11.67	0.22	121.35	2.36	0.61	0.64	1.63	0.80	190.11
2008	0.12	4.07	19.88	6.77	0.04	5.11	0.13	64.17	3.82	0.80	0.99	1.45	0.80	100.29
2009	0.14	2.43	35.04	10.09	0.04	6.16	0.20	91.93	4.16	0.91	1.58	1.85	0.76	146.03
2010	0.13	1.78	22.68	7.11	0.04	4.05	0.14	85.54	3.84	0.66	1.36	2.55	0.74	121.47
2011	0.15	1.62	23.73	7.20	0.04	3.02	0.22	104.84	4.23	0.66	0.68	2.45	0.89	140.82
2012	0.15	1.32	25.86	5.92	0.03	2.65	0.26	100.60	4.55	0.55	0.60	5.37	0.81	136.79
2013	0.20	1.07	26.38	7.21	0.04	2.65	0.23	94.43	4.73	0.56	0.70	5.26	0.76	132.21
2014	0.21	1.27	39.78	6.98	0.04	2.43	0.23	122.09	5.14	0.59	1.02	5.00	0.93	173.03
2015	0.21	1.31	25.87	5.14	0.02	2.82	0.18	101.86	6.27	0.69	1.17	5.22	0.86	137.41
2016	0.19	1.27	25.46	5.49	0.02	2.29	0.21	113.92	4.64	0.65	1.18	5.10	0.99	148.85
2017	0.18	1.93	34.75	7.61	0.03	3.36	0.21	135.55	4.72	0.74	1.09	5.00	1.01	183.61

*Total Metals = Cd+Cr+Cu+Pb+Hg+Ni+Ag+Zn

From this analysis, it is apparent that large percentages of the toxic loads to the Field's Point and Bucklin Point plants are from residential and other background sources that are beyond the control of the NBC regulatory program. Understanding non-industrial sources is important to permit development and planning to reduce loading to the treatment facilities and to Narragansett Bay. EMDA continues to improve and update studies of pollutant loads throughout the collection system using flow measurements, metering stations on NBC interceptors, and manhole monitoring data to choose study sites that will accurately describe mass loading from domestic sources, storm runoff, and major drainage basins.

Influent Loading Conclusions

The development of the National Pretreatment Program was a direct result of the Federal Water Pollution Control Act (Act) of 1972. The program was established at that time to monitor and regulate the introduction of pollutants from non-domestic sources into Publicly Owned Treatment Works (POTW). Section 307 of the Act required the EPA to develop standards designed to:

- Prevent the discharge of pollutants which would interfere with POTW operations
- Prevent the discharge of pollutants which would pass through the treatment works
- Prevent the discharge of pollutants which would accumulate in POTW sludge thereby reducing the potential for beneficial reuse or reduce the opportunities for safe disposal or which would be otherwise incompatible with POTW operations

In 1977 the Act was amended to include additional pretreatment requirements which made POTWs responsible for the establishment of local pretreatment programs to ensure compliance with EPA categorical pretreatment standards. Categorical standards have been developed to achieve a nationally uniform system of water pollution control for selected industries and pollutants. Local limits are intended to protect the wastewater treatment facility, the receiving waters, sludge quality, and the health of the public, as well as to prevent environmental problems as a result of discharges from any non-domestic user.

The development of local limits is not a one-time event. Local limits are required to be periodically reviewed and revised to respond to changes in Federal or State regulations, environmental protection criteria, treatment facility design and operational criteria, and the nature of industrial contributions to POTW influent. The initial local limits for the Bucklin Point facility became effective in the late 1980s. Local limits for Field's Point were first developed in 1982 as part of the original NBC Pretreatment Program and were later revised by Pretreatment staff in 1987.

In 2004, NBC re-evaluated local limits for both facilities. The re-evaluation of these limits resulted in revised permit limits for several metals based on new EPA data handling methods and criteria in the updated Local Limits Development Guidance (issued in July 2004), as well as a special study of metals in NBC receiving waters. Between July 2001 and May 2002 a study was conducted by NBC, University of Rhode Island – Graduate School of Oceanography (URI-GSO), and MicroInorganics, Inc. to better understand metal partitioning in the Providence and Seekonk Rivers. Multiple transects during seasonal surveys were performed over complete tidal cycles to capture the *in-situ* metals partitioning between dissolved and particulate phases in these estuarine waters. Dissolved and particulate cadmium, copper, lead, nickel, and silver concentrations were analyzed and used to develop site specific metal translator values for each POTW. The metal translator is used to convert dissolved water quality criteria concentrations into total metal concentrations in order to calculate the effective total metal concentration, combined with dilution factors within the receiving waters, that correspond to a given water quality criterion.

As a result of an extensive review of the data from the metals study and facility data collected between January 2000 and June 2004, new MAHL values were calculated. The MAHL values represent the loadings that the treatment facilities can effectively treat without upset to plant operations or pass-through of toxins that could adversely affect water quality and aquatic life, while also allowing for the safe disposal of solids removed from incoming wastewater. The recommendations from this evaluation were documented in a Metals Compliance Plan that was submitted to DEM in September 2004. As part of the new permit issuance, effective December 1, 2017, re-evaluation of local limits and MAHL values has been initiated.

TABLE 25 provides a comparison of the calculated MAHL goals with the total metal influent loadings for 2017. In the case of cyanide, loading goals for both plants were calculated using the EPA 20 ppb quantitation-based effluent permit limit. For Bucklin Point, copper loading goals were calculated using the RIPDES effluent permit limits in the Consent Agreement. In all cases, it is clear that NBC is meeting the calculated loading goals at both wastewater treatment facilities with a considerable margin of safety. In 2017 there were no influent metals loadings that were above the MAHL. Meeting these goals attests to the overall effectiveness of NBC initiatives and measures to control pollutant input and effective removal during plant operations.

TABLE 25
Comparison of 2017 Influent Loadings to Maximum Allowable Headworks Loadings (MAHL)

	Field's Point			Bucklin Point		
Parameter	**MAHL lbs/yr**	**2017 Loading lbs/yr**	**Below MAHL?**	**MAHL lbs/yr**	**2017 Loading lbs/yr**	**Below MAHL?**
Cadmium	2,227	302.8	Yes	511	133.1	Yes
Chromium	37,303	1,502.3	Yes	10,439	767.9	Yes
Copper	16,900	5,288.1	Yes	4,015	3,029.1	Yes
Lead	8,541	1,643.8	Yes	2,738	567.6	Yes
Mercury	183	4.8	Yes	11	2.4	Yes
Nickel	21,134	2,667.8	Yes	1,314	1,280.3	Yes
Silver	3,942	487.7	Yes	402	219.9	Yes
Zinc	50,005	13,966.3	Yes	16,498	5,574.7	Yes
Total Metals	140,235	25,863.6	Yes	35,928	11,574.9	Yes
Cyanide	4,453	1,350.4	Yes	2,446	356.2	Yes

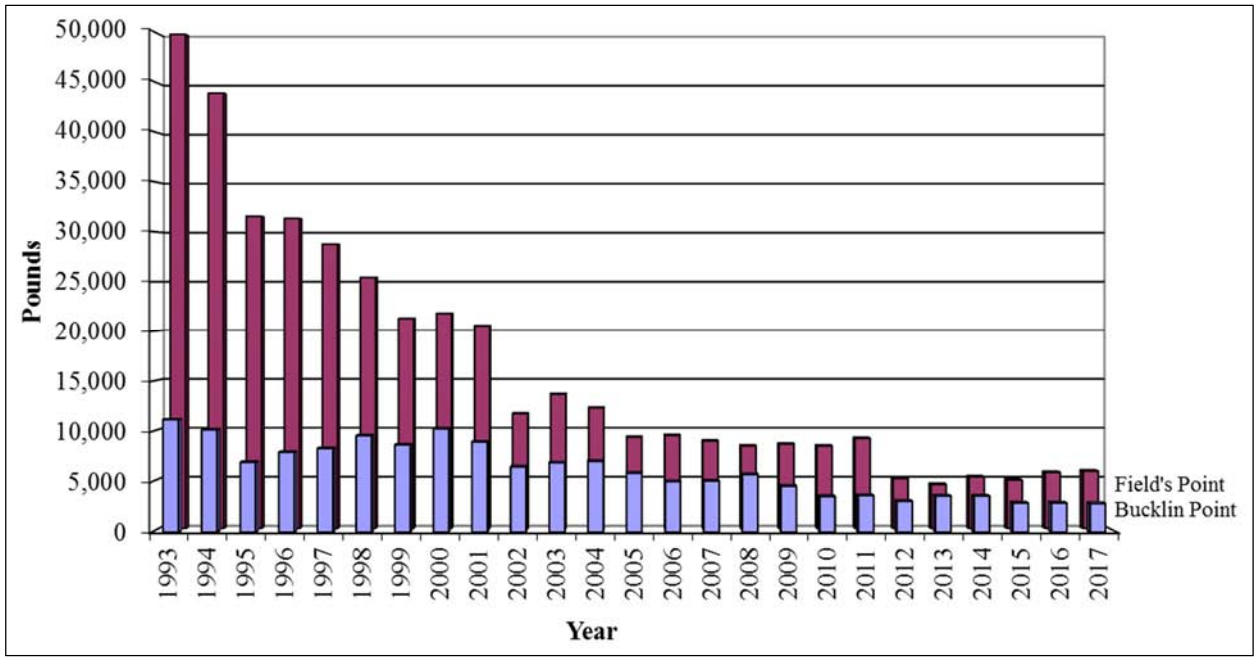
The annual loading goals presented in TABLE 25 should only be used as an initial evaluation of a facility's ability to meet discharge compliance. Discharge permits enforce daily maximum and monthly average limits based on acute and chronic water quality criteria. While the annual means used to calculate the loadings and goals are instructive when evaluating facility function over longer time periods, meeting annual mean goals does not always translate to compliance with daily or monthly limits. It should be noted the RIPDES permits that became effective on December 1, 2017 require the local limits for both plants be re-evaluated. As part of the evaluation, the local limits and MAHLs will be recalculated.

Analysis of Effluent Loading Data

This chapter attempts to quantitatively measure the results of the work of Pretreatment and ESTA by analyzing the loadings of toxics in the influent of the NBC facilities. It is also important to consider the discharge loadings into the receiving waters after wastewater treatment has been provided. Issues pertaining to these impacts are included later in this chapter and in CHAPTER VII. To maintain continuity with influent data, current and historical effluent data for both NBC facilities for the period from 1993 to 2017 were compiled and analyzed. The overall effluent trends are similar to those for the influent data, as concentrations and loadings have been decreasing over time at Field's Point and Bucklin Point.

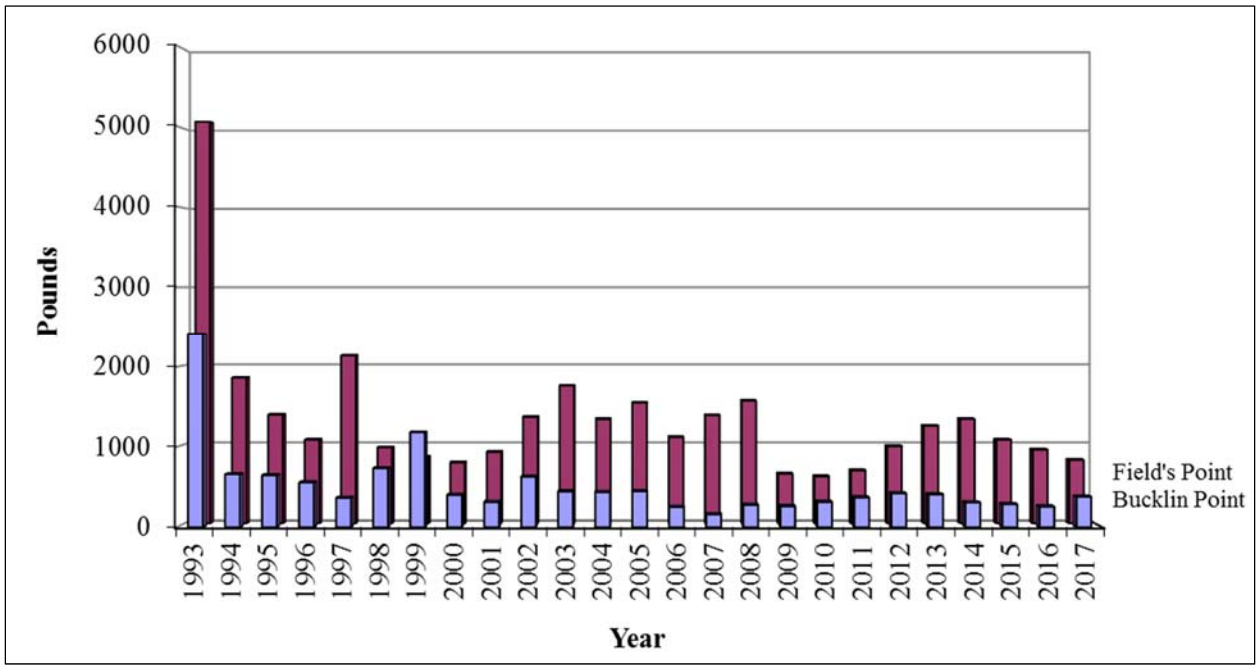
Historical total metals discharges from both NBC facilities are shown in FIGURE 23. It is important to note that the Field's Point facility handles approximately twice the flow volume of Bucklin Point. Total metals effluent loadings have been steadily decreasing at Field's Point since 1993 with some minor annual fluctuations. In 2017, total metals in the Field's Point effluent increased by 2.4% or 133.2 pounds compared to 2016, while loadings in Bucklin Point effluent decreased by 2.1% or 62.3 pounds. Since 2011, effluent metals loadings have been reduced by 36% at Field's Point. This dramatic decrease may be attributable to BNR treatment technologies that began to come into operation at that plant in 2012. At Bucklin Point, effluent loading has been below 6,000 pounds since 2005, whereas prior to 2005 the average effluent loading was 8,554 pounds. As mentioned previously, throughout 2005 advanced treatment processes were brought online at the Bucklin Point facility contributing to improved total metals removal. The BNR facilities at Bucklin Point underwent an upgrade in 2014, and effluent metals have remained lower over the past three years. Overall since 1993, effluent metals from Bucklin Point have decreased by 74.5% and effluent metals at Field's Point have decreased by 88.4%.

FIGURE 23
NBC Total Metals Effluent Loadings Trend Analysis



As seen in FIGURE 24, effluent cyanide loadings decreased by 14% in 2017 at Field's Point, and increased by 48% at Bucklin Point. While this chapter presents the annual loadings of total cyanide, the NBC reports only available cyanide on Discharge Monitoring Reports (DMR) submitted monthly to DEM. At Bucklin Point, available cyanide made up the majority of loadings, 65% in 2017, or 246.4 pounds compared to total cyanide annual loadings of 379.7 pounds. At Field's Point, available cyanide represented a greater proportion, 70% of the total, or 558.7 pounds compared to total cyanide loading of 801.4 pounds. These percentages are generally consistent with 2016 total versus available cyanide breakdowns.

FIGURE 24
NBC Cyanide Effluent Loadings Trend Analysis



Breakdown Analysis of POTW Effluents

The portioning of total metals loading in the effluent of each plant can be seen in FIGURES 25 and 26. The relative contributions show that zinc, copper, and nickel are the largest contributors in the effluent at both Field's Point and Bucklin Point. In 2017, these three metals accounted for 96.1% of the total metals effluent loading from Field's Point and 96.2% of total metals effluent loading for Bucklin Point. At both plants, nickel and zinc represent higher percentages of the total metals in the effluent than in the influent due to their low removal efficiency compared to the other metals. For example, at Field's Point nickel comprised 30.8% of the effluent loading totals versus only 10.3% of the influent. At Bucklin Point, zinc comprised 72.4% of the effluent loading total versus only 48.2% of the influent.

FIGURE 25
Breakdown of Total Metals - Field's Point 2017 Effluent Loading

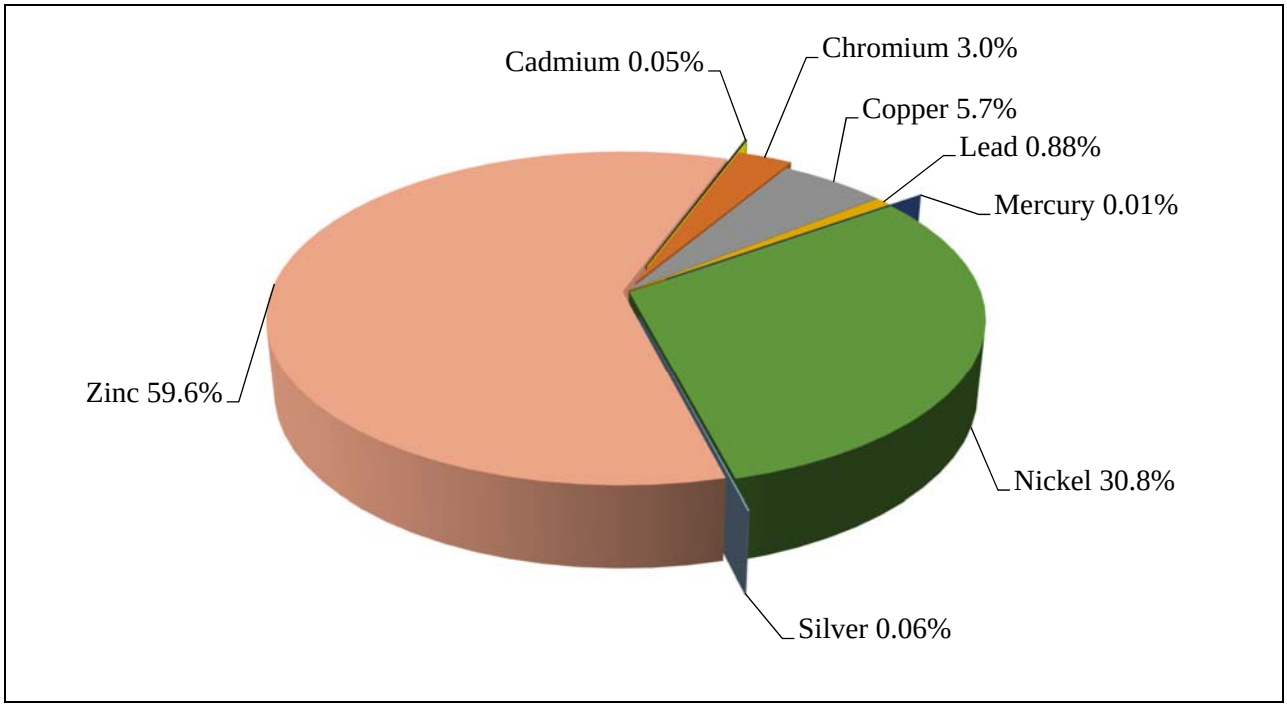
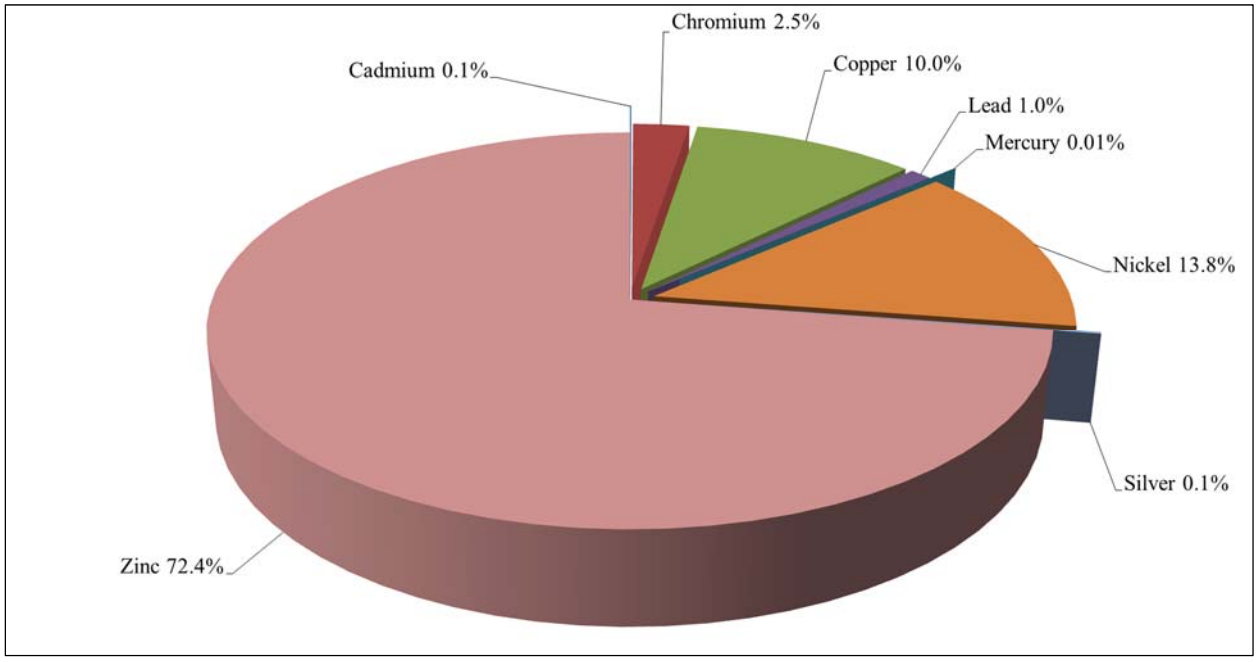


FIGURE 26
Breakdown of Total Metals - Bucklin Point 2017 Effluent Loading



Bioassay Data

The two NBC facilities are required to conduct quarterly bioassay studies to determine effluent toxicity to various test organisms. Test organisms are exposed to wastewater effluent at multiple dilutions to evaluate whether such exposure leads to reduced survival or reproductive success. Effluent samples are collected only in dry weather, defined as no rain 48 hours prior to or during sampling. NBC met the quarterly bioassay sampling frequency requirements during 2017 for both facilities.

Effluent from each facility is tested for acute toxicity to the mysid shrimp *Americamysis bahia* and chronic toxicity to the sea urchin *Arbacia punctulata*. Results of the acute toxicity testing are analyzed to determine the LC_{50} and the A-NOEC statistics. The LC_{50} result is defined as the concentration of wastewater that causes mortality to 50% of the test organisms. A-NOEC or Acute-No Observable Effect Concentration is defined as the highest concentration of the effluent in which 90% or more of the test animals survive. Both NBC facilities have an LC_{50} permit limit requirement of 100% or greater, defined as a sample which is composed of 100% effluent. There are no monitoring requirements nor permit limits for A-NOEC for either POTW. The chronic toxicity test performed on *A. punctulata* examines the sublethal effects of effluent on the fertilization of eggs. The C-NOEC or Chronic-No Observed Effect is reported. The C-NOEC permit limit for Bucklin Point is 50% or greater while at Field's Point the permit requires monitoring only.

At Field's Point and Bucklin Point, all quarterly acute toxicity test results were 100% or greater for both the LC_{50} and A-NOEC indicating not observable effect of undiluted effluent on the study organisms.

In the chronic tests, the C-NOEC was 100% for all four quarters of testing for both Field's Point and Bucklin Point, indicating no observable or adverse effect on the fertilization rates of *A. punctulata*. Results of the quarterly bioassay tests for 2017 are included in ATTACHMENT VOLUME II, SECTION 10.

RIPDES Compliance

Analysis of Toxic Pollutant Loadings for Discharge Monitoring Reports

The Laboratory strives to use analytical methods that are sufficiently sensitive in order to measure the concentrations of pollutants that are in the influent and effluent of each facility as accurately as possible. Oftentimes, some pollutants are present in such minute quantities that they cannot be detected by the analytical method that is appropriate for the sample matrix. There are various means of dealing with those results that are below a detection limit. In this report, all calculations have dealt with non-detectable results by replacing them with one that is equal to the detection limit. This is the method that had been specified in RIPDES permits prior to 2010. Calculations have also been performed in this manner and reported in all previous Pretreatment Annual Reports. This method results in over-estimation of loading whenever there are results that are below the detection limit and will no longer necessarily correlate with the data that is

reported to the DEM in our DMRs. This is a result of DEM changing the below detection limit reporting requirements beginning in September 2010. NBC is now required to replace non-detected results with a zero for the purposes of most DMR calculations. For fecal coliform and enterococci, reporting methods were changed as of July 1, 2015. Prior to this date, any result that was reported as less than the detection limit of 2.0 MPN/100 mL was replaced with a 2 when calculating geometric means. After July 1st, any result that was reported as <2.0 MPN/100 mL was replaced with a result of 1 MPN/100 mL. For consistency with the reporting of data on the DMR, data in the following section for RIPDES permit compliance have been analyzed according to the current DMR methods.

Field's Point Facility

The Field's Point 1992 RIPDES permit contained effluent limitations for priority pollutants for the first time in the history of the facility. In recognition that the Field's Point Facility might not be able to immediately comply with all limitations, the DEM issued a Consent Agreement (RIA-029) in December 1992 that included adjusted effluent discharge limits. On December 31, 2001, Field's Point was issued a new permit. DEM and NBC resolved differences over the contested items in January 2004 and agreed to a new Consent Agreement, RIA-330, which went into effect on January 1, 2004. This permit remained in effect through November 2017. TABLE 26 lists the permit limits for metals and cyanide and the Consent Agreement values, or interim limits, under this permit. TABLE 25 also presents the measured maximum daily values and maximum monthly averages for the Field's Point facility for parameters of interest during the months of 2017 under this permit. It should be noted that available cyanide is reported in the table below as this is what the NBC reports on the DMR.

TABLE 26
Comparison of Field's Point RIPDES & Consent Agreement Limits with January - November 2017 Wastewater Treatment Facility Results

	RIPDES Permit Limits		**Consent Agreement Limits**		**January – November 2017 Results**	
Parameter	Maximum Daily (ppb)	Average Monthly (ppb)	Maximum Daily (ppb)	Average Monthly (ppb)	Maximum Daily* (ppb)	Average Monthly* (ppb)
Copper	23	23	86.2	35.9	5.92	3.17
Mercury**	8.5	0.4	-	-	0.0082	0.0036
Nickel	332	127	-	-	23.61	16.9
Silver	10	-	-	-	0.12	0.04
Zinc	380	380	-	-	37.88	33.19
Available Cyanide**	4	4	49.6	20.0	9.73	1.22
BOD Percent Removal***	-	≥85%	-	-	-	97.3
TSS Percent Removal***	-	≥85%	-	-	-	95.5
Fecal Coliform	400 MPN/100 ml	200 MPN/100 ml	-	-	62.4 MPN/100 mL	2.4 MPN/100 mL
Americamysis bahia (LC_{50})***	100% or greater	-	-	-	>100%	-
Arbacia punctulata (C-NOEC)***	---%	-	-	-	100%	-

*For comparison to the RIPDES permits, the highest maximum daily value and the highest average monthly value reported for 2017 is listed in the table.

**Note that the limits for compliance/noncompliance determinations are based on the quantitation limit, which is defined as 0.2 micrograms per liter for mercury and 20.0 micrograms per liter for cyanide.

***Permit limits for percent removals and bioassays are set for the minimum, not maximum. The percent removal 2017 results represent the minimum average monthly percent removals. The bioassay 2016 results represent the minimum quarterly results.

TABLE 27 details the compliance status of the Field's Point facility with the limits established by the RIPDES permit and Consent Agreement in effect during January through November 2017.

TABLE 27
January - November 2017 Compliance Status with RIPDES & Consent Agreement Limits for Field's Point

	January - November 2017 Compliance with RIPDES Permit Limits?		**January - November 2017 Compliance with Consent Agreement Limits?**	
Parameter	Maximum Daily	Average Monthly	Maximum Daily	Average Monthly
Copper	Yes	Yes	Yes	Yes
Lead	Yes	Yes	-	-
Mercury	Yes	Yes	-	-
Nickel	Yes	Yes	-	-
Silver	Yes	Yes	-	-
Zinc	Yes	Yes	-	-
Available Cyanide	**No**	Yes	Yes	Yes
BOD Percent Removal	-	Yes	-	-
TSS Percent Removal	-	Yes	-	-
Fecal Coliform	Yes	Yes	-	-
Americamysis bahia (LC_{50})	Yes	-	-	-
Arbacia punctulata (C-NOEC)	Yes	-	-	-

TABLE 27 shows that in 2017, Field's Point was in compliance with the daily and monthly discharge limitations specified in the Consent Agreement for all toxic pollutant parameters listed in the table. However, additional work will be necessary to ensure compliance with toxic pollutant discharge limits specified in the RIPDES permit for cyanide. All 2017 cyanide results were reported as "available cyanide" and no results exceeded the Consent Agreement limits. In 2017, 99% of effluent cyanide samples were reported below the detection limit of 4 ppb for available cyanide. One sample exceeded the maximum daily permit limit of 4.0 ppb, though no samples exceeded the interim limit of 20.0 ppb.

The NBC met BOD and TSS percent removals in all months of 2017, as well as fecal coliform daily maximum s and monthly averages. All bioassay results also met the permit limits in 2017.

New RIPDES permits were issued for both Field's Point and Bucklin Point and became effective on December 1, 2017. TABLES 28 and 29 below are analogous to TABLES 26 and 27 above, respectively, comparing Field's Point data results from December 2017 to the new permits in effect during that month. The NBC has formally contested several of the new permit requirements, and the RIDEM has granted stays of these limits until interim limits or alternate limits are agreed upon. These temporary stay limits are shown in the tables below.

TABLE 28
Comparison of Field's Point RIPDES & Interim Effluent Limits with December 2017 Wastewater Treatment Facility Results

	RIPDES Permit Limits		**Stay Limits**		**December 2017 Results**	
Parameter	Maximum Daily (ppb)	Average Monthly (ppb)	Maximum Daily (ppb)	Average Monthly (ppb)	Maximum Daily* (ppb)	Average Monthly* (ppb)
Arsenic	306.3	5.4	-	-	1.85	1.54
Copper	24.5	24.5	86.2	35.9	3.05	2.59
Nickel	331	127	-	-	29.91	18.43
Available Cyanide**	4	4	49.6	20.0	0.00	0.00
CBOD Percent Removal***	-	≥85%	-	-	-	99.8
TSS Percent Removal***	-	≥85%	-	-	-	97.8
Enterococci	276 CFU/100 ml	35 CFU/100 ml	-	-	8.7 CFU/100 mL	3.2 CFU/100 mL
Americamysis bahia (LC_{50})***	100% or greater	-	-	-	>100%	-
Arbacia punctulata (C-NOEC)***	---%	-	-	-	100%	-

*For comparison to the RIPDES permits, the highest maximum daily value and the highest average monthly value reported for 2017 is listed in the table.

**Note that the limits for compliance/noncompliance determinations are based on the quantitation limit, which is defined as 0.2 micrograms per liter for mercury and 20.0 micrograms per liter for cyanide.

***Permit limits for percent removals and bioassays are set for the minimum, not maximum. The percent removal 2017 results represent the minimum average monthly percent removals. The bioassay 2016 results represent the minimum quarterly results.

TABLE 29
December 2017 Compliance Status with RIPDES & Interim Effluent Limits for Field's Point

	December 2017 Compliance with RIPDES Permit Limits?		December 2017 Compliance with Stay Limits?	
Parameter	Maximum Daily	Average Monthly	Maximum Daily	Average Monthly
Arsenic	Yes	Yes	-	-
Copper	Yes	Yes	Yes	Yes
Nickel	Yes	Yes	-	-
Available Cyanide	Yes	Yes	Yes	Yes
CBOD Percent Removal	-	Yes	-	-
TSS Percent Removal	-	Yes	-	-
Enterococci	Yes	Yes	-	-
Americamysis bahia (LC_{50})	Yes	-	-	-
Arbacia punctulata (C-NOEC)	Yes	-	-	-

The NBC is actively working to ensure full compliance with all the toxic and conventional pollutants specified in its RIPDES permit. In 2004, at the request of DEM, the NBC recalculated toxic pollutant permit limits based on the metal translator study conducted by NBC in 2001 and 2002. The results of the metal translator studies found the Providence and Seekonk Rivers met water quality criteria for the trace metals analyzed which were copper, lead, nickel, and silver. This data resulted in both rivers being removed from the EPA 303(d) list of impaired waterbodies for metals.

Bucklin Point Facility

When the NBC acquired the Bucklin Point facility in 1991, the RIPDES permit originally issued to the Blackstone Valley District Commission in December 1990 remained in effect. This permit listed several discharge limits for metals, organic compounds, and nutrients, but was modified to reflect alternative effluent limits when the NBC stressed that permitted discharge levels for some pollutants were not attainable.

A new permit was issued to the facility on December 31, 2001. NBC contested the new permit limits for copper, mercury, nickel, silver, zinc, cyanide, and nutrients, and for BOD and TSS during rain events when primary effluent would be diverted to the chlorine contact tank. NBC contested the above parameters due to the inability to meet limits that were set as low as saltwater primary contact water quality criteria in certain cases. Consent Agreement RI-330 was issued, which imposed interim limits effective as of January 2004. The 2001 permit limits and 2004 Consent Agreement limits were in effect through November 2017.

TABLE 30 outlines the RIPDES permit limits, and Consent Agreement limits, and a summary of January through November 2017 effluent results. TABLE 31 indicates that the facility was unable to meet the originally issued Maximum Daily and Average Monthly permit limits for copper and cyanide. In contrast, the facility was able to meet the limits detailed in the Consent Agreement for each of these parameters. There was one exceedance of the monthly TSS percent removal requirement in 2017, during the month of July. This requirement does not have Consent Agreement limits.

Bucklin Point did not have any permit violations of the Consent Agreement limits from January through November 2017. In addition, bioassay results met limits for both acute (LC_{50}) and chronic (C-NOEC) RIPDES permit requirements throughout 2017, further confirming the successful control of toxic contaminants entering the Bucklin Point facility.

TABLE 30
Comparison of Bucklin Point RIPDES & Interim Effluent Limits with January – November 2017 Wastewater Treatment Facility Results

	RIPDES Permit Limits		Consent Agreement Limits		January – November 2017 Results	
Parameter	Maximum Daily (ppb)	Average Monthly (ppb)	Maximum Daily (ppb)	Average Monthly (ppb)	Maximum Daily (ppb)	Average Monthly* (ppb)
Hexavalent Chromium	997	60	-	-	10.00	1.11
Copper	5.2	5.2	86.1	29.8	25.51	15.55
Lead	199	10.3	-	-	2.41	1.52
Mercury**	1.7	0.04	1.7	0.2	0.0178	0.0099
Nickel	67	13.7	67	53.3	16.00	9.81
Silver	2	-	4.5	-	0.46	0.23
Zinc	76	76	88	76	55.18	46.53
Available Cyanide**	0.8	0.8	69.3	20	11.50	1.44
BOD Percent Removal***	-	≥85%	-	-	-	96.7
TSS Percent Removal***	-	≥85%	-	-	-	84.4
Fecal Coliform	400 MPN/100 ml	200 MPN/100 ml	-	-	101.1	13.1
Americamysis bahia (LC_{50})***	100% or greater	-	-	-	>100	-
Arbacia punctulata (C-NOEC)***	50%	-	-	-	100	-

*The highest average monthly value is listed in this table for comparison against the RIPDES permit.

** Note that the limit for compliance/noncompliance determinations is based on the quantitation limit, which is defined as 0.2 micrograms per liter for mercury and 20.0 micrograms per liter for cyanide.

***Permit limits for percent removals and bioassays are set for the minimum, not maximum. The percent removal 2017 results represent the minimum average monthly percent removals. The bioassay 2017 results represent the minimum quarterly results.

TABLE 31
January - November 2017 Compliance Status with RIPDES & Consent Agreement Limits for Bucklin Point Facility

	January - November 2017 Compliance with RIPDES Permit Limits?		**January - November 2017 Compliance with Consent Agreement Limits?**	
Parameter	Maximum Daily	Average Monthly	Maximum Daily	Average Monthly
Hexavalent Chromium	Yes	Yes	-	-
Copper	**No**	**No**	Yes	Yes
Lead	Yes	Yes	-	-
Mercury**	Yes	Yes	Yes	Yes
Nickel	Yes	Yes	Yes	Yes
Silver	Yes	-	Yes	-
Zinc	Yes	Yes	Yes	Yes
Available Cyanide**	**No**	**No**	Yes	Yes
BOD Percent Removal	-	Yes	-	-
TSS Percent Removal	-	**No**	-	-
Fecal Coliform	Yes	Yes	-	-
Americamysis bahia (LC_{50})	Yes	-	-	-
Arbacia punctulata (C-NOEC)	Yes	-	-	-

**Note that the limit for compliance/noncompliance determinations is based on the quantitation limit, which is defined as 0.2 micrograms per liter for mercury and 20.0 micrograms per liter for cyanide.

TABLES 32 and 33 are analogous to TABLES 30 and 31 above, respectively, comparing data results during December 2017 to the new permit limits that went into effect on December 1, 2017. The NBC has formally contested several of the new permit requirements, and the RIDEM has granted stays of these limits until interim limits or alternate limits are agreed upon. These temporary stay limits are shown in the tables below. During the first month of this permit, Bucklin Point remained in compliance with all new permit limits, including those with stays.

TABLE 32
Comparison of Bucklin Point RIPDES & Interim Effluent Limits with December 2017 Wastewater Treatment Facility Results

	RIPDES Permit Limits		Stay Limits		December 2017 Results	
Parameter	Maximum Daily (ppb)	Average Monthly (ppb)	Maximum Daily (ppb)	Average Monthly (ppb)	Maximum Daily (ppb)	Average Monthly* (ppb)
Copper	6.5	6.5	86.1	29.8	5.22	4.43
Nickel	70.3	14.3	70.3	53.3	10.45	6.14
Zinc	85.6	85.6	-	-	47.81	41.59
Available Cyanide**	0.8	0.8	-	-	0.00	0.00
CBOD Percent Removal***	-	≥85%	-	-	-	99.5
TSS Percent Removal***	-	≥85%	-	-	-	96.0
Enterococci	276 cfu/100 mL	35 cfu/100 mL	-	-	11.0	2.9
Americamysis bahia (LC_{50})***	100% or greater	-	-	-	>100	-
Arbacia punctulata (C-NOEC)***	50%	-	-	-	100	-

*The highest average monthly value reported for the year is listed in this table for comparison against the RIPDES permit.

** Note that the limit for compliance/noncompliance determinations is based on the quantitation limit, which is defined as 10.0 micrograms per liter for cyanide.

***Permit limits for percent removals and bioassays are set for the minimum, not maximum. The percent removal 2017 results represent the minimum average monthly percent removals. The bioassay 2017 results represent the minimum quarterly results.

TABLE 33
December 2017 Compliance Status with RIPDES & Interim Effluent Limits for Bucklin Point Facility

	December 2017 Compliance with RIPDES Permit Limits?		December 2017 Compliance with Stay Limits?	
Parameter	Maximum Daily	Average Monthly	Maximum Daily	Average Monthly
Copper	Yes	Yes	Yes	Yes
Nickel	Yes	Yes	Yes	Yes
Zinc	Yes	Yes	-	-
Available Cyanide**	Yes	Yes	-	-
CBOD Percent Removal	-	Yes	-	-
TSS Percent Removal	-	Yes	-	-
Enterococci	Yes	Yes	-	-
Americamysis bahia (LC_{50})	Yes	-	-	-
Arbacia punctulata (C-NOEC)	Yes	-	-	-

**Note that the limit for compliance /noncompliance determinations is based on the quantitation limit, which is defined as 10.0 micrograms per liter for cyanide.

Bucklin Point Final Effluent pH Variability and Permit Compliance

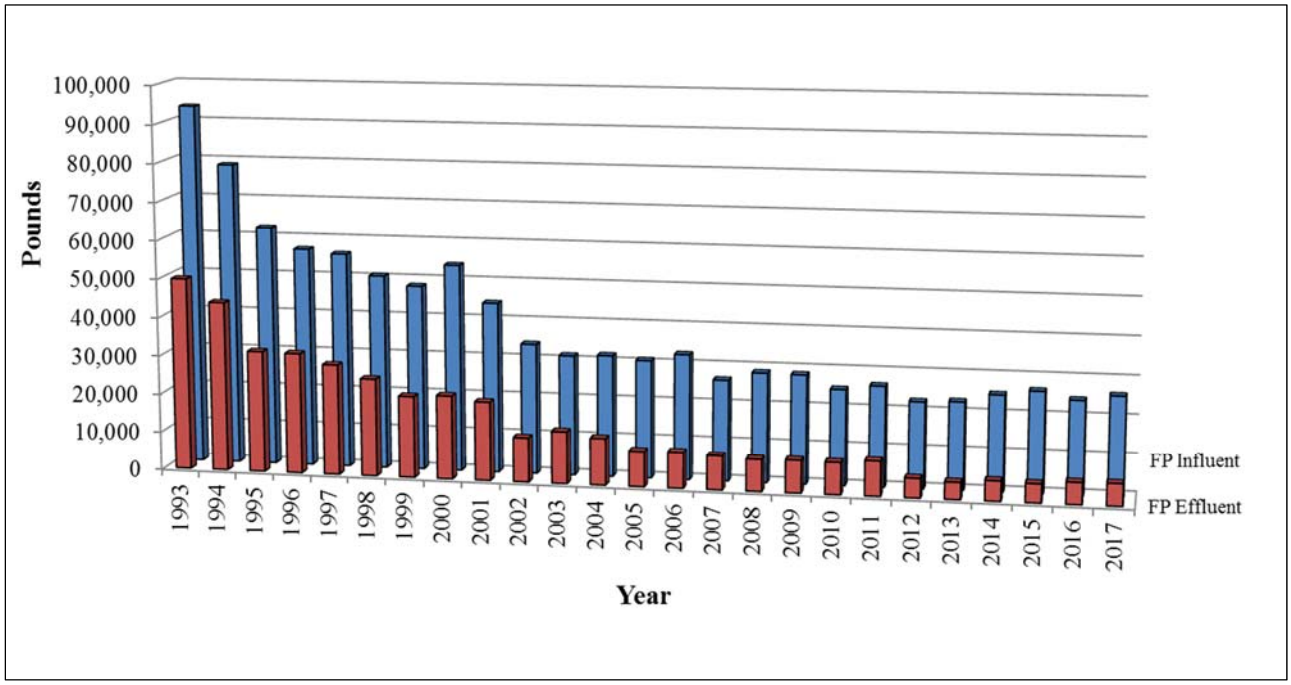
The pH of the Bucklin Point effluent is measured daily by EMDA staff with the use of a high-precision Orion pH meter. This analytical program is under the supervision of the NBC Laboratory. The addition of soda ash (sodium bicarbonate) to the process at Bucklin Point enables more effective biological nutrient reduction and typically maintains the effluent pH within the desired permit range. The values measured in 2017 ranged between 6.14 and 7.29 s.u.

The lack of pH permit violations over the course of 2017 reflects the success of the Bucklin Point Operations staff and the Pretreatment program, which prevented the discharge of low pH wastewater by industry.

Comparison of Influent and Effluent Loadings

FIGURE 27 provides a comparison of historic Field's Point influent and effluent loadings for total metals. At the Field's Point facility, a major portion of each metal observed in the plant influent is removed in grit and sludge during the treatment process.

FIGURE 27
Field's Point Influent and Effluent Total Metals Loadings Trend Analysis



The removal rate of metals entering the Field's Point facility varied from 32.7% to 99.2% in 2017. Influent loading increased by 6.0%, or 1,458.3 pounds in 2017 as compared to 2016. Effluent loadings increased by 133.2 pounds or 2.4% in 2017. Since the plant upgrades associated with the nitrogen removal process went into operation, removal efficiencies for metals have increased substantially.

FIGURE 28 provides a comparison between the historic influent and effluent total metal loadings for Bucklin Point. As noted for Field's Point, a major portion of each pollutant observed in the plant influent is removed in grit and sludge during the treatment process. In 2017 there was a 136.2 pound or 1.2% increase in influent metals, while effluent metals decreased by 62.3 pounds or 2.1% over 2016 loadings. Percent removal of the various metals at Bucklin Point ranged between 62.4% and 98.7%.

FIGURE 28
Bucklin Point Influent and Effluent
Total Metals Loadings Trend Analysis

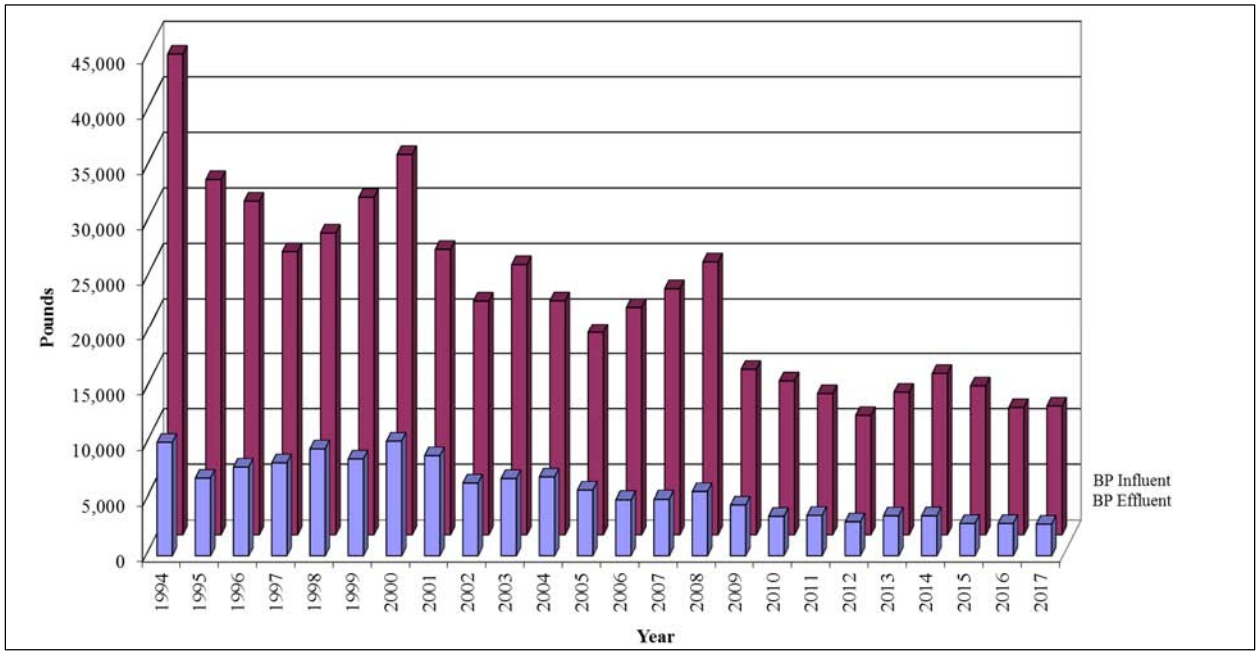


TABLE 34 details removal rates for each of the heavy metals and cyanide at both NBC wastewater treatment plants. The term removal here means the reduction of pollutants in the wastewater through their incorporation into settleable solids, which are then concentrated into sludge material. Municipal wastewater treatment plants are not designed to treat and remove industrial waste such as heavy metals. Those metals that are strongly associated with the dissolved phase (e.g., nickel) will be discharged to the receiving waters with less removal than those with higher particulate phase portioning (e.g., copper or lead) which are particle reactive and settle into the sludge. Several influent and effluent metals measured at the plants are often non-detectable by the appropriate laboratory method applied. The metals shown with asterisks in the table below are frequently non-detectable and therefore are statistically analyzed at their detection limits, resulting in overestimation of these concentrations. From TABLE 34 it is easy to see that a major portion of all toxic pollutants are removed from the waste stream at the NBC plants prior to effluent discharge to the receiving waters of Narragansett Bay. The Field's Point facility was able to remove 87% or more of the cadmium, chromium, copper, lead, mercury, and silver discharged in the district. The Bucklin Point facility was able to remove 90% or more of the cadmium, chromium, copper, lead, mercury, and silver discharged to the plant. Nickel had the lowest percent removal rate of the heavy metals at Field's Point, at 32.7%. Zinc had the lowest percent removal rate at Bucklin Point, at 62.4%.

TABLE 34
Percent Removal of Metals and Cyanide for NBC Facilities

	Field's Point Concentrations			Bucklin Point Concentrations		
	Influent (ppb)	Effluent (ppb)	% Removal	Influent (ppb)	Effluent (ppb)	% Removal
Cadmium	2.33*	0.02*	99.1%	2.33*	0.03	98.7%
Chromium	11.53*	1.43	87.6%	13.25*	1.29	90.3%
Hexavalent Chromium	24.28	10.00*	58.8%	35.44	10.00*	71.8%
Copper	42.19	2.54	94.0%	53.23	5.16	90.3%
Lead	12.68*	0.39	96.9%	9.99*	0.49	95.1%
Mercury	0.0391	0.0027*	93.1%	0.0435	0.0037	91.5%
Nickel	21.18	14.26	32.7%	20.84*	7.04	66.2%
Silver	3.76*	0.03*	99.2%	3.85*	0.07	98.2%
Zinc	111.54	27.26	75.6%	100.96	38.00	62.4%
Total Cyanide	10.47	6.30	39.8%	6.33	6.97	-10.1%
Total Metals	205.25	45.93	77.6%	204.49	52.08	74.5%

*25% or more samples measured below the detection limit.

POTW Effluent Dissolved Metals Study

In 2000, the NBC began a study to monitor the dissolved metals fraction of the effluent discharged to the receiving waters of the Providence and Seekonk Rivers. Dissolved metals were typically analyzed once per week at each POTW. Total metals were measured twice per week. In 2017, Field's Point and Bucklin Point effluent dissolved metals samples were analyzed monthly. The NBC and DEM use these data to better understand the fate, effect, and physical phase partitioning of metals discharged from the POTWs.

Understanding the partitioning between dissolved and particulate phases is important for the calculations of permit discharge limits. POTWs are permitted for total metals; however, the limits are derived from receiving water quality criteria set for dissolved metals concentrations, the phase that is more readily absorbed by marine life. Therefore, when determining permit limits of a wastewater treatment plant, the DEM must use a "metals translator conversion factor" to estimate the fraction of the total metals load from the POTW that will be in the dissolved phase in the effluent. By sampling for both total and dissolved metals, the NBC is able to better assess the ratio of dissolved to total metals in POTW effluent and in the receiving waters and inform such permit limit calculations.

TABLE 35 summarizes the data from 2017 as dissolved-to-total metals ratios. The values were calculated for each date there was a dissolved metals result (i.e., once per month), using the dissolved metals concentration and the total metals concentration for that day. Annual averages were then calculated from these monthly data. The dissolved phase is operationally defined as that portion which passes through a 0.45-micron filter. At Field's Point, some of the dissolved aluminum, cadmium, lead, and silver samples were reported at less than the detection limit (between 66% and 100% of all samples). Similarly, at Bucklin Point some dissolved cadmium, lead, and silver samples were reported at less than the detection limit (between 33% and 58% of all samples). Also, some effluent total cadmium and silver samples at Field's Point and lead samples at both plants were reported at less than the detection limit. Note that averages were calculated for these metals using substitution of the detection limit value, therefore, overestimating the true concentrations.

TABLE 35
2017 Final Effluent Phase Partitioning Study Results

Dissolved/Total Shown as a Ratio		
	Field's Point Mean	**Bucklin Point Mean**
Aluminum	0.51	0.40
Cadmium	0.98	0.76
Chromium	0.99	0.79
Copper	0.90	0.64
Iron	0.44	0.46
Lead	0.81	0.69
Nickel	0.99	0.91
Silver	0.80	0.42
Zinc	1.02	0.95

At Field's Point, the results show cadmium, chromium, copper, nickel, and zinc to be the metals with the highest fraction in the dissolved phase in the final effluent, followed by lead and silver. At Bucklin Point, nickel and zinc were shown to be the metals with the highest fraction in the dissolved phase, followed by cadmium, chromium, and copper, and lead. Aluminum and iron were more strongly associated with particles and thus the fraction of the metal in the dissolved phase is lower.

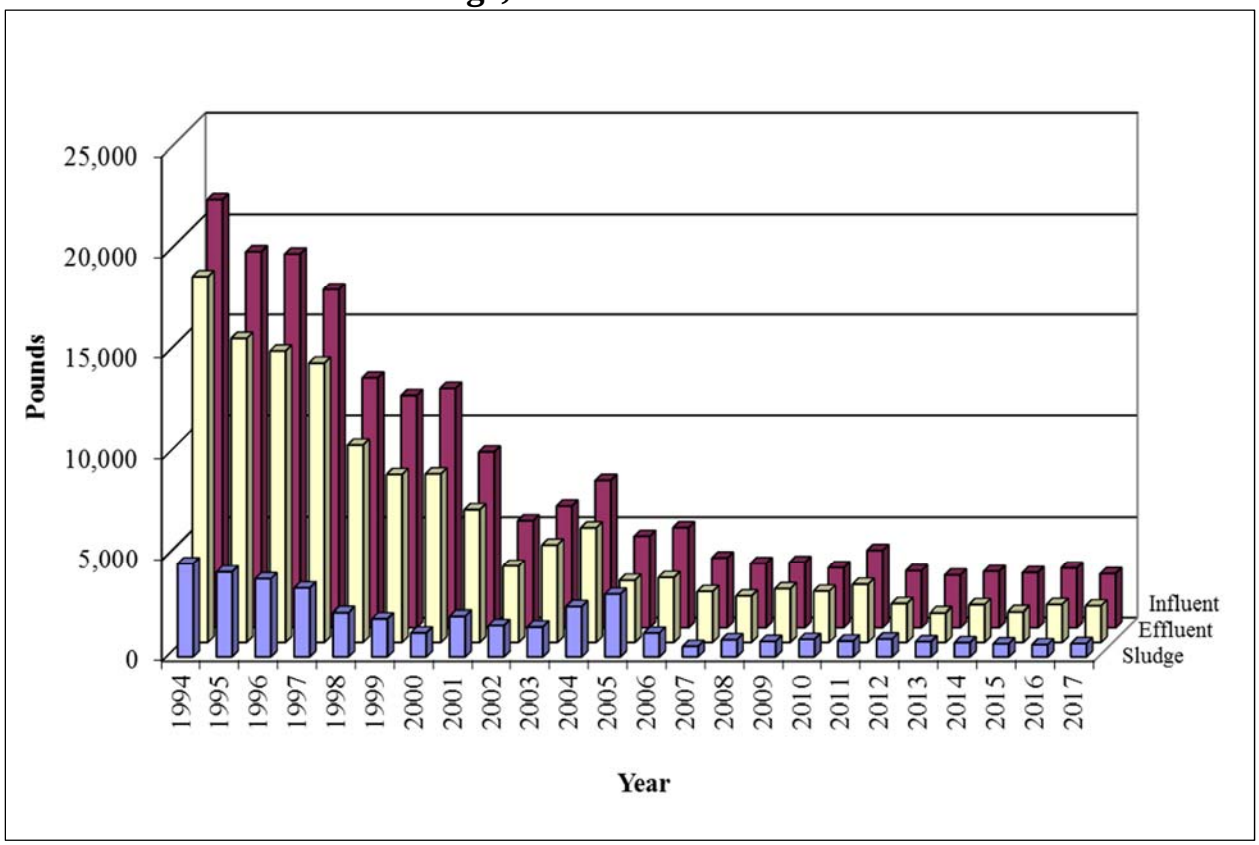
The mean dissolved-to-total proportion of zinc at Field's Point was above 1.0, indicating a higher concentration in the dissolved phase than was detected in the analysis of the total metal. The low removal efficiency of this metal supports that the majority is likely in the dissolved phase. In addition, there are occasionally instances in which the dissolved metals portion is higher than the effluent portion due to equipment precision. Data for 2017 total and dissolved metals analysis results are included in ATTACHMENT VOLUME II, SECTION 10.

Sludge Analysis

To provide further insight into influent trends and POTW removal efficiency for metals, sludge loading trends for three metals have been compared to influent and effluent loads since 1994 at each facility. Nickel was chosen for this comparison due to its high incidence in the dissolved phase. Nickel is also a metal commonly associated with industrial sources. Copper and zinc were also chosen due to their relatively high abundance and significant influent sources. In the following figures, please note that the final sludge loading is an approximation since there is insufficient data for loading attributed to grit. During 2017 sludge metals measurements were conducted bimonthly as opposed to weekly for the years prior to 2006. The mass balance agreement of these metals is calculated by subtracting the effluent and sludge loadings from the influent loading. Historical and 2017 sludge data are included in ATTACHMENT VOLUME II, SECTION 10.

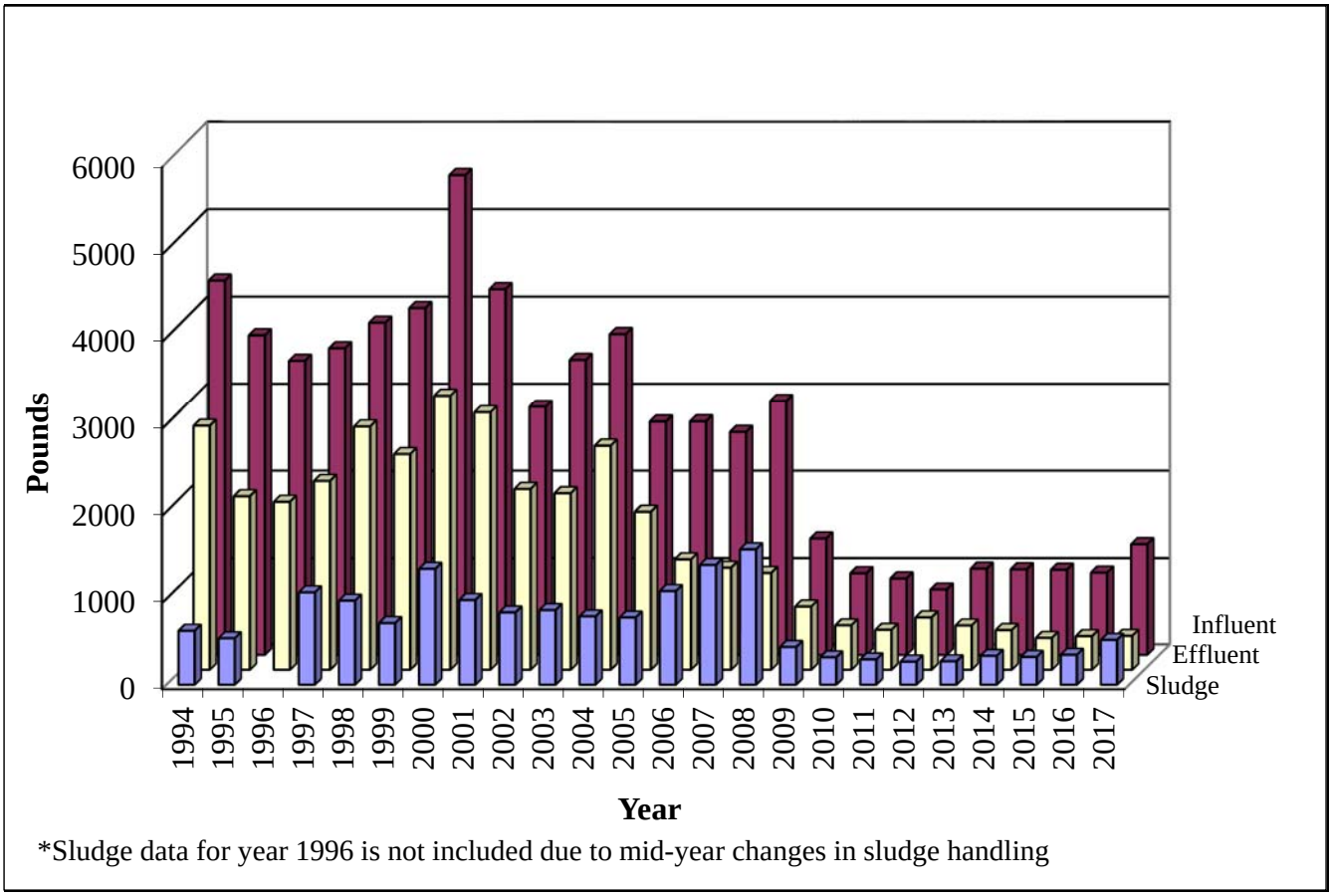
As can be seen in FIGURE 29, nickel inputs in Field's Point influent generally declined from 1994 to 2008 and loadings have been relatively steady since then. The center row of columns on the figure represents final effluent loading. During 2017, Field's Point nickel loading decreased slightly in the influent and effluent but increased in the sludge as compared to 2016. Nickel in the sludge had remained below 1,000 pounds since 2007. The discrepancy between influent nickel loading compared to sludge and effluent nickel loadings was 9% during 2017. This discrepancy is attributed to loading in grit and general variability due to sampling and analytical methods.

FIGURE 29
Nickel Loading Trend Analysis for Field's Point
Sludge, Influent and Effluent



At Bucklin Point, nickel loading increased in the influent, effluent, and sludge during 2017 as compared to 2016. As can be seen in FIGURE 30, influent nickel increased by 325.7 pounds, effluent nickel increased by 3.0 pounds, and nickel in the sludge increased by 173.4 pounds. In 2017, there was a 40% discrepancy between measured influent loading and loading in the effluent and sludge. This discrepancy is attributed to loading in the grit and general variability due to sampling and analytical methods.

FIGURE 30
Nickel Loading Trend Analysis for Bucklin Point
Sludge, Influent and Effluent



*Sludge data for year 1996 is not included due to mid-year changes in sludge handling

Nickel has the lowest removal efficiency of all of the metals measured in the influent and effluent at either plant, due in part to its high incidence in the dissolved phase. This results in relatively low loading of nickel to the sludge at either plant.

FIGURES 31 and 32 show the loading trends for zinc at the Field's Point and Bucklin Point facilities respectively. Zinc loading at Field's Point decreased in the sludge and influent, but increased in the effluent in 2017, as compared to 2016. The discrepancy between Field's Point influent zinc loading and the combined sludge and effluent zinc was 21%. At Bucklin Point, zinc loading decreased in the influent, but increased in the sludge and effluent. The discrepancy at Bucklin Point was just 2%. These discrepancies can be attributed to loading in the grit.

FIGURE 31
Zinc Loading Trend Analysis for Field's Point
Sludge, Influent, and Effluent

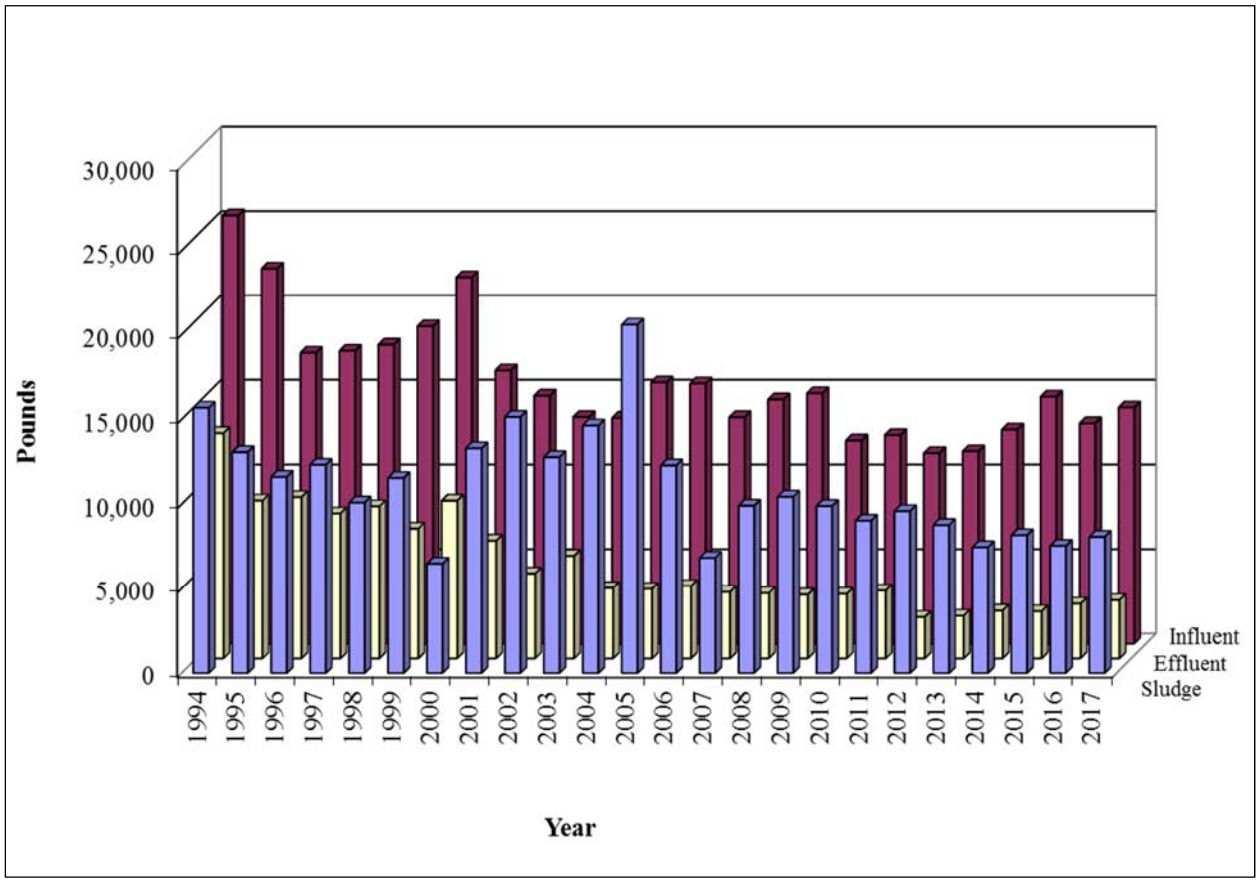
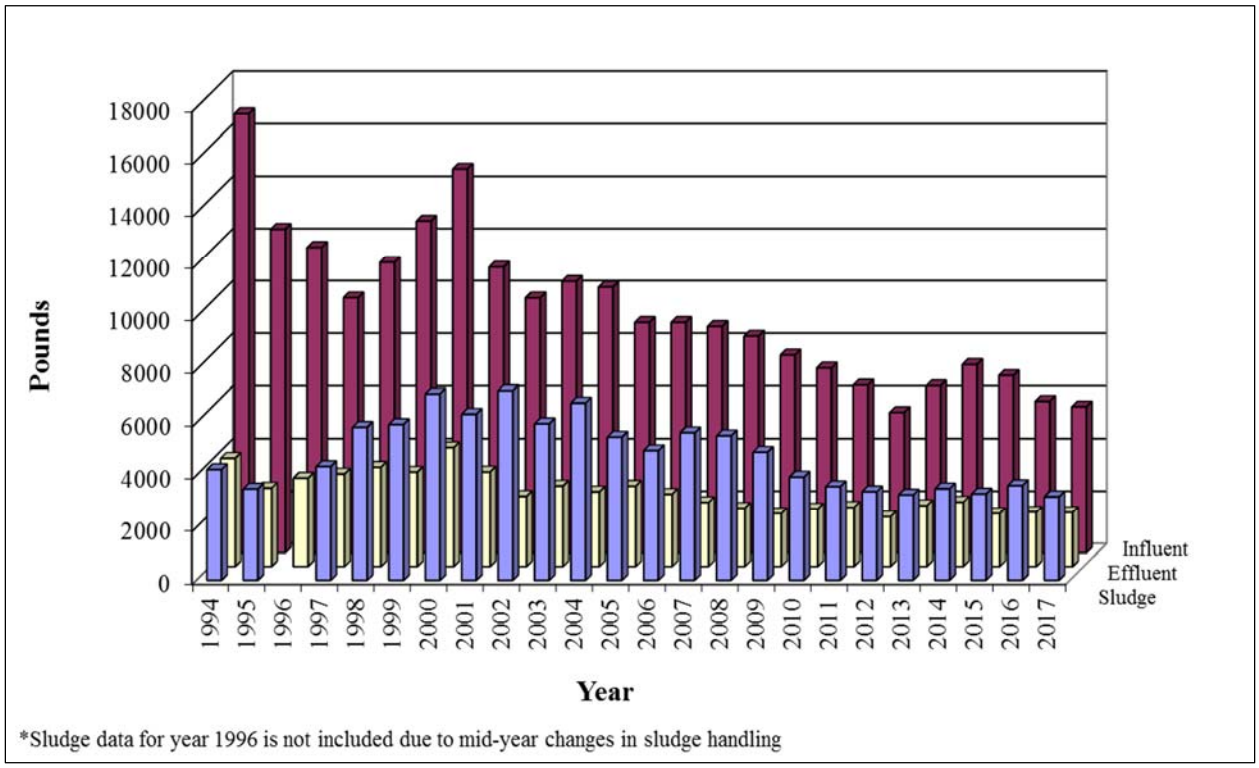


FIGURE 32
Zinc Loading Trend Analysis for Bucklin Point
Sludge, Influent, and Effluent



FIGURES 33 and 34 present the copper loading trend analyses. At Field's Point, copper loading decreased in the influent, effluent, and sludge in 2017 when compared to 2016. The discrepancy between the influent and combined effluent and sludge loading was 37%. At Bucklin Point, copper loadings decreased in the influent and effluent, but increased in the sludge. The discrepancy between the influent and combined effluent and sludge loading was 2%. These discrepancies can be attributed to the loading in the grit.

FIGURE 33
Copper Loading Trend Analysis for Field's Point
Sludge, Influent, and Effluent

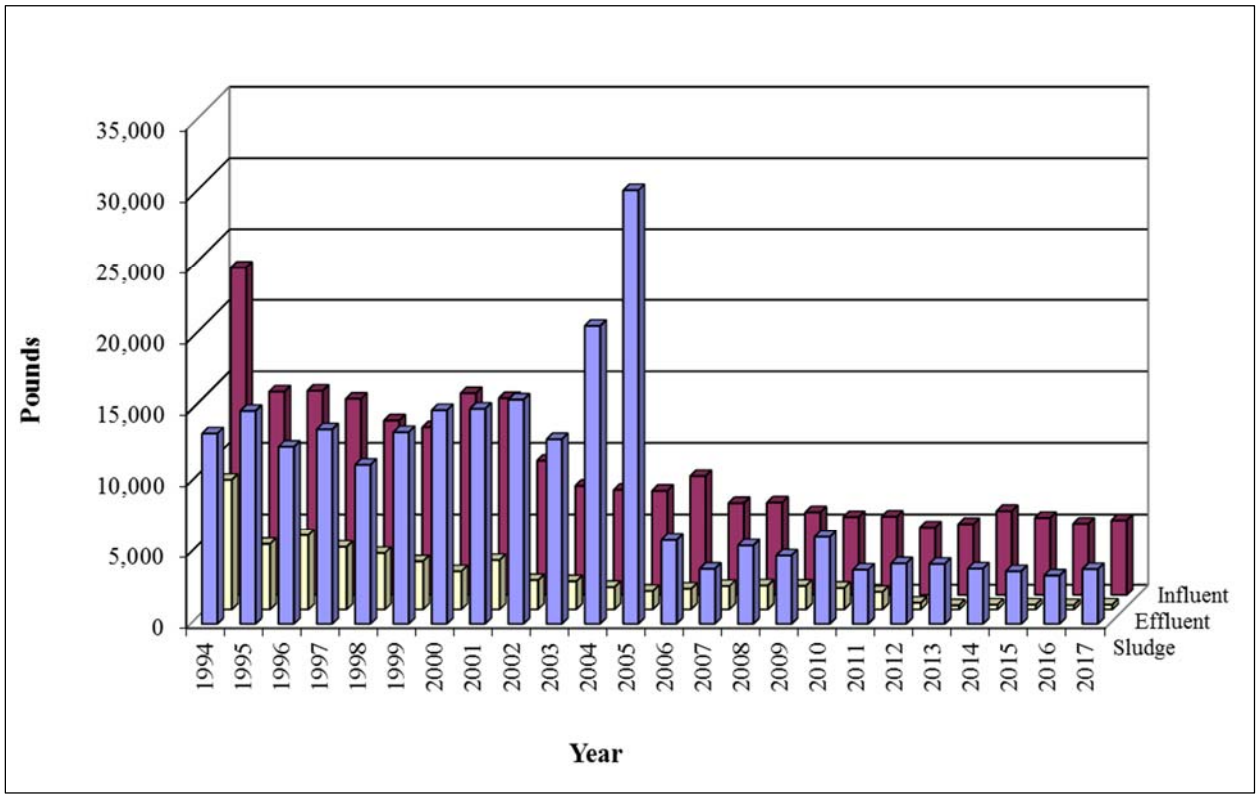
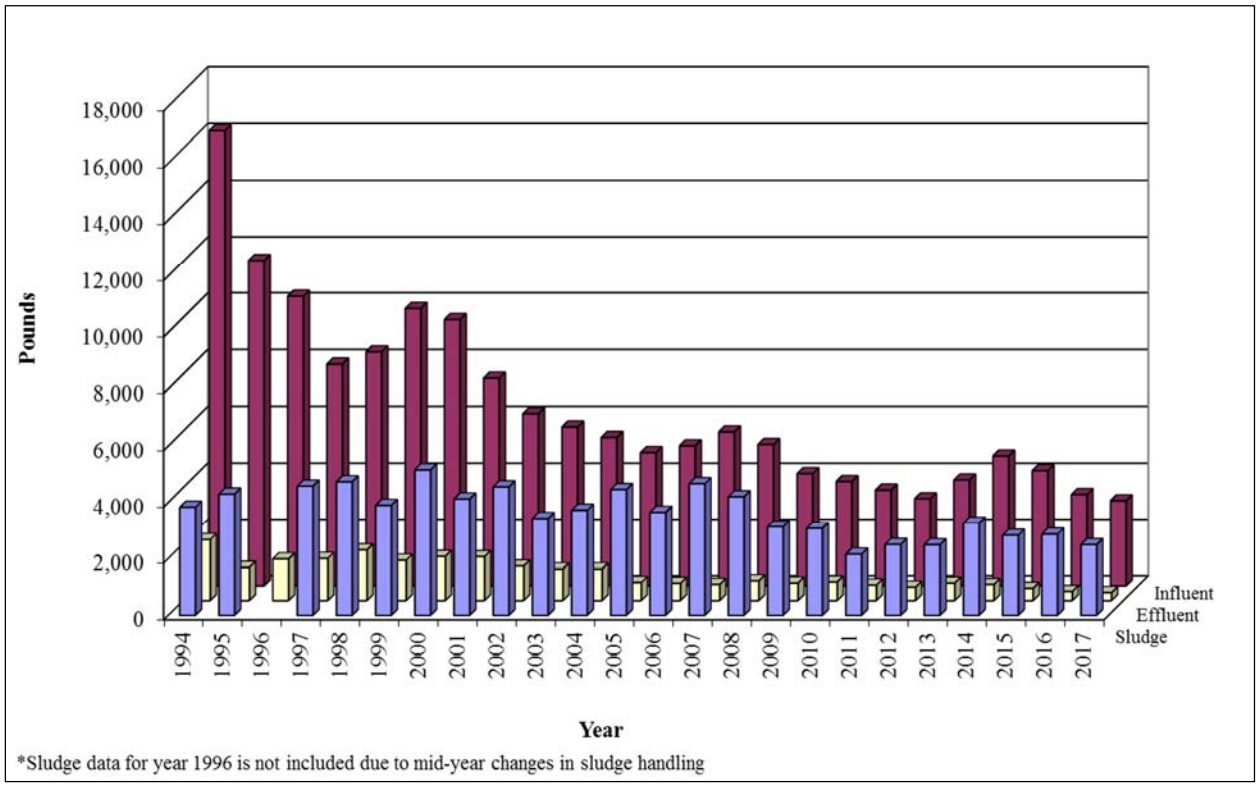


FIGURE 34
Copper Loading Trend Analysis for Bucklin Point
Sludge, Influent, and Effluent



BOD, CBOD, and TSS Loadings

BOD, CBOD, and TSS loading historical trend analysis provides an interesting means of determining the ability of the individual facility to handle variability in influent loadings without disruption of plant operations. While the previous RIPDES permits required BOD monitoring in the influent and effluent, the most recent permits, effective December 1, 2017, replaced BOD monitoring with CBOD. The following figures retain the historical BOD loading data through the last date of monitoring, November 30, 2017.

For Bucklin Point, FIGURES 35 and 36 show the 30-day average trend for influent and effluent BOD and CBOD, and TSS, respectively. Historical effluent BOD and TSS at Bucklin Point show a decline and overall reduction in variability beginning in 2005 which is largely attributable to improved treatment processes as a result of comprehensive facility upgrades that began to go online that year.

FIGURE 35
BOD and CBOD Loading Trend Analysis
for Bucklin Point Influent and Effluent

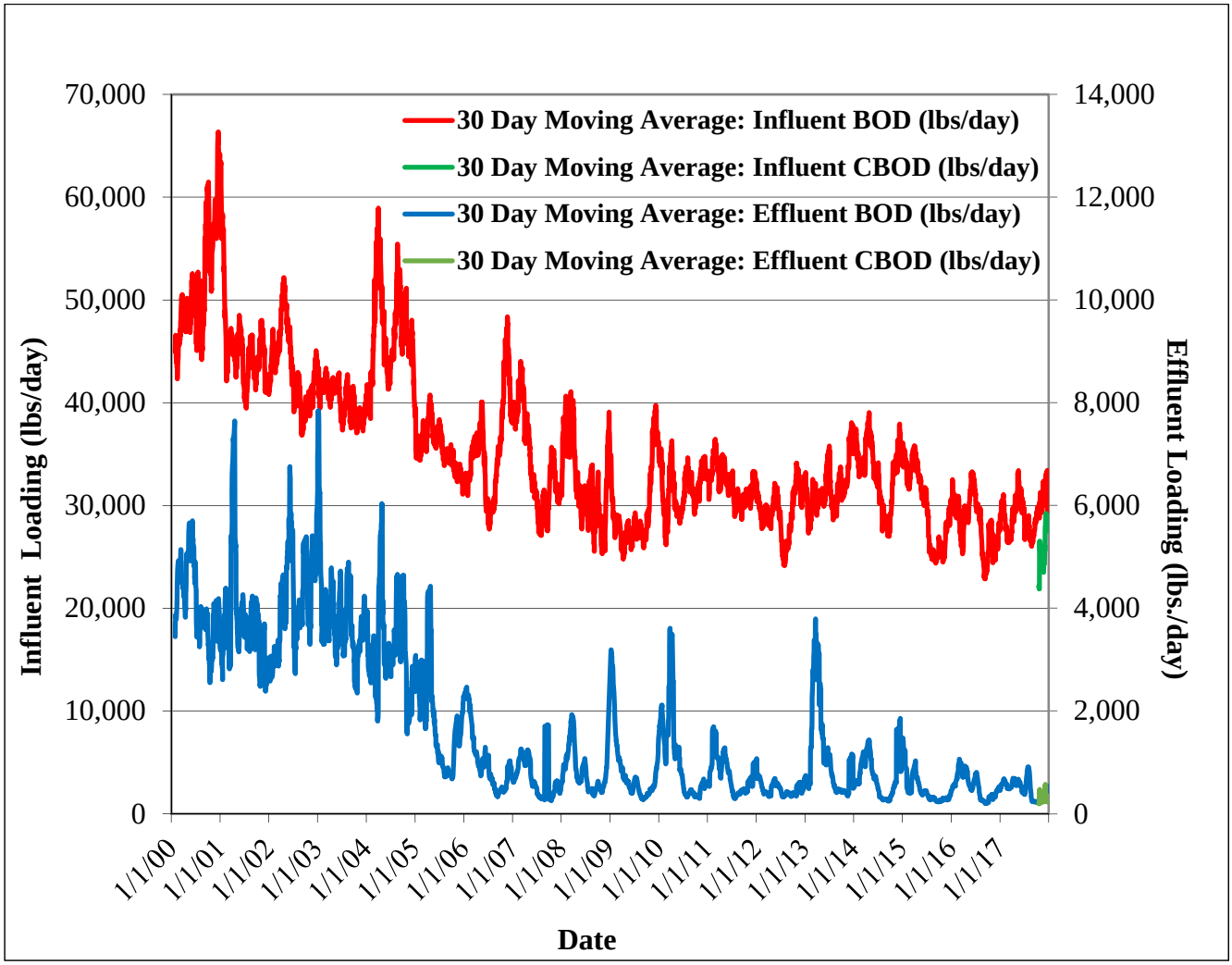
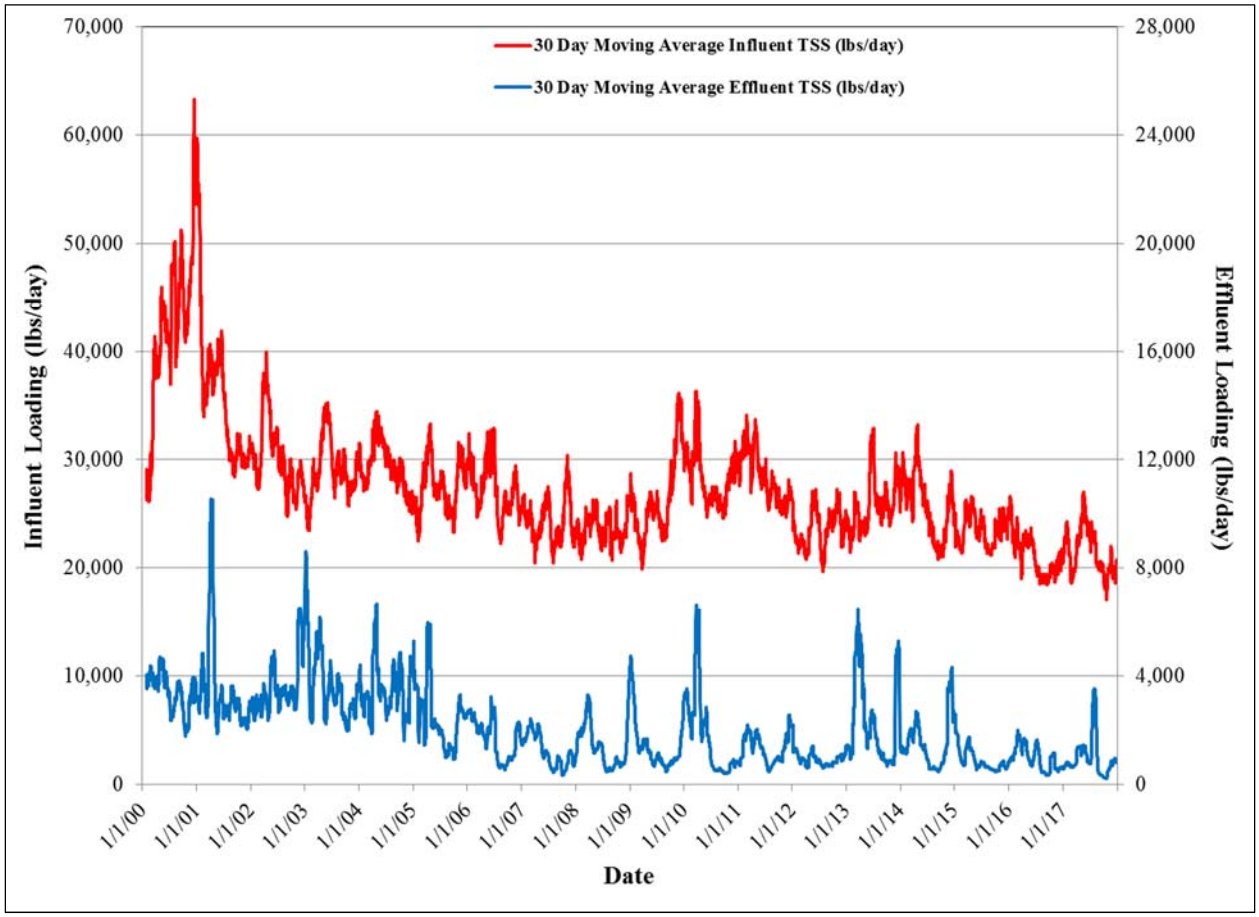


FIGURE 36
TSS Loading Trend Analysis for Bucklin Point Influent and Effluent



FIGURES 37 and 38 show the 30-day averaged BOD, CBOD and TSS data for Field's Point. Periods of high influent loading are possibly attributable to maintenance within the collection system, or wet weather events. It is estimated that at Field's Point flow coming from the CSO tunnel accounts for approximately 4.5% of the influent BOD, 4.3% of influent CBOD (December 2017 data only), and approximately 10.7% of the influent TSS loading. It is interesting to note that, despite these transient increases in the influent loading rates, effluent loadings show very little variability. This demonstrates the buffering capacity of both facilities, the ability of Operations to effectively adjust conditions to treat incoming pollutants. FIGURES 37 and 38 below show less variable effluent BOD and TSS and a decline in effluent BOD and TSS beginning in 2012 at Field's Point, which is most likely attributable to plant upgrades associated with the BNR treatment process, parts of which became operational in 2012.

FIGURE 37
BOD and CBOD Loading Trend Analysis for Field's Point Influent and Effluent

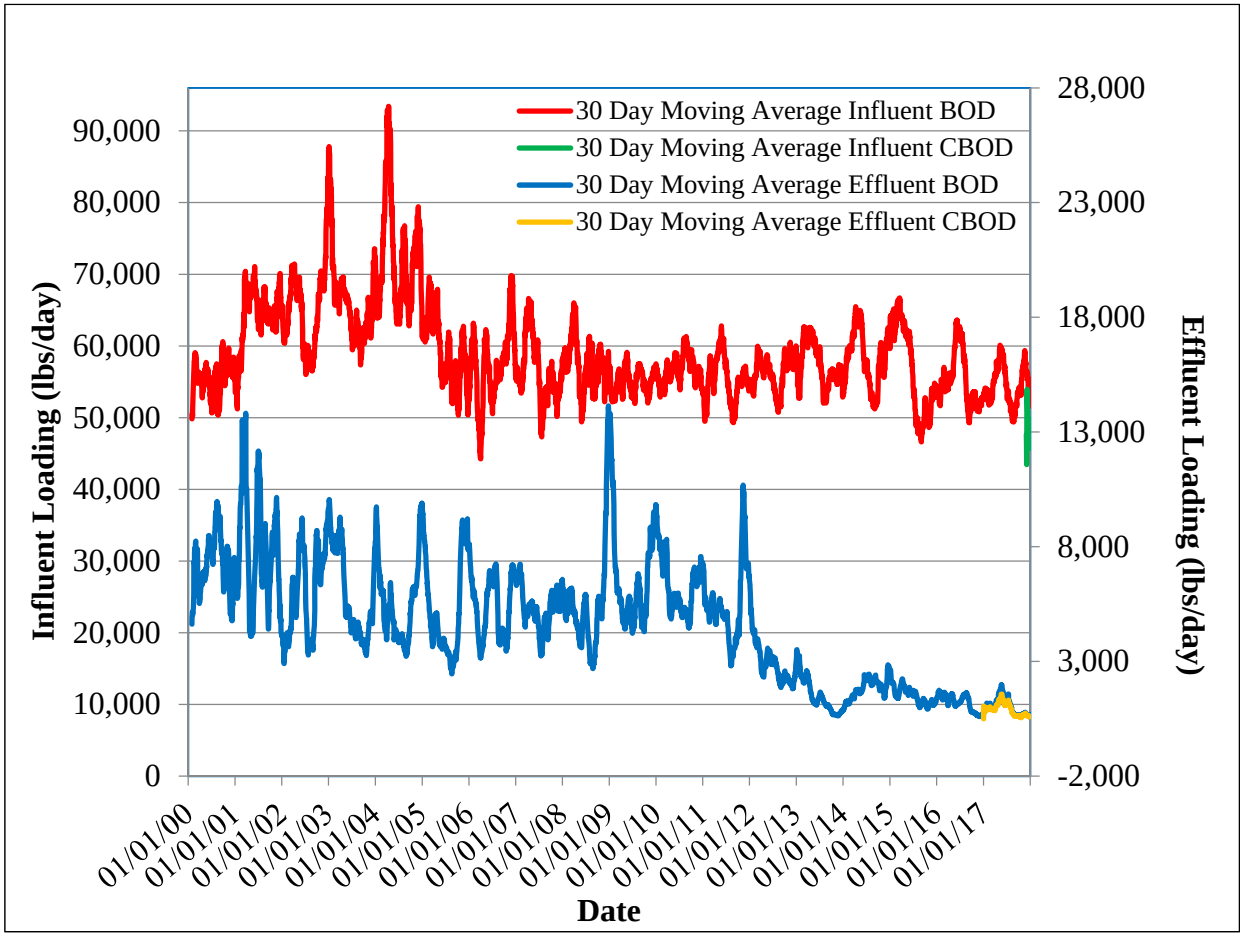
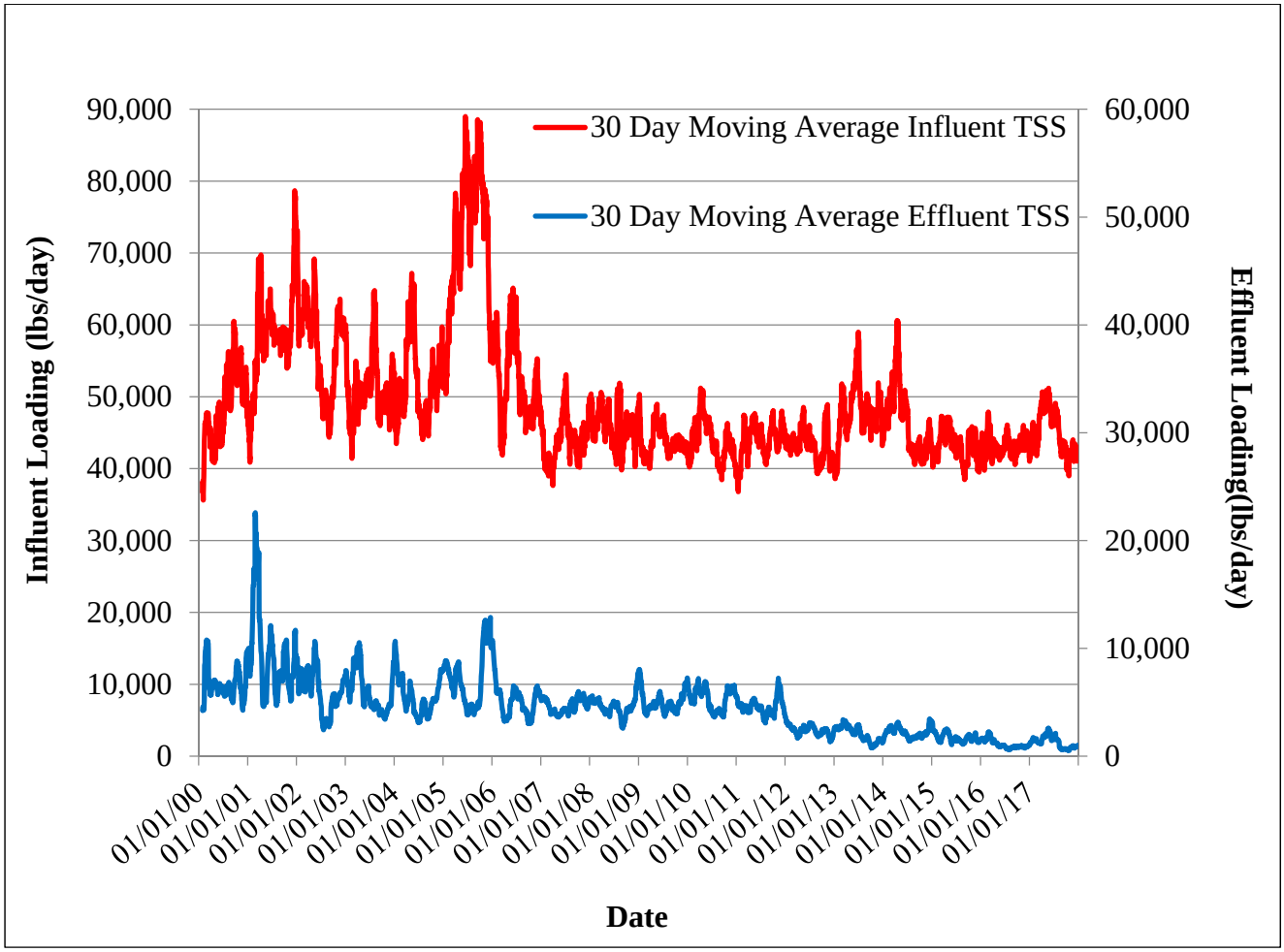


FIGURE 38
TSS Loading Trend Analysis for Field's Point Influent and Effluent



Comparison of Final Effluent Concentrations in 2017 and Saltwater Water Quality Criteria for Receiving Waters

A comparison of final effluent concentrations of permitted parameters and water quality criteria is useful to evaluate potential impact of the treatment plants on the receiving waters. TABLE 35 lists measured dissolved and total metal concentrations in the effluent, as well as cyanide, pH and fecal coliform bacteria compared to saltwater water quality criteria determined by DEM. Comparisons are made between annual averages and chronic criteria that protect long-term exposure, and between annual maxima and acute criteria that are established to protect marine life and waters from short-term exposures to pollutants. Effluent concentrations in bold in TABLE 36 exceeded those water quality standards. Dissolved metals are measured monthly at the two plants and total metals are measured twice per week. Saltwater water quality criteria are

set for dissolved metals, based on a metals translator conversion factor, converting from total to dissolved phase. Default EPA conversion factors range from 0.83 to 1.0, a ratio without units. Dissolved concentrations in the effluent can be compared to the water quality criteria with the understanding that dilution occurring in the established mixing zones at the outfalls quickly lowers the concentrations in the Bay waters. This was demonstrated in the 2001 and 2002 trace metal study of the Bay Waters by NBC, URI and MicroInorganics, Inc. The trace metal study conducted by NBC and URI found both the Seekonk and Providence River reaches of Narragansett Bay meeting EPA water quality criteria for metals. These findings were presented to DEM. As a result of this work the Seekonk and Providence rivers have been removed from the state EPA 303(d) list of impaired water bodies for metals.

TABLE 36
Comparison of 2017 Final Effluent Concentrations and Water Quality Criteria of Receiving Waters

Pollutant	Phase and Statistical Category	Bucklin Point Effluent Results in ppb	Field's Point Effluent Results in ppb	Chronic WQC in ppb	Acute WQC in ppb
Copper	Dissolved phase effluent annual average	**3.3**	2.2	3.1	
	Dissolved phase effluent annual maximum	**6.2**	2.5		4.8
	Total effluent annual average	5.2	2.5		
	Total effluent annual maximum	25.5	5.9		
Lead	Dissolved phase effluent annual average	0.33	0.30	8.1	
	Dissolved phase effluent annual maximum	0.45	0.30		210
	Total effluent annual average	0.49	0.39		
	Total effluent annual maximum	2.4	1.8		
Nickel	Dissolved phase effluent annual average	6.0	**14.1**	8.2	
	Dissolved phase effluent annual maximum	10.4	17.7		74
	Total effluent annual average	7.0	14.3		
	Total effluent annual maximum	16.0	29.9		
Silver	Dissolved phase effluent annual average	0.03	0.02		
	Dissolved phase effluent annual maximum	0.05	0.03		1.9
	Total effluent annual average	0.07	0.03		
	Total effluent annual maximum	0.46	0.12		
Zinc	Dissolved phase effluent annual average	37.2	27.9	81	
	Dissolved phase effluent annual maximum	44.7	32.0		90
	Total effluent annual average	38.0	27.3		
	Total effluent annual maximum	55.18	37.9		
Mercury	Dissolved effluent annual average	NM	NM	0.94	
	Dissolved effluent annual maximum	NM	NM		1.8
	Total effluent annual average	0.004	0.003		
	Total effluent annual maximum	0.018	0.008		
Total Cyanide	Total effluent annual average	**7.0**	**6.3**	1	
	Total effluent annual maximum	**11.7**	**13.2**		1
pH	Total effluent annual minimum (s.u.)	6.14	6.02	> 6.5 < 8.5	
	Total effluent annual maximum (s.u.)	7.29	7.16		> 6.5 < 8.5
Enterococci Bacteria	Total effluent annual geometric mean	2.9	2.6	35	104
Fecal Coliform Bacteria	Total effluent annual geometric mean	4.0	2.4	50	400

From TABLE 36, the following conclusions can be made regarding the various pollutant parameters:

- Dissolved copper concentrations at Field's Point met both the chronic and acute water quality criteria for annual average and annual maximum. Dissolved copper concentrations at Bucklin Point did not meet either criterion. However, effluent concentrations are rapidly diluted as the effluent enters the receiving waters. It is often difficult for wastewater effluent to meet the receiving water quality criteria for copper since the limit in drinking water is over 400 times higher than the limit in the receiving waters.

- Lead continues to show annual average and maximum dissolved concentrations substantially lower than the acute and chronic water quality criteria at both facilities. The annual maxima for total lead at both Field's Point and Bucklin Point are nearly two orders of magnitude lower than the acute dissolved lead criterion.

- The dissolved nickel annual maximum concentrations at both facilities were below the acute saltwater quality criterion. However, the dissolved nickel annual average effluent concentration did not meet the chronic water quality criterion at Field's Point. As noted above for copper, effluent concentrations are rapidly diluted as the effluent enters the mixing zone of the receiving waters, reducing the effective concentration of these metals in the environment.

- The dissolved silver annual maximum and average concentrations were all below the acute water quality criterion. There is no chronic saltwater water quality criterion established for silver.

- Maximum and average dissolved zinc concentrations at both facilities are less than the acute and chronic water quality criteria.

- The annual average and maximum effluent total cyanide concentration were above the chronic and acute water quality criteria at both Field's Point and Bucklin Point. Though the effluent did not meet these criteria, effluent concentrations are rapidly diluted as the effluent enters the mixing zone of the receiving waters. Cyanide loadings at both facilities have generally decreased over time.

- pH annual effluent minima and maxima were within water quality criteria at both plants.

- The annual geometric mean of all fecal coliform bacteria sample results was used to determine whether the facilities met the chronic water quality criterion, while a count of the number of samples that exceeded 400 MPN/100 mL was used to establish whether the acute water quality criterion was met. Both facilities remained well below the 50 MPN/100 mL chronic water quality criterion; neither facility had any sample results greater than 400 MPN/100 mL in 2017.

- The annual geometric mean of all Enterococci bacteria sample results was used to determine whether the facilities met the chronic water quality criterion, while a count of the number of samples that exceeded 60 MPN/100 mL was used to establish whether the acute water quality criterion was met. Both facilities remained well below the 50 MPN/100 mL chronic water quality criterion, and less than 1% of the fecal coliform samples at Bucklin Point (0.2%) and Field's Point (0.3%) were above the 60 MPN/100 mL threshold in 2017.

Summary

In general, the two POTWs continue to show significant improvements in operations and effluent quality since NBC took over operations and with the implementation of the NBC Pretreatment Program and Pollution Prevention initiatives of the ESTA section. The Pretreatment and ESTA sections have implemented educational programs to assist firms in achieving and maintaining compliance. The NBC has also significantly improved sampling methods over the past several years and improved sampling of septage and sludge have shown clear results. The aim of the EMDA sampling program is to collect representative samples at every stage, reduce contamination, and provide valuable information to POTW and regulatory staff in order to protect the environment and serve public interest. The Laboratory section continues to improve analytical procedures and research new technologies to improve the accuracy of all analytical procedures and sampling. The Field's Point and Bucklin Point treatment plant upgrades have clearly resulted in not only reduced nutrients but improved effluent quality for a multitude of other parameters as well.

While NBC studies show that substantial portions of influent toxic metal pollutants originate from residential sources, the overall toxic pollutant loadings to the two NBC wastewater treatment plants have decreased over time. This is a clear reflection of the fine work done by the NBC toxic reduction and control programs. The influent metals loading from 2016 to 2017 increased only slightly at both plants. Bucklin Point had an increase of 1.2% while Field's Point had an increase of 6.0%. These changes in loading appear to have been insignificant to plant processes. The levels of toxics in the effluent discharged from Bucklin Point decreased slightly this year, while Field's Point had a slight increase, though both plants remained far below historical loadings. In 2017, effluent total metals loadings increased at Field's Point by 2.4%, or 133.2 pounds, and decreased at Bucklin Point by 2.1%, or 62.3 pounds. Overall, 2017 effluent loadings continue to support the 2002 removal of NBC receiving waters from the EPA 303(d) List of Impaired Waters by the DEM. This is a clear testament to the effectiveness of the NBC toxic reduction and control programs.

VI. ENFORCEMENT

NBC Enforcement Actions

The NBC will initiate some type of enforcement action against 100% of those persons and companies who violate the NBC Rules and Regulations. A wide range of enforcement actions are used to bring industrial and commercial users into compliance with NBC requirements and effluent limitations. The action can be as routine as a telephone call or as serious as an administrative order and assessment of penalty. Hundreds of phone calls were made during 2017 and 1,664 Notices of Violation (NOV) were issued for various violations of NBC Rules and Regulations. The following is a description of the most common types of enforcement actions utilized by the NBC and a brief summary of the number of each type initiated by the NBC over the past year:

- *Telephone calls* to users are made daily to discuss violations and problems. These calls are often sufficient to bring the user into compliance. A telephone log sheet documenting the conversation is prepared and placed in the user file or in some cases a letter may be sent to the user summarizing the discussion.

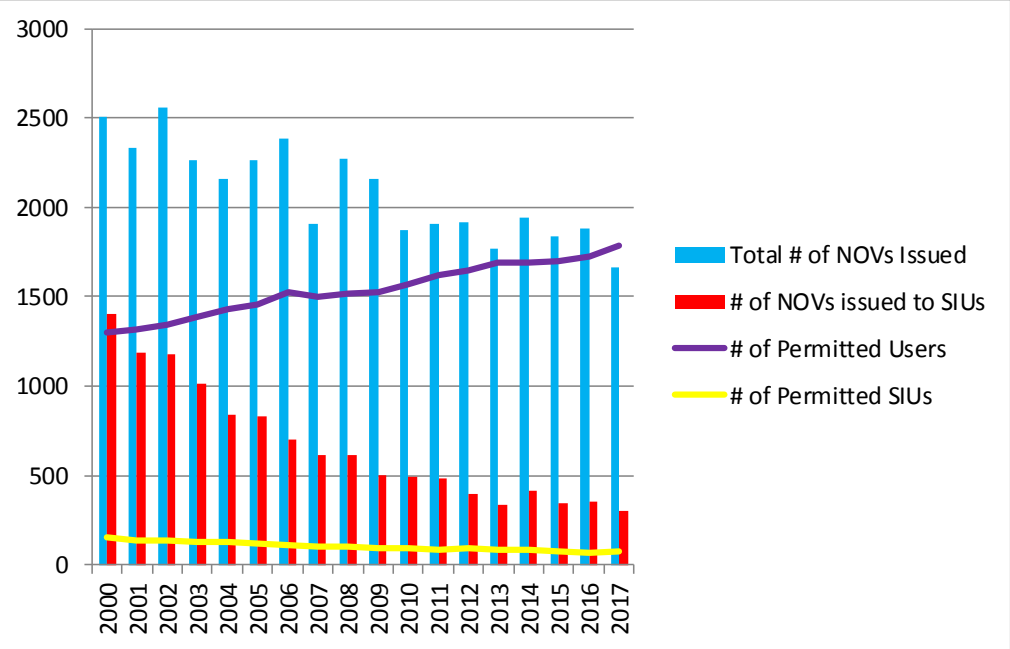
- *Notices of Violation* are issued by the NBC to inform a user of its noncompliance with NBC Rules and Regulations and warn the user that escalated enforcement action may result for continued noncompliance. These letters can be computer generated or may be tailored by the Pretreatment staff. An NOV specifically states that its issuance does not prohibit additional enforcement action. It also informs the violator that the non-compliance may result in publication of the firm's name in The Providence Journal and explains that inclusion on that list will subject the violator to liability for payment of the publication. In addition, NOVs refer the user to free technical and compliance assistance from the ESTA Section. The most typical NOVs are described below. TABLE 37 describes each type of NOV that is issued and the number of each issued in 2017. Examples may be viewed in ATTACHMENT VOLUME I, SECTION 4.

TABLE 37
2017 Notices of Violation

NOTICE OF VIOLATION	DESCRIPTION	NUMBER ISSUED IN 2017
Letter of Deficiency	• Issued by certified mail • Notifies users of deficiencies identified during inspections • Requires corrective actions with specific due dates	99
Failure to Meet Standards	• Issued when NBC or user self-monitoring results indicate a violation of NBC or EPA discharge limitations including monthly average limits • Requires an increase in sampling frequency	105
Notice of pH Violations	• Issued each time a user violates the high or low pH limit as indicated on the user monthly pH report	107
Failure to Submit Monitoring Reports	• Issued monthly to users that fail to submit a Self-Monitoring Compliance (SMCR), pH Monitoring, Zero Discharge Certification or Best Managing Practices (BMP) reports on time	626
Failure to Complete or Sign Required Reports	• Issued to users that do not complete or sign SMCRs or pH Monitoring Reports	5
Failure to Sample and/or Analyze for All Parameters	• Issued to users that did not sample for and/or analyze all required parameters required by their permits	4
Failure to Immediately Report Violations	• Issued to users that fail to notify the NBC within 24 hours of becoming aware of violations of NBC discharge limits in accordance with 40CFR403.12(g)(2)	43
Failure to Satisfy NBC Requirements	• Issued to users that fail to submit required documents or exceeding required completion dates	358
Failure to Pay Permit Fees	• Issued to users greater than 90 days late in paying permit fees	317
Total Notice of Violation Letters Issued		**1,664**

FIGURE 39 graphically shows the number of NOVs issued to all users, the number of NOVs issued to SIUs and the number of permitted users for the period of 2000 through 2017. As can be seen, the total number of NOVs issued is relatively consistent from year to year. There was a 11.4% decrease in the number of NOVs issued to SIUs in 2017 when compared to 2016. However, the number of NOVs issued to SIUs has steadily declined from 2000 to 2017. In fact the number of SIU NOVs decreased by 74.5% since 2000. The number of permitted users increased steadily since 2000. For the period of 2000 to 2016 there has been an overall increase of 33.0% in the number of permitted users. This drastic decrease in the number of NOVs issued to SIUs and the declining trend observed in NOVs issued to all users since 2000, considering the increase in the number of permitted users, can be attributed to the educational efforts of the Pretreatment and ESTA Sections.

FIGURE 39
NOVs ISSUED TO ALL USERS AND SIUs 2000 – 2017



- *Letters of Wastewater Discharge Permit Suspension* are typically issued to SIUs who have not discharged process wastewater to the NBC sewer system for at least 30 days. These letters are issued by the Executive Director. During 2017, the NBC did not issue any letters of suspension. These letters require the user to permanently disconnect the final process discharge line from the NBC sewer line due to their potential to adversely impact the NBC should illegal or unpermitted discharges occur. The suspension of a user permit relieves the user from having to submit monthly monitoring reports. Inspections of these users by Pretreatment staff are still conducted since they still have the potential to impact the NBC sewer system.

- *Annual publication* of user names in the state's largest daily paper will result if a violator meets the criteria for Significant Non-Compliance as defined in 40CFR 403.8(f)(2)(vii). All NOV letters issued during the preceding year contained language warning the industrial user that the name of their firm would be published if their outstanding violation was not quickly corrected. Despite these warnings, the names of eleven firms found to be in SNC with NBC regulations were listed in an advertisement in the PROVIDENCE JOURNAL on February 23, 2018 for violations occurring between October 1, 2016 and December 31, 2017. A copy of this public notice is provided later in this chapter in FIGURE 40.

- *Meetings with users* are held to discuss problems or violations the firm may be experiencing and often produce good results. Before initiating an administrative action and/or assessing an administrative penalty, the parties may reach a resolution of the issues without further enforcement action. At these meetings, the user is informed of its potential financial liability should its non-compliance status continue, often resulting in compliance.

- *Administrative Orders* (AO) are Orders issued by the NBC to address repeated or serious instances of noncompliance. AOs are classified into one of four general types; Compliance Orders, Cease and Desist Orders, Consent Orders/Settlement Agreements and Termination/Suspension of Permit/Service Orders. The AO may or may not assess an administrative penalty. Depending on the type of AO issued, the user may be required to immediately cease discharging or achieve compliance with NBC Rules and Regulations within a specified time frame. AOs are considered the harshest control vehicle for ensuring compliance with NBC regulations. All AOs entitle the alleged violator the right to request a hearing before an independent hearing officer with regard to both the issue of compliance and penalties. AOs are issued by the NBC Chief Legal Counsel.

- *Civil Suits* are filed against users for nonpayment of pretreatment fees or to enforce the terms of an Administrative Order, Consent Order or Final Decision and Order. Depending on the amount outstanding, the suits are filed either in District or Superior Court. These suits are filed only after all other collection avenues have been attempted and were unsuccessful. Firms may pay in full, establish a payment schedule or negotiate a settlement as a result of these suits. During 2017, no civil suits were filed.

2017Administrative Orders

During 2017, the NBC issued two Administrative Orders (AO) for violations of NBC Rules and Regulations and/or permit requirements and sought to resolve two pending AOs. A sample AO is provided in ATTACHMENT VOLUME I, SECTION 4. Furthermore, a history of all enforcement actions taken by the NBC as of December 31, 2017 is found at the end of this chapter in TABLE 39. The table provides a history of the penalties assessed, the penalties paid and the present status of each enforcement action. A brief summary to update the status of pending Administrative Orders is provided later in this chapter.

Field's Point District

- AO #FP-01-17 was issued against Rain Car Wash, a hand car wash company, and Kelvin Sanders, the company president, on April 27, 2017. The AO cited this company for failure to submit plans for the installation of an oil and solids/grit removal system and failure to submit Self-Monitoring Compliance Reports and analytical results for total oil and grease. The AO stated that Rain Car Wash must submit plans for the installation of an oil and solids/grit removal system, implement the plan after review and approval, submit Self-Monitoring Compliance Reports as required by the company's permit, and pay an Administrative Penalty of $4,000.00. The NBC had significant trouble serving the AO on both the business and Mr. Sanders in his personal capacity. Certified mail was only returned as delivered from Mr. Sanders' home address after many attempts to reach him. On October 11, 2017 NBC held a status conference with Mr. Sanders. During this meeting, Mr. Sanders assured NBC staff that he had been in contact with contractors to receive quotes for the installation of the necessary pretreatment device and agreed to begin to make monthly payments on the Administrative Penalty. Since that time, although both the NBC Legal and Pretreatment staff have made many attempts to contact Mr. Sanders or a company representative, Rain Car Wash still has not submitted plans for the installation of a pretreatment device and it has only made two installment payments of $200 each toward the Administrative Penalty. The NBC will continue its efforts to fully enforce the AO against Rain Car Wash.

In addition to AO #FP-01-17, the Pretreatment Section prepared information for an AO Prep Form in late 2016 for Putnam Holdings, Inc. This AO Prep Form requested that an AO be issued for not submitting required Self-Monitoring Compliance Reports and non-payment of fees. The AO was prepared in early 2017. However, prior to the AO being issued, the NBC received notification that Putnam Holdings, Inc. had gone into receivership. Pretreatment staff continued to issue Notices of Violation for the outstanding reports as well as attempted to contact the company on numerous occasions to discuss the matter.

Update of Past Enforcement Actions

- AO # BP-01-15 was issued against Ecological Fibers, Inc., a paper coating and printing company, on October 6, 2015. The AO cited this company for thirty (30) exceedances of the daily maximum concentration discharge limitation for zinc since August 1, 2013. The AO stated that Ecological Fibers must submit a proposal to the NBC to reduce zinc concentrations in order to comply with the NBC daily maximum concentration discharge limitations for zinc, implement said plan after review and approval by the Pretreatment Section, and pay an Administrative Penalty of $22,000.00. On December 9, 2015, NBC held a status conference with representatives from Ecological Fibers. Steps to mitigate the consistent zinc exceedances were discussed during the meeting. Throughout 2016, Ecological Fibers, Inc. addressed house keeping issues at the facility and investigated additional pretreatment technologies. During 2016 the company experienced

twenty-two (22) zinc violations. The company submitted monthly reports on the status of the various treatment projects and the steps that were taken to address these violations. As of September 2016 the company has not had any additional violations of the zinc discharge limitation. The decrease in zinc violations can be attributed to operational changes the company implemented as well as zinc bearing waste streams being sent offsite for disposal. The NBC Legal Section and Ecological Fibers, Inc. negotiated a Consent Order (CO) which was executed on February 8, 2017. The company paid an Administrative Penalty of $10,000. This matter is now closed.

- AO #FP-01-15 was issued against DFI-EP, LLC, a metal finishing company, on January 14, 2016. The AO cited this company for failure to meet effluent discharge limitations for twenty-six (26) exceedences since beginning operations in May of 2014. These twenty-six (26) exceedances included three (3) cadmium violations, two (2) copper violations, eleven (11) nickel violations, three (3) zinc violations, and seven (7) cyanide violations. The AO stated that DFI-EP must submit a proposal to the NBC to reduce effluent concentrations to comply with the Permit, implement the plan after review and approval by the Pretreatment Section, and pay an Administrative Penalty of $23,500.00. On February 2, 2016 NBC held a status conference with representatives from DFI-EP, LLC. During this meeting the company stated repairs had been made to address the violations and it was developing standard operating procedures to address house keeping issues. In addition the company stated that it had expended over $23,000 on repairs and improvements to the pretreatment system. The company was required to submit financial information regarding these expenditures. A Consent Order (CO) was negotiated and executed on November 10, 2016. The CO required the company to achieve and maintain compliance, purchase equipment to conduct inhouse analytical testing, conduct monthly training of its employees and pay an administrative penalty of $8,000. The NBC agreed to conduct a training session for DFI-EP, LLC employees on the impacts of the metal finishing wastewater on the sewer system. This training was conducted by Pretreatment staff on October 25, 2016. The administrative penalty was paid in full by the end of 2017. The company ceased operations at this location in April 2017. This matter is now closed.

2017 Civil Suits

During 2017 the NBC did not issue any civil suits against a permitted company for violations of the Rules and Regulations and the terms of its Wastewater Discharge Permit. Below is an update of the civil action (CA) that was issued in 2012.

- CA #12-2600 was issued against Providence Specialty Products, Inc. (Providence Specialty), a SIU conducting cheese manufacturing operations. Providence Specialty accrued an outstanding balance due to non-payment of permit fees and BOD/TSS surcharges. Letters from the Legal Section were issued to the company on February 15, 2012 and March 20, 2012. The company did not respond to these letters and a complaint was filed with the Superior Court on April 17, 2012 for the

recovery of $87,873.73. The complaint was amended for the balance of $99,735.66. The company was served with the complaint on July 5, 2012. The parties met on September 13, 2012 to discuss the issues. During the discussion, Providence Specialty stated the BOD/TSS surcharge calculations that were performed by the NBC were not accurate because the volume of flow used for the calculations was too high. The company provided documentation to demonstrate that more water is used in the process and not discharged to the sewer. The documentation showed the flow credit that should be used in determining the surcharge should be 50% rather than the 25% used by NBC. At the end of the meeting the parties agreed that Providence Specialty had until January 25, 2013 to respond to the complaint. A site visit of the facility was also agreed on. The site visit was conducted on October 2, 2012. The purpose of the visit was to verify that the increased flow credit was warranted and to determine the most accurate way of monitoring the wastewater discharged from the facility. The company was provided options to accurately measure wastewater flow from the facility. Both parties met again on December 13, 2012. At this meeting Providence Specialty outlined a proposal for payment of the outstanding balance which included BOD/TSS surcharges, permit and consumption fees. A CO was issued and signed by Providence Specialty and NBC on January 31, 2013. Providence Specialty agreed to pay $90,527.11 in monthly installments. During 2017, Providence Specialty continued to pay these installments. As of December 31, 2017, Providence Specialty has paid a total of $61,000.00.

Permit Suspensions

As stated in Article 8.14 of the NBC Rules and Regulations, the Executive Director may suspend the Wastewater Discharge Permit of any user who ceases operations for any period exceeding one month. The suspension does not act as a revocation of the permit, but rather as a temporary suspension of the users' rights under the permit while operations have ceased. During 2017, no Letters of Wastewater Discharge Permit Suspension were issued.

Supplemental Environmental Projects

Supplemental Environmental Projects (SEP) are additional requirements and/or extra activities that may be undertaken by a violator of environmental laws or regulations against whom enforcement action has been taken. In settlement negotiations, the violator or the regulating authority may propose that an environmental project be undertaken in consideration of a reduced penalty.

In no case should the cost of the project to the violator be less than the offset amount of the penalty. A SEP may only be considered for inclusion in a settlement if the total settlement agreement ensures future compliance through corrective measures, a substantial monetary payment is made in addition to the SEP and if an appropriate nexus is demonstrated between the violation and the environmental benefits to be derived from the SEP.
The EPA recognizes five categories of acceptable supplemental environmental projects. The first four categories: pollution prevention projects, pollution reduction projects,

Environmental restoration projects and environmental auditing projects require that the Project demonstrates an appropriate nexus between the nature of the violation and the environmental benefits to be derived. For example, if the violator was cited for repeated pH reporting violations, the purchase and installation of digital or computerized pH monitoring and recording equipment would provide sufficient nexus between the violation and the anticipated benefit to be derived from use of the equipment. The last category, public awareness projects, is not subject to this strict nexus requirement, but must still be related to the type of violation which is the subject of the underlying violations. Pursuant to EPA regulation, general educational and environmental awareness projects are not acceptable as SEPs. In addition, SEPs are less appropriate for repeat offenders.

Environmental Enforcement Fund

During the 1989 Legislative Session, 89-S-786 was passed into law which established the Narragansett Bay Commission Environmental Enforcement Fund (EEF). This fund consists of sums recovered by administrative or civil enforcement actions brought under the authority of Rhode Island General Laws, Chapter 46-25 (the NBC enabling legislation) and may be used for the following:

- Emergency response activities such as site inspections, investigatory reports, collection, monitoring, and analysis of samples of wastewater, spill response, etc.
- Enforcement activities such as legal activities, to enforce the provisions of this chapter, etc.
- Additional activities such as professional and emergency response training, environmental research, public information and education, etc.
- Bay bond debt retirement (discretionary in the event that funds have not been committed for projects within a three year period following their deposit into the fund).

Volunteers from URI collect debris from the Rocks as they participate in a Save the Bay clean-up in Providence

In 2017, six proposals were submitted to the NBC Board of Commissioners for review and were approved, awarding $24,600 collected from environmental violations to projects that enhance the Rhode Island environment and environmental education.

Since the late 1990s, the NBC has successfully sponsored a large Earth Day river cleanup event that focused on beautifying the Woonasquatucket River. In 2013, the NBC initiated a grant program, provided through the EEF, intended to expand the positive impact on multiple rivers throughout the NBC service area rather than focusing solely on the Woonasquatucket River. The NBC continued this grant program in 2017 and was able to assist numerous local organizations, cities and towns by providing 21 small grants that allowed the organizations to purchase the supplies necessary to organize cleanups and perform river restoration activities with the NBC service area. A complete list of the grant award recipients can be found in CHAPTER VII.

A summary of the grants that were awarded Environmental Enforcement Funds in 2017 are listed below in TABLE 38.

TABLE 38
2017 Approved Environmental Enforcement Fund Proposals

EEF#	Company	Project	Amount Awarded
17-001	NBC Earth Day Clean-Up Grant Program	Grant program designed to offer financial assistance in the form of small grants to qualifying organizations conducting Earth Day Clean-Up events within the NBC service district.	$11,000.00
17-002	Blackstone Valley Tourism Council	Contribution to the *Riverclassroom* River Study Program for students to study aboard the Blackstone Valley "Explorer" riverboat.	$2,600.00
17-003	City of Pawtucket	Grant awarded to the Pawtucket Department of Public Works for the distribution of rain barrels as part of a pilot program.	$2,500.00
17-004	Greater Providence YMCA	Support for summer camp scholarships for financially underprivileged children to attend outdoor education programs.	$1,000.00
17-005	The MET School - Leonard Walker Scholarship Fund	Contribution to the Leonard Walker Scholarship Fund to help school children in RI receive a better education at the MET School.	$2,500.00
17-006	NBC Public Affairs	Funding to animate Mr. Can, a grease fighting superhero, in English and Spanish and to create coloring books and activity sheets, and be used as part of the NBC Watershed Explorer Program.	$5,000.00
Total Approved in 2017			**$24,600.00**

Enforcement Response Plan

In accordance with 40CFR§403.8(f)(5), the NBC developed and submitted an Enforcement Response Plan (ERP) to the DEM on February 1, 1993. The plan was officially approved by the DEM on January 12, 1995. The purpose of the plan is to clearly establish anticipated reactions of the agency to specific violations of the relevant environmental laws and regulations. The plan explains the enforcement tools and mechanisms available and employed by the NBC and the Pretreatment Program. The plan suggests timetables for the initiation of enforcement actions that would be followed as soon as practicable after NBC staff becomes aware of any non-complying event. These timetables serve two goals. The timetables avoid continued user non-compliance for extended periods of time by requiring quick enforcement response by the NBC. Secondly, the quick enforcement response guarantees that evidence and memories will not become stale by the time delay that can occur when initiating an enforcement action.

The NBC has revised the ERP to comply with DEM requirements imposed during the year 2000 DEM Pretreatment Compliance Inspection and the RIPDES permits issued by the DEM on December 31, 2001. The revised ERP was submitted to the DEM on August 28, 2002 in accordance with DEM requirements. The plan was approved by the DEM on September 26, 2003.

Publication of Firms in Significant Non-Compliance (SNC)

Federal regulation 40CFR§403.8(f)(2)(vii) requires the NBC to publish at least annually the names of all industrial users in Significant Non-Compliance (SNC) with pretreatment standards or other pretreatment requirements during the preceding 15 months. A list of industrial users found to be in SNC with pretreatment standards and/or administrative requirements for the period of October 1, 2016 through December 31, 2017 were published in an advertisement in the PROVIDENCE JOURNAL on February 23, 2018. A copy of this advertisement is provided in FIGURE 39, while the Confirmation of Publication is provided in FIGURE 40.

During 2006 the NBC Rules and Regulations were modified to incorporate the revised EPA definition of SNC, detailed in the EPA Pretreatment Streamlining Regulations. The NBC complied with Federal regulations to cite any industrial user as being in SNC for violating any of the following criteria:

(a) Chronic violations of wastewater discharge limitations, defined here as those in which 66% or more of all measurements taken in a six (6) month period exceed (by any magnitude) a numerical Pretreatment Standard of Requirement for the same pollutant parameter;

(b) Technical Review Criteria (TRC) violation, defined here as those in which 33% or more of all the measurements for each pollutant parameter taken during a six (6) month period equal or exceed the product of the numerical Pretreatment Standard or Requirement multiplied by the applicable TRC value. (TRC = 1.4 for BOD, TSS, fats, oil, and grease and 1.2 for all other pollutants except pH);

(c) Any other violation of a pretreatment effluent limit (daily maximum or long-term average) that the Commission determines has caused, either alone or in combination with other discharges, pass through or interference (including endangering the health of Commission personnel or the general public);

(d) Any discharge of a pollutant that has caused imminent endangerment to human health, welfare, or the environment, or causes the POTW to exercise its emergency authority to halt or prevent such discharge;

(e) Failure to meet, within 90 days after the scheduled date, a compliance milestone contained in a permit or enforcement order, for starting construction, completing construction, or attaining final compliance;

(f) Failure to provide within 30 days after the due date, required reports such as Baseline Monitoring Reports, 90-day reports, periodic reports, and compliance schedule milestone reports;

(g) Failure to accurately report non-compliance;

(h) Any violation or group of violations that the NBC determines will adversely affect the operation or implementation of the Pretreatment Program.

Based upon extensive user file reviews, the names of nine firms were listed in the February 23, 2018, public notice in the Providence Journal. Of the nine firms listed in SNC, six users are located in Field's Point and three are located in Bucklin Point users. There one firm in SNC subject to EPA categorical standards. This firm is classified as metal finisher and is located in Field’s Point. Two firms are classified as non-categorical significant industrial users. One is located in Field’s Point and conducts cheese manufacturing operations. The other is located in Bucklin Point and conducts barrel washing operations. Six of the firms published are classified as non-significant industrial users. Three of these firms conduct zero discharge jewelry manufacturing operations. One firm conducts plate making operations. One firm conducts mass finishing operations. The remaining firm conducts painting operations. Four of the non-significant industrial users are located in the Field’s Point disctrict and two are located in the Bucklin Point district.

As noted there were nine firms listed in SNC in 2017, a decrease from the eleven firms listed in SNC in 2016. All but three of the nine users listed in the February 23, 2018, SNC Public Notice, had achieved full compliance with the EPA and NBC Rules and Regulations for which they were published prior to the date of publication. Two of the firms that had not returned to full compliance, a zero discharge jewelry manufacturing facility and a plate making facility, were published in SNC for failure to submit reports on time. The reports had still not been received as of the date of the Public Notice. Both of these facilities are now out of business. The remaining firm that did not return to full compliance prior to the publication is a SIU conducting cheese manufacturing operations. The firm has contacted ESTA staff for assistance with returning to compliance. The compliance issues at this firm will be further addressed by Pretreatment in 2018. Three of the firms, two of which are SIUs, were published in SNC for exceeding NBC discharge limitations. The remaining four

firms were published in SNC for failure to submit reports on time, which are administrative violaitons. Additional information regarding the firms listed in SNC is provided in CHAPTERS I and IV. The cost to publish the public notice was billed to the firms listed as being in Significant Non-Compliance.

Publication of Firms in Perfect Compliance

In addition to publishing the annual SNC public notice, the NBC annually publishes the names of firms that achieved perfect compliance during the review period. In 2017, the NBC recognized twenty-three SIUs for achieving perfect compliance with the terms of their permits and the NBC Rules and Regulations. These twenty-three SIUs will be recognized at awards ceremony in April 2018. The 2017 Perfect Compliance advertisement can be seen in FIGURE 42. Additional information regarding the Environmental Merit Awards program can be found in CHAPTER VII.

FIGURE 40
2017 SIGNIFICANT NON-COMPLIANCE PUBLIC NOTICE
THE PROVIDENCE JOURNAL

The Narragansett Bay Commission

PUBLIC NOTICE

Firms in Significant Non-Compliance

THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGULATION 40 C.F.R. 403.8 (f) (2) (viii) and Article 10 of the Narragansett Bay Commission, Rules and Regulations require the NBC to publish annually the names of all industrial users in Significant Non-Compliance (SNC) with pretreatment standards and other pretreatment requirements during the preceding year. Companies deemed to be in Significant Non-Compliance are those industrial users who have violated any of the Significant Non-Compliance criteria listed, as defined by Article 2 of the NBC Rules and Regulations during the time period from October 1, 2015 through December 31, 2016. The parameter for which a company was not in compliance and/or the specific administrative deficiency are listed after the company name. The number(s) in parentheses correspond to the type of SNC criteria specified below. Some of the firms listed below may have been issued an Administrative Order in which administrative and/or civil penalties may have been assessed. Many of the companies listed have made significant progress toward correcting the violation and may now be in compliance.

Significant Non-Compliance Criteria:

(1) Chronic violations of wastewater discharge limits, defined here as those in which 66% or more of all of the measurements taken during a six-month period exceed (by any magnitude) a numerical Pretreatment Standard or Requirement for the same pollutant parameter;

(2) Technical Review Criteria (TRC) violations, defined here as those in which 33% or more of all the measurements for each pollutant parameter taken during a six-month period equal or exceed the product of a numerical Pretreatment Standard or Requirement multiplied by the applicable TRC value (TRC = 1.4 for BOD, TSS, fats, oil, and grease and 1.2 for all other pollutants except pH);

(3) Any other violation of a pretreatment effluent limit (daily maximum or long-term average) that the Commission determines has caused, alone or in combination with other discharges, interference or pass through (including endangering the health of Commission personnel or the general public);

(4) Any discharges of a pollutant that has caused imminent endangerment to human health, welfare or the environment or has resulted in the Commission's exercise of its emergency authority to halt or prevent such a discharge;

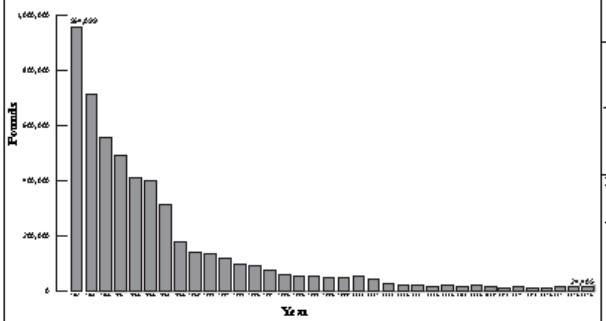
(5) Failure to meet, within 90 days after the scheduled date, a compliance milestone contained in a Commission notification, permit or enforcement order, for starting construction, completing construction or attaining final compliance;

(6) Failure to provide, within 30 days after the due date, required reports such as baseline monitoring reports, 90-day compliance reports, self-monitoring compliance reports and reports on compliance with compliance schedules;

(7) Failure to accurately report noncompliance;

(8) Any other violation or group of violations which the Commission determines has adversely effected the operation or implementation of the Industrial Pretreatment Program. •

Total Metals Influent to Field's Point WWTF, 1981-2016



THE NARRAGANSETT BAY COMMISSION IS COMMITTED TO PROTECTING THE STATE'S TWO LARGEST WASTEWATER TREATMENT FACILITIES AND NARRAGANSETT BAY FROM TOXIC DISCHARGES. This is accomplished by the issuance of discharge permits to commercial and industrial sewer users. These discharge permits specify the level of pollutants that can be discharged in a facility's wastestream and may require a firm to conduct wastewater monitoring to verify compliance with discharge limits, to implement a Spill Control Plan and/or Toxic Organic/Solvent Management Plan, and to install pretreatment equipment. Various reporting and record keeping requirements may also be written into discharge permits. The firms listed in this public notice violated one or more of the significant non-compliance criteria specified above. The Commission is required by the RI DEM and the US EPA to annually publish the names of all firms violating any of these criteria. Therefore, firms must be sure to comply with all the terms specified in their discharge permit to ensure that the name of their firm is not listed in this annual public notice. The NBC offers FREE technical assistance to firms located in the NBC service area through its non-regulatory Office of Environmental, Safety & Technical Assistance. For information on how the NBC Environmental, Safety & Technical Assistance Program can help your firm achieve and maintain compliance, contact the Environmental, Safety & Technical Assistance Program Staff at 461-8848 /TDD 461-6549.

Most businesses located in the NBC district are to be commended for the fine job they have done treating their process discharges to remove toxic pollutants. In 1981, local industries discharged 954,099 pounds of heavy metals such as copper, nickel and zinc and 80,440 pounds of cyanide to the Field's Point Wastewater Treatment Facility. Since 1981, the total metals and cyanide loadings to the Field's Point facility have been reduced by 97.4% and 98.7% respectively. Similar toxic loading reductions have been observed at the NBC Bucklin Point facility.

Bucklin Point Service Area

Lincoln

Company Name	Violations Cited	Present Status
Putnam Holdings, Inc.	Failure to submit reports on time (6)	Reports have not been received.

Pawtucket

Ecological Fibers, Inc.	Zn (2)	Firm is now in compliance.
Rand Whitney Southeast Container, LLC	Cu (2)	Firm is now in compliance.
Bliss Manufacturing Company, Inc.	CN (2)	Firm is now in compliance.
Microfibres, Inc.	Failure to submit reports on time (6)	Firm is out of business.

Field's Point Service Area

Johnston

Company Name	Violations Cited	Present Status
Eastern Screw Company	O&G (2)	Firm is now in compliance.
KB Surfaces	Failure to submit report on time (6)	Report has been received.

North Providence

DFI-EP, LLC	Cr (2), CN (2), Ni (2)	Firm is now in compliance.

Providence

Providence Specialty Product	O&G (1, 2) Failure to submit report on time (6)	Firm is now in compliance. Report has been received.
JC Gorham Co.	Failure to submit report on time (6)	Reports have not been received.
Bella's Jewelry	Failure to submit report on time (6)	Report has not been received.

The Narragansett Bay Commission will continue to lead in wastewater treatment, environmental protection, and environmental education to ensure a cleaner Narragansett Bay for all to enjoy.

Vincent J. Mesolella, *Chairman* • Raymond J. Marshall, P.E., *Executive Director*
Narragansett Bay Commission • One Service Road • Providence, RI 02905 • 401-461-8848 • TDD 401-461-6549 • FAX 401-461-6540 • http://www.narrabay.com
Twitter: @narrabay • Facebook: www.facebook.com/narrabay • Instagram: @narrabay

The cost of this public notice will be billed to the firms listed above that were in significant non-compliance

FIGURE 41
CONFIRMATION OF PUBLICATION OF SNC PUBLIC NOTICE

KETTLE

FRIARS

POLICE DIGEST

Missing license plate leads to gun arrest

School placed on lockdown for hour

Narragansett Bay Commission

Perfect Compliance

The Narragansett Bay Commission recognizes these Significant Industrial User companies for perfect regulatory compliance with Pretreatment Program regulations during 2017:

A. Harrison & Company, Inc.
Dominion Energy Manufacturer Sr., Inc.
Hood Crystal Corporation
International Chromium Plating Mahr, Inc.
Metallurgical Solutions, Inc.
Pawtucket Power Associates
Pilgrim Screw Corporation
Providence Journal Company Production Facility
Tenaxy Industries PVD, Inc.
Teknikom, Inc.
Unitrol USA, Inc.
Eagle Laundry, Inc.
Electrolizing, Inc.
HP Services, Inc.
Indiplate, LLC
Materion Technical Materials, Inc.
Interplex Engineered Products, Inc.
Narragansett Jewelry, dba C & J Jewelry Company
Providence Metallizing Company, Inc.
Stadtler Corporation
Technocite, Inc.
Trans, Inc.

Has your company demonstrated extraordinary environmental efforts this year?

The Narragansett Bay Commission

PUBLIC NOTICE

Firms in Significant Non-Compliance

Two Great Rates!

2.00%APY* 15-month CD | 2.10%APY* 24-month CD

*The minimum to open each account is $1,000

Greenwood Credit Union

A safe, simple, practical investment. Greenwood leads the way with higher CD rates. No hidden restrictions.

Visit our branch today or open online.

2689 Post Rd, Warwick, RI 02886 | 401-739-4000 | greenwoodcu.org

FIGURE 42
2017 PERFECT COMPLIANCE ADVERTISEMENT
PROVIDENCE JOURNAL

TABLE 39
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/17
FIELD'S POINT

NFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
NOV #1 F. RONCI CO.	01/31/1986	HEARING AWARDED $219,950.00 COURT REVERSED AWARD	N/A	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
NOV #2 ABATE & URSILLO COMPANY	03/20/1987	CONSENT ORDER 05/01/87 BANKRUPT	N/A	$23,000.00	$2,683.31	$20,316.69	$1,500.00	$1,500.00	$0.00	$750.00	$750.00	$0.00
NOV #3 ASTRO PLATING WORKS	05/13/1987	CONSENT ORDER 08/20/87	N/A	$70,000.00	$70,000.00	$0.00	$4,000.00	$4,000.00	$0.00	$19,500.00	$19,500.00	$0.00
NOV #4 A & J JEWELRY CO.	10/07/1987	CONSENT ORDER 11/13/87	N/A	$7,500.00	$7,500.00	$0.00	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00
NOV #5 RAU FASTENERS, INC.	10/12/1987	CONSENT ORDER 07/23/90	N/A	$50,000.00	$50,000.00	$0.00	$2,000.00	$2,000.00	$0.00	$117,500.00	$117,500.00	$0.00
NOV #6 H.M. PLATING CO.	12/10/1987	NOV RESCINDED	N/A	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
NOV #7 ANTONELLI PLATING CO.	12/07/1987	NOV RESCINDED	N/A	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
NOV #8 H.M. PLATING CO.	09/14/1988	CONSENT ORDER 01/13/89 BANKRUPT	N/A	$15,000.00	$3,000.00	$12,000.00	$2,000.00	$2,000.00	$0.00	$1,750.00	$1,750.00	$0.00
NOV #9 BIANCO PLATING CO.	10/04/1988	CONSENT ORDER 03/10/89 BANKRUPT	N/A	$23,000.00	$7,800.00	$15,200.00	$8,400.00	$8,400.00	$0.00	$500.00	$500.00	$0.00
NOV #10 PROCRAFT, INC.	02/16/1989	CONSENT ORDER 04/27/90	N/A	$1,500.00	$1,500.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
NOV #11 CONCORDE BUCKLE CO.	08/04/1989	CONSENT ORDER 03/20/90	N/A	$7,500.00	$7,500.00	$0.00	$1,000.00	$1,000.00	$0.00	$0.00	$0.00	$0.00

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NOV #12 GALAXY GOLD, INC.	11/01/1989	CONSENT ORDER 04/27/90 PERMIT REVOKED 10/26/89	N/A	$6,300.00	$6,300.00	$0.00	$2,193.00	$2,193.00	$0.00	$0.00	$0.00	$0.00
NOV #13 SCIENTIFIC METAL FINISHING	11/01/1989	NOV RESCINDED	N/A	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
NOV #14 EASTLAND/ NU-WAY FOOD PRODUCTS	11/01/1989	CONSENT ORDER 03/29/90	N/A	$3,000.00	$3,000.00	$0.00	$12,254.00	$12,254.00	$0.00	$0.00	$0.00	$0.00
NOV #15 GOLD CROWN, INC.	02/15/1990	CONSENT ORDER 09/11/90	N/A	$10,000.00	$10,000.00	$0.00	$2,270.00	$2,270.00	$0.00	$0.00	$0.00	$0.00
NOV #16 SCIENTIFIC METAL FINISHING/S. MARCOS	12/22/1989	CONSENT ORDER 07/25/90 BANKRUPT	N/A	$12,500.00	$5,200.00	$7,300.00	$7,700.00	$2,500.00	$5,200.00	$1,500.00	$500.00	$1,000.00
NOV #17 SCIENTIFIC METAL FINISHING/ J. ROACH	12/22/1989	TERMS INCORPORATED INTO THE ABOVE CONSENT ORDER		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
NOV #18 ELECTRONIC PRECISION	02/15/1990	NOV RESCINDED MERGED W/ NOV #27	N/A	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
NOV #19 AMICARELLI & EASTMAN	05/15/1990	NOV RESCINDED	N/A	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
NOV #20 ARC ENTERPRISE	05/15/1990	HEARING ORDER 08/29/90 DEBTOR INSOLVENT	N/A	$6,000.00	$0.00	$6,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
NOV #21 ELECTROLIZING	06/07/1990	CONSENT ORDER 01/16/91	$68,000.00	$8,000.00	$8,000.00	$0.00	$4,000.00	$4,000.00	$0.00	$0.00	$0.00	$0.00
NOV #22 RHODE ISLAND CLEANERS	06/11/1990	HEARING ORDER 10/02/90 CONSENT ORDER 07/14/92	$15,000.00	$15,000.00 w/ $4,000.00 SUSPENDED	$11,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

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NOV #23 QUALITEX, INC.	07/05/1990	CONSENT ORDER 10/19/90	N/A	$25,000.00	$25,000.00	$0.00	$5,193.92	$5,193.92	$0.00	$5,000.00	$5,000.00	$0.00
NOV #24 PROVIDENCE HOUSING AUTHORITY	08/23/1990	CONSENT ORDER 11/01/90	$4,000.00	$0.00	$0.00	$0.00	$7,614.88	$7,614.88	$0.00	$0.00	$0.00	$0.00
NOV #25 JOHNSTON DRESSED BEEF & VEAL CO.	08/29/1990	HEARING ORDER 11/14/90	N/A	$23,000.00	$23,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
NOV #26 J.V. PLATING CO.	09/04/1990	CONSENT ORDER 04/09/91 BANKRUPT	$22,000.00	$3,000.00	$1,750.00	$1,250.00	$2,260.00	$1,130.00	$1,130.00	$750.00	$0.00	$750.00
NOV #27 ELECTRONIC PRECISION CIRCUITRY	09/24/1990	CONSENT ORDER 01/07/91	N/A	$12,300.00	$12,300.00	$0.00	$7,700.00	$7,700.00	$0.00	$0.00	$0.00	$0.00
NOV #28 WALLACE COMPANY	10/26/1990	BANKRUPT	N/A	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
NOV #29 APAC TOOL, INC.	10/26/1990	CONSENT ORDER 04/23/91	$8,000.00	$2,498.00	$2,498.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
NOV #30 D'AMBRA CONSTRUCTION	12/19/1990	CONSENT ORDER 06/11/92	N/A	$2,000.00	$2,000.00	$0.00	$7,000.00	$7,000.00	$0.00	$0.00	$0.00	$0.00
NOV #31 NEW ENGLAND TELEPHONE & TELEGRAPH CO.	01/10/1991	CONSENT ORDER 06/13/91	$9,910.00	$8,000.00	$8,000.00	$0.00	$1,910.00	$1,910.00	$0.00	$0.00	$0.00	$0.00
NOV #32 ALLENS MANUFACTURIN G CO.	01/10/1991	CONSENT ORDER 09/06/91	$54,000.00	$2,870.00	$2,870.00	$0.00	$2,810.00	$2,810.00	$0.00	$0.00	$0.00	$0.00
NOV #33 PROVIDENCE COLLEGE	02/07/1991	MERGED WITH NOV #34 CONSENT ORDER 07/15/91	$7,200.00	$12,000.00	$12,000.00	$0.00	$2,320.00	$2,320.00	$0.00	$0.00	$0.00	$0.00

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NOV #34 PROVIDENCE COLLEGE	02/15/1991	MERGED WITH NOV #33 SEE ABOVE	N/A	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
NOV #35 VANITY JEWELRY	03/13/1991	CONSENT ORDER 05/10/91	$1,250.00	$1,250.00	$1,250.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #1 QUALITY STAMPING	06/25/1991	CONSENT JUDGMENT 04/26/96	$25,000.00	$5,000.00	$5,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #2 JOHN OLSON & SONS	07/03/1991	CONSENT ORDER 06/09/92	$22,000.00	$4,500.00	$4,500.00	$0.00	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00
AO #3 D & D PLATING	08/26/1991	CONSENT ORDER 02/11/92	$9,250.00	$3,000.00	$3,000.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #4 DON-LIN JEWELRY CO.	08/26/1991	CONSENT ORDER 01/13/92	$4,218.00	$2,500.00	$2,500.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #5 FEDERAL PRODUCTS	08/26/1991	CONSENT ORDER 12/26/91	$4,250.00	$2,500.00	$2,500.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #6 SMITH JEWELRY SERVICE CO.	08/26/1991	IMMEDIATE COMPLIANCE ORDER	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #7 F. RONCI (SMITH ST.)	10/10/1991	BANKRUPT	$171,850.00	$170,850.00	$0.00	$170,850.00	$1,000.00	$0.00	$1,000.00	$0.00	$0.00	$0.00
AO #8 F. RONCI (ATLANTIC BLVD.)	10/10/1991	BANKRUPT	$52,200.00	$51,700.00	$0.00	$51,700.00	$500.00	$0.00	$500.00	$0.00	$0.00	$0.00
AO #9 CH SPRAGUE	10/10/1991	CONSENT ORDER 05/06/92	$15,000.00	$4,000.00	$4,000.00	$0.00	$2,000.00	$2,000.00	$0.00	$0.00	$0.00	$0.00

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AO #10 QUALITY PLATING	12/04/1991	DEBTOR INSOLVENT	$40,135.00	$39,650.00	$0.00	$39,650.00	$485.00	$0.00	$485.00	$0.00	$0.00	$0.00
AO #11 GENERAL ELECTRIC	10/28/1991	COMPLIED WITH ORDER	$6,885.00	$6,885.00	$6,885.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #12 ALLENS MFG. CO.	12/04/1991	PERMIT FEES PAID FINE WAIVED	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #13 ELECTROBRITE COATING CO.	12/14/1991	PERMIT FEES PAID FINE WAIVED	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #14 MERCURY POLISHING & PLATING	12/14/1991	PERMIT FEES PAID FINE WAIVED	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #15 GABRIELE'S, IND.	12/14/1991	COMPLIED WITH ORDER	$250.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #16 DUNC'S PLATING	12/14/1991	COMPLIED WITH ORDER	$250.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #17 SAMSON MFG., LTD.	12/14/1991	AO RESCINDED	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #18 STARBRITE PLATING	12/14/1991	COMPLIED WITH ORDER	$250.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #19 ASTRO PLATING WORKS	12/14/1991	COMPLIED WITH ORDER	$250.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #20 QUALITY PLATING CO.	12/14/1991	AO RESCINDED	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

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AO #21 CLAYTON CO.	01/22/1992	CONSENT ORDER 12/07/92	$9,882.00	$6,000.00	$6,000.00	$0.00	$382.00	$382.00	$0.00	$0.00	$0.00	$0.00
AO #22 JEWELS BY PATRICIA	01/22/1992	CONSENT ORDER 05/18/92	$10,500.00	$2,500.00	$2,500.00	$0.00	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00
AO #23 J.V. PLATING	01/22/1992	BANKRUPT	$250.00	$250.00	$0.00	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #24 QUAKER PLATING	01/23/1992	CONSENT ORDER 06/19/92	$14,600.00	$5,900.00	$5,900.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #25 GOLD CROWN	01/23/1992	CONSENT ORDER 07/08/93	$19,000.00	$9,000.00	$9,000.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #27 QUEBECOR PRINTING	01/07/1992	CONSENT ORDER 06/29/93	$22,250.00	$10,000.00	$10,000.00	$0.00	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00
AO # FP-01-92 ANTONELLI PLATING	04/03/1992	MERGED WITH #FP-02-92 CONSENT ORDER 07/23/92	$250.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # FP-02-92 ANTONELLI CASTING	04/03/1992	MERGED WITH #FP-01-92 SEE ABOVE	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # FP-03-92 GOLD CROWN	05/26/1992	IMMEDIATE COMPLIANCE ORDER	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # FP-04-92 ALLENS MFG.	06/04/1992	BANKRUPT	$11,250.00	$11,250.00	$0.00	$11,250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # FP-05-92 GENERAL ELECTRIC	09/01/1992	CONSENT ORDER 08/10/93	$9,500.00	$7,500.00	$7,500.00	$0.00	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00

TABLE 39
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/17
FIELD'S POINT

NFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
AO # FP-06-92 DUNC'S PLATING	11/12/1992	PERMIT FEES PAID FINE WAIVED	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # FP-07-92 BROAD STREET CAR WASH	11/12/1992	CONSENT ORDER 01/06/93	$250.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # FP-08-92 CAFFE PAZZO	12/16/1992	CONSENT ORDER 07/07/93 BUSINESS CHANGED OWNERSHIP	$2,500.00	$500.00	$100.00	$400.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # FP-09-92 AIR CLEANING CONCEPTS	12/23/1992	COMPLIANCE ORDER	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-01-93 FEDERATED METALS	03/29/1993	CONSENT ORDER 06/17/93	$12,250.00	$1,500.00	$1,500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-02-93 EASTERN COLOR & CHEMICAL	03/29/1993	CONSENT ORDER 07/08/93	$23,000.00	$10,000.00	$10,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-03-93 B B GREENBERG	03/29/1993	BANKRUPT	$7,500.00	$7,500.00	$0.00	$7,500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-04-93 ROCCHIO & SONS	05/05/1993	CONSENT ORDER 05/19/97	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-05-93 RI DEPT OF TRANS.	05/05/1993	SAME CASE AS ABOVE	SAME CASE AS ABOVE	SAME CASE AS ABOVE	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # FP-06-93 GFB/ADMIRAL NORGETOWN	05/18/1993	OUT OF BUSINESS	$1,000.00	$1,000.00	$0.00	$1,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # FP-07-93 NEW RIVERS RESTAURANT	07/14/1993	CONSENT ORDER 12/03/93	$1,500.00	$200.00	$200	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

TABLE 39
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/17
FIELD'S POINT

NFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
AO #FP-08-93 MERCURY POLISHING & PLATING CO.	07/22/1993	BANKRUPT/ TERMINATION OF PERMIT	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # FP-09-93 RAU FASTENER	07/23/1993	CONSENT ORDER 05/06/94	$25,000.00	$7,500.00	$7,500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # FP-10-93 ALLENS MFG. CO.	07/26/1993	BANKRUPT	$11,000.00	$11,000.00	$0.00	$11,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # FP-11-93 MERIT PLATING	08/06/1993	CONSENT ORDER 04/28/94 BUSINESS CLOSED	$25,000.00	$5,000.00	$0.00	$5,000.00	$500.00	$0.00	$500.00	$0.00	$0.00	$0.00
AO #FP-12-93 R.E.STURDY COMPANY	12/08/1993	COMPLIED WITH ORDER	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-13-93 PROVIDENCE ELECTRO-PLATING	12/30/1993	CONSENT ORDER 10/17/95	$20,000.00	$1,000.00 $5,000.00 (SEP)	$1,000.00 $5,000.00 (SEP)	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #FP-14-93 FBF, INCORPORATED	12/30/93 AMENDED 09/13/95	CONSENT ORDER 10/31/95 BUSINESS CLOSED	$31,000.00	$5,000.00	$0.00	$5,000.00	$250.00	$0.00	$250.00	$0.00	$0.00	$0.00
AO #FP-15-93 GEMCRAFT	12/30/1993	CONSENT ORDER 07/21/94	$16,000.00	SEP ($11,000)	SEP($11,000)	$0.00	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00
AO #FP-01-94 JOHNSTON DRESSED BEEF	04/08/1994	COMPLIED WITH ORDER	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-02-94 QUAKER PLATING	04/19/1994	CONSENT ORDER 06/06/94	$13,000.00	$3,000.00	$3,000.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #FP-03-94 YEA, YEA INC./SGUMBATO & SONS	4/19/94 AMENDED 11/20/95	CONSENT ORDER 09/23/96	$10,000.00	$5,000.00	$5,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

TABLE 39
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/17
FIELD'S POINT

NFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
AO #FP-04-94 SHOOTER'S AT INDIA POINT	04/22/1994	CONSENT ORDER 10/12/94	$2,500.00	$2,500.00	$2,500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-05-94 EVANS PLATING	06/24/1994	CONSENT ORDER 08/03/95	$29,000.00	$2,500 $6,000.00 (SEP)	$2,500.00 $6,000.00 (SEP)	$0.00	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00
AO #FP-06-94 RHODE ISLAND PUBLIC TRANSIT AUTHORITY	07/13/1994	COMPLIED WITH ORDER	$11,000.00 CONDITION ON NON-COMPLIANCE	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-07-94 T & J CONTAINER	07/20/1994	CONSENT ORDER 09/27/94	$4,000.00	$1,000.00	$1,000.00	$0.00	$152.94	$152.94	$0.00	$0.00	$0.00	$0.00
AO #FP-08-94 COLORLAB, LTD.	08/25/1994	CONSENT ORDER 11/09/94	$5,000.00	$500.00	$500.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #FP-09-94 PDQ PHOTO	08/25/1994	CONSENT ORDER 11/09/94	$5,000.00	$500.00	$500.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #FP-11-94 IDEAL PLATING	11/02/1994	CONSENT ORDER 08/07/95	$15,000.00	$2,500.00 $2,500.00 (SEP)	$2,500.00 $2,500.00 (SEP)	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #FP-12-94 BLUE GROTTO RESTAURANT	10/07/1994	CONSENT ORDER 05/30/95 BANKRUPT	$5,000.00	$2,000.00	$700.01	$1,299.99	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-13-94 GOLDEN DRAGON RESTAURANT	10/07/1994	CONSENT ORDER 02/02/95	$5,000.00	$1,000.00	$1,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-14-94 T. SARDELLI & SONS	10/07/1994	CONSENT ORDER 01/03/95	$15,000.00	$5,000.00	$5,000.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #FP-15-94 LINCOLN PARK	10/27/1994	SETTLEMENT	$5,000.00	$5,000.00	$5,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

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FIELD'S POINT

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AO #FP-16-94 PASTA ETC	11/07/1994	BUSINESS CLOSED	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-17-94 A.A. WRECKING	11/18/1994	SETTLEMENT	$10,000.00	$500.00	$500.00	$0.00	$5,997.44	$5,997.44	$0.00	$0.00	$0.00	$0.00
AO #FP-01-95 EAGLE PLATING CO, INC	05/30/1995	CONSENT ORDER 09/03/96	$50,000.00	$7,500.00	$7,500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-02-95 RUMSTICK DINNER	06/08/1995	AO RESCINDED 10/18/95 BUSINESS CLOSED	$5,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-03-95 D'AGOSTINO'S AUTO SALVAGE, INC	07/10/1995	CONSENT ORDER 11/27/95	$11,000.00	$2,750.00	$2,750.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #FP-04-95 CENTURY PLATING INTERNATIONAL INC	07/10/1995	CONSENT ORDER 08/30/95	$33,000.00	$7,500.00	$7,500.00	$0.00	$500.00	$500.00	$0.00	$200.00	$200.00	$0.00
AO #FP-05-95 CARABELLA'S RESTAURANT	09/14/1995	AO RESCINDED	$5,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-06-95 KELLY'S CAR WASH	10/04/1995	CONSENT ORDER 02/29/96	$5,000.00	$2,500.00	$2,500.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #FP-07-95 FINISHING CONCEPTS, INC	10/05/1995	CONSENT ORDER 11/27/95	$20,000.00	$5,000.00	$5,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-08-95 CRC, CORP	11/21/1995	CONSENT ORDER 04/01/96	$1,000.00	PUBLIC AWARENESS AD $519.70	$519.70	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-09-95 THAILAND RESTAURANT	10/10/1995	CONSENT ORDER 11/20/96	$5,000.00	$200.00	$200.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

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AO #FP-10-95 RAU FASTENERS, LLC	12/28/1995	CONSENT ORDER 02/20/96	$13,000.00	$9,900.00	$9,900.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-01-96 OPTI FINISHING TECHNOLOGIES	04/09/1996 AMENDED 06/13/1996	PERMIT REVOKED	$18,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-02-96 RIBCO MFG. INC	04/09/1996	CONSENT ORDER 05/31/96	$10,000.00	$10,000.00	$10,000.00	$0.00	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00
AO #FP-03-96 DUNC'S PLATING CO.	04/25/1996	CONSENT ORDER 06/24/96	$5,000.00	$1,200.00	$1,200.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-04-96 NORTH PROVIDENCE MEDICAL SERVICES, INC.	07/02/1996	CONSENT ORDER 09/18/96	$0.00 COMPLIANCE ORDER	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-05-96 PRECISION INDUSTRIES	09/04/1996	CONSENT ORDER 11/20/96	$7,000.00	$1,500.00	$1,500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-06-96 A&F PLATING CO., INC.	09/25/1996	MERGED WITH # FP-08-96	$25,000.00	MERGED WITH FP-08-96	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-07-96 REGENCY PLAZA ASSOCIATES	09/25/1996	CONSENT ORDER 01/13/97	$10,000.00	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-08-96 A&F PLATING CO., INC.	12/19/1996	PROSECTUED CRIMINALLY	$160,000.00	$15,000.00	$15,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-01-97 FOTO FINISH	06/12/1997	PERMIT FEES PAID CONSENT JUDGMENT 10/15/97 BUSINESS CLOSED	$5,000.00	$1,000.00	$751.06	$248.94	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-02-97 BEAUCRAFT, INC.	11/20/1997	CONSENT ORDER 01/15/98	$14,000.00	$5,750.00	$5,750.00	$0.00	$250.00	$250.00	$0.00	$400.00	$400.00	$0.00

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AO #FP-03-97 QUAKER PLATING COMPANY, INC.	12/30/1997	CONSENT ORDER 10/14/99	$52,000.00	$26,500.00	$26,500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-01-98 HAB TOOL, INC.	02/24/1998	CONSENT ORDER 05/21/98	$10,000.00	$2,500.00	$2,500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-02-98 AD-TECH, INC.	03/17/1998	HEARING HELD APPEAL PENDING	$40,500.00	$75,000.00 AWARDED AT HEARING	$0.00	$75,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-03-98 ALLENS MFG. CO., INC.	03/25/1998	RESOLUTION THRU BANKRUPTCY	$23,000.00	23,000.00	$23,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-04-98 DIMEO CONTRUCTION	06/18/1998	CONSENT ORDER 12/16/98	$1,500.00	$500.00 PUBLIC NOTICE ($459.60)	$959.60	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-05-98 RAWCLIFF CORPORATION	12/10/1998	CONSENT ORDER 03/30/99	$2,500.00	PUBLIC NOTICE ($597.75)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-06-98 RENCLIF, INC.	12/29/1998	CONSENT ORDER 03/18/99	$5,000.00	$1,000.00	$1,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-01-99 HAMILTON TOOL, INC.	03/02/1999	CONSENT ORDER 04/06/00 PERMIT FEES PAID	$5,000.00	$2,500.00	$2,500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-01-00 CROWN PLATING, INC.	06/20/2000	SUPERIOR COURT STIPULATION FOR PAYMENT OF $12,000 FOR PERMIT FEES FINE WAIVED	$6,250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-02-00 ULTRA METAL FINISHING, INC.	12/28/2000	INCOPORATED INTO AO#FP-02-01 BANKRUPT	$22,000.00	$22,0000	$0.00	$22,000	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-03-00 EASTERN WIRE PRODUCTS CORP.	12/28/2000	CONSENT ORDER 10/30/01	$105,000.00	$10,000.00	$9,150.00 (per accelerated payment plan)	$0.00	$2,000.00	$1,925.00 (per accelerated payment plan)	$0.00	$0.00	$0.00	$0.00

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AO#FP-01-01 MICHAEL MARSOCCI	10/31/2001	CONSENT ORDER 05/02/02	$5,000.00	$750.00	$750.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO#FP-02-01 ULTRA METAL FINISHING CO., INC.	12/27/2001	PERMIT REVOKED BUSINESS CLOSED BANKRUPT	$5,000.00	$5,000	$0.00	$5,000	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO#FP-01-02 RICHARD FULLER	02/05/2002	CONSENT ORDER 05/16/02	$5,000.00	$750.00	$750.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO#FP-02-02 D&L SALES	04/11/2002	CONSENT ORDER 02/25/03	$10,000.00	$2,500.00	$2,500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO#FP-03-02 RI CESSPOOL CLEANERS, INC.	05/14/2002	CONSENT ORDER 06/17/02	$5,000.00	$1,250.00	$1,250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO#FP-04-02 C&J JEWELRY COMPANY, INC.	10/17/2002	CONSENT ORDER 12/11/02	$10,000.00	$5,000.00	$5,000.00	$0.00	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00
AO#FP-05-02 TOWN OF JOHNSTON	10/24/2002	AO SUSPENDED FOR COMPLIANCE	$25,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-01-03 TOWN OF JOHNSTON	09/10/2003	AO SUSPENDED FOR COMPLIANCE	$10,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-02-03 VICTORY FINISHING TECHNOLOGIES	09/10/2003	CONSENT ORDER 6/8/05	$55,000.00	$5000.00	$5000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-03-03 NEW ENGLAND INDUSTRIES	09/10/2003	CONSENT ORDER 3/9/04	$35,000.00	$1,500.00	$1,500.00	$0.00	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00
AO #FP-01-04 ELMHURST EXTENDED CARE	3/5/2004	CONSE4NT ORDER 10/27/04	$20,000.00	$7,500.00	$7,500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

TABLE 39
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/17
FIELD'S POINT

NFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
AO #FP-02-04 ROGER WILLIAMS MEDICAL CENTER	03/05/2004	CONSENT ORDER 10/27/04	$30,000.00	$12,500.00	$12,500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-01-05 WAL-MART STORES, INC.	10/17/2005	SETTLEMENT AGREEMENT 09/18/06 $40,000 CONTRIBUTION MADE FOR MAINTENANCE AND RIVER CLEANUPS	$61,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-01-07 PHILIP McKENDALL D/B/A LA PRIMA CAFFE	09/05/2007	CONSENT ORDER 11/19/07	$7,500	$2,500	$2,500	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-01-08 JRB ASSOCIATES INC.	08/25/08	CONSENT ORDER 4/15/09	$67,000	$24,000.00	$24,000	$0.00	$0.00	$0.00	$0.00	$575.00	$575.00	$0.00
AO #FP-01-09 AO #FP-02-09 MAZEY'S RESTAURANTS	10/8/2009	SETTLEMENT VIA SUPERIOR COURT STIPULATION FOR PAYMENT OF $640 10/24/13	$18,500	$640.00	$640.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
CIVIL ACTION #12-2600 PROVIDENCE SPECIALTY PRODUCTS, INC.	4/17/2012	CONSENT ORDER 1/31/13	$127,018.60	$90,527.11	$61,000	$29,527.11	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-01-15 DFI-EP, LLC	1/14/16	CONSENT ORDER 11/10/16	$23,500	$8,000	$8,000	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-01-7 RAIN CAR WASH	4/27/17	PENDING	$4,000	$4000	$400	$3,600	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

TABLE 39
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/17
BUCKLIN POINT

ENFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
BVDC NOV/ORDER LYNCH PAINT	JAN-87	BANKRUPT	$5,000.00	$1,000.00	$0.00	$1,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
BVDC NOV/ORDER LIBERTY PLATING	12/04/1987	CONSENT AGREEMENT 01/29/88	$85,500.00	$18,000.00 ($85,500.00 W/ $67,500.00 SUSPENDED)	$18,000.00	$0.00	$266.35	$266.35	$0.00	$0.00	$0.00	$0.00
BVDC NOV/ORDER #1 COLFAX, INC.	06/10/1988	SETTLEMENT AGREEMENT 09/08/88	$324,000.00	$60,000.00	$60,000.00	$0.00	$57,793.10	$57,793.10	$0.00	$0.00	$0.00	$0.00
BVDC NOV/ORDER TANYA CREATIONS	02/03/1989	CONSENT AGREEMENT 03/07/89	$54,000.00	$24,000.00 ($54,000 W/ $30,000 SUSPENDED)	$24,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
BVDC CHEMART COMPANY	04/17/1989	CONSENT AGREEMENT 09/29/89	$20,000.00	$5,000.00 ($10,000.00 w/ $5,000.00 SUSPENDED)	$5,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
BVDC NOV/ORDER NULCO MFG CORP	08/21/1989	CONSENT ORDER 05/01/90	$126,000.00	$21,000.00 ($42,000.00 W/ $21,000.00 SUSPENDED)	$21,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
BVDC NOV/ORDER #2 COLFAX, INC.	03/16/1990	SETTLEMENT AGREEMENT 07/11/90	$125,000.00	$12,500.00 ($20,000.00 W/ $7,500 SUSPENDED)	$12,500.00	$0.00	$10,117.98	$10,117.98	$0.00	2,000.00	$2,000.00	$0.00
BVDC NOV/ORDER NEWMAN CROSBY	04/10/1990	CONSENT ORDER 08/20/90	$10,500.00	$6,000.00 ($10,500.00 W/ $4,500.00 DEFERRED)	$6,000.00	$0.00	$4,403.26	$4,403.26	$0.00	$0.00	$0.00	$0.00
BVDC NOV/ORDER #3 COLFAX, INC.	07/06/1990	SETTLEMENT AGREEMENT 09/25/90	$25,000.00	$5,000.00	$5,000.00	$0.00	$6,562.15	$6,562.15	$0.00	$0.00	$0.00	$0.00
BVDC NOV/ORDER #4 COLFAX, INC.	08/08/1990	SETTLEMENT AGREEMENT 10/16/90	$380,000.00	$13,000.00	$13,000.00	$0.00	$42,056.29	$42,056.29	$0.00	$0.00	$0.00	$0.00
BVDC NOV/ORDER #5 COLFAX, INC.	12/13/1990	SETTLEMENT AGREEMENT 02/26/91	$20,000.00	$0.00	$0.00	$0.00	$2,867.65	$2,867.65	$0.00	$0.00	$0.00	$0.00
BVDC NOV/ORDER MICROFIBRES	07/31/1991	COMPLIED WITH CONDITIONAL ORDER	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

TABLE 39
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/17
BUCKLIN POINT

ENFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
BVDC NOV VITRUS, INC.	09/17/1991	SETTLEMENT AGREEMENT 10/2/91	$0.00	$0.00	$0.00	$0.00	$1,025.54	$1,025.54	$0.00	$0.00	$0.00	$0.00
A0 #BP-01-92 DORETTE, INC.	04/22/1992	PERMIT FEES PAID FINE WAIVED	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-02-92 CELTIC PUB	04/22/1992	PERMIT FEES PAID FINE WAIVED	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-03-92 PIZZA PALACE	04/22/1992	BUSINESS CLOSED FINE WAIVED	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # BP-04-92 BILL'S RESTAURANT	04/22/1992	PERMIT FEES PAID FINE WAIVED	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-05-92 CHRISTINE'S OF CUMBERLAND	04/22/1992	PERMIT FEES PAID FINE WAIVED	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-06-92 VISTAWALL, INC.	04/22/1992	COMPLIED WITH ORDER	$250.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # BP-07-92 JACY'S SALAD BAR	04/22/1992	BUSINESS CLOSED FINE WAIVED	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # BP-08-92 KING'S LAUNDRY	04/22/1992	PERMIT FEES PAID FINE WAIVED	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-09-92 WASHING WELL LAUNDROMAT	04/22/1992	PERMIT FEES PAID FINE WAIVED	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-10-92 BRAXTON'S, INC.	04/22/1992	BUSINESS CLOSED FINE WAIVED	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

TABLE 39
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/17
BUCKLIN POINT

ENFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
AO #BP-11-92 WOODLAWN FISH & CHIPS	04/22/1992	PERMIT FEES PAID FINE WAIVED	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-12-92 LITTLE ANTHONY'S RESTAURANT	04/22/1992	CHANGED OWNERSHIP FINE WAIVED	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # BP-13-92 SMITHFIELD AVENUE LAUNDROMAT	04/22/1992	CHANGED OWNERSHIP FINE WAIVED	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-14-92 JEHA'S TEXACO	04/22/1992	PERMIT FEES PAID FINE WAIVED	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-15-92 ESTRELA DO MAR RESTAURANT	04/22/1992	PERMIT FEES PAID FINE WAIVED	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-16-92 RICOTTI'S SANDWICH SHOP	04/22/1992	COMPLIED WITH ORDER	$100.00	$100.00	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-17-92 UNCLE TONY'S PIZZA	04/22/1992	PERMIT FEES PAID FINE WAIVED	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-18-92 SERRA DE ESTRELA RESTAURANT	04/22/1992	COMPLIED WITH ORDER	$100.00	$100.00	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-19-92 REGINA MFG.	04/22/1992	COMPLIED WITH ORDER	$100.00	$100.00	$100.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-20-92 WOODLAWN CLEANERS & LAUNDRY	04/30/1992	COMPLIED WITH CEASE AND DESIST ORDER	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-21-92 STANDARD UNIFORM SERVICES	06/17/1992	COMPLIED WITH CEASE AND DESIST ORDER	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

TABLE 39
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/17
BUCKLIN POINT

ENFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
AO #BP-22-92 METROPOLITAN PLATING	04/22/1992	OUTSTDG FEES RESCINDED SUBJ. TO SHUTDOWN	$5,500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-23-92 CHN ANODIZING	06/18/1992	CONSENT ORDER 03/30/93	$17,500.00	$7,000.00	$7,000.00	$0.00	$262.50	$262.50	$0.00	$0.00	$0.00	$0.00
AO #BP-24-92 PARAMOUNT CARDS	06/18/1992	CONSENT ORDER 02/09/93	$17,500.00	$2,000.00	$2,000.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #BP-26-92 SLATER SCREEN PRINT	03/10/1992	CONSENT ORDER 01/01/94	$18,000.00	$9,000.00	$9,000.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO # BP-28-92 A.T.CROSS CO.	02/06/1992	CONSENT ORDER 03/31/93	$3,250.00	$1,000.00	$1,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-02-93 SLATER SCREEN PRINT	03/18/1993	CONSENT ORDER 01/01/94	$25,000.00	$5,000.00	$5,000.00	$0.00	$500.00	$500.00	$0.00	$6,500.00	$6,500.00	$0.00
AO #BV-03-93 ELIZABETH WEBBING MILLS	05/04/1993	CONSENT ORDER 10/12/93	$25,000.00	$3,000.00	$3,000.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #BV-04-93 CHN ANODIZING	07/19/1993	CONSENT ORDER 03/08/94	$25,000.00	$5,000.00	$5,000.00	$0.00	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00
AO #BV-05-93 STANDARD UNIFORM	10/29/1993	CONSENT ORDER 05/03/94	$18,000.00	$11,000.00	$11,000.00	$0.00	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00
AO #BV-06-93 BILL'S RESTAURANT	10/29/1993	COMPLIED WITH ORDER FINE RESCINDED	$3,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # BV-01-94 AAFCO, INC.	03/17/1994	CONSENT ORDER 09/26/96	$11,000.00	$6000 (SEP)	$6000 (SEP)	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00

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BUCKLIN POINT

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AO #BV-02-94 UNCLE TONY'S PIZZA & PASTA	07/12/1994	CONSENT ORDER 11/21/94	$12,000.00	PUBLIC AWARENESS PROJECT	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-03-94 MCDONALD'S RESTAURANT	07/19/1994	CONSENT ORDER 11/01/94	$10,000.00	$5,000.00	$5,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-04-94 MCCONNELL & CARPENTER	07/28/1994	COMPLIED WITH ORDER	$0.00 COMPLIANCE ORDER	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-05-94 COLFAX	10/13/1994	CONSENT ORDER 01/09/95	$5,000.00	$5,000.00	$5,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-07-94 UNCLE BEAN'S DINER	10/07/1994	CONSENT ORDER 12/06/94 BUSINESS CLOSED	$10,000.00	$1,000.00	$183.34	$816.66	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-01-95 LIBERTY PLATING	01/04/1995	CONSENT ORDER 08/03/95	$75,000.00	$6,000.00	$6,000.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #BV-02-95 JOSEPH'S FAMILY RESTAURANT	02/08/1995	COMPLIED WITH ORDER	$0.00 COMPLIANCE ORDER	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-03-95 SCOLA ENTERPRISES, INC.	05/30/1995	CONSENT ORDER 10/04/95	$20,000.00	$4,000.00	$4,000.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #BV-04-95 ELIZABETH WEBBING	10/02/1995	CONSENT ORDER 02/26/97	$50,000.00	$35,000.00 (SEP)	$35,000.00 (SEP)	$0.00	$750.00	$750.00	$0.00	$0.00	$0.00	$0.00
AO #BV-05-95 SLATER SCREEN PRINT	10/31/1995	CONSENT ORDER 11/20/97	$150,000.00	$35,000.00 $5,000. (SEP)	$35,000.00 $5,000. (SEP)	$0.00	$0.00	$0.00	$0.00	$5,500.00	$5,500.00	$0.00
AO #BV-06-95 TEKNOR APEX COMPANY	11/02/1995	CONSENT ORDER 06/19/96	$6,000.00	$3000.00 $3,000.00 (SEP)	$3,000.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00

TABLE 39
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/17
BUCKLIN POINT

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AO #BV-01-96 STI, INC.	05/15/1996	CONSENT ORDER 07/31/96	$7,000.00	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-02-96 MOBIL OIL CORPORATION	05/15/1996	AO RESCINDED	$10,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-03-96 MICROFIBRES, INC.	06/12/1996	CONSENT ORDER 04/10/97	$0.00 COMPLIANCE ORDER	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-01-97 EL PANAL RESTAURANT	06/12/1997	AO RESCINDED	$5,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-02-97 REGEN CORPORATION	11/20/1997	PERMIT FEES PAID CONSENT ORDER	$5,000.00	$500.00	$500.00	$0.00	$250.00	$250.00	$0.00	$0.00	$0.00	$0.00
AO #BV-01-98 BOWCAM CONTAINERS	05/19/1998	COMPLIED WITH ORDER	$2,000.00	$2,000.00	$2,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-02-98 NATIONAL RING TRAVELER	05/27/1998	CONSENT ORDER 07/28/99	$33,000.00	$16,000.00	$16,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-03-98 MICROFIBRES, INC.	12/08/1998	CONSENT ORDER 05/17/01	$112,000.00	$25,000.00	$25,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-04-98 ELIZABETH WEBBING MILLS, INC.	12/10/1998	COMPANY BANKRUPT	$134,000.00	$134,000.00	$0.00	$134,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-05-98 CHN ANODIZING	12/10/1998	CONSENT ORDER 03/18/99	$30,000.00	$12,000.00	$12,000.00	$0.00	$0.00	$0.00	$0.00	$175.00	$175.00	$0.00
AO #BV-01-99 TANURY INDUSTRIES	06/08/1999	CONSENT ORDER 08/03/99	$22,000.00	$9,800.00	$9,800.00	$0.00	$0.00	$0.00	$0.00	$900.00 AGREED UPON $600	$600.00	$0.00

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SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/17
BUCKLIN POINT

ENFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
AO #BV-02-99 BRISTOL COUNTY SEPTIC, INC.	12/22/1999	CONSENT ORDER 08/09/00	$30,000.00	$1,000.00	$1,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-01-00 ELIZABETH WEBBING MILLS, CO., INC.	06/29/2000	COMPANY IN BANKRUPTCY	$0.00 COMPLIANCE ORDER	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-02-00 WOODLAWN LAUNDRY & CLEANERS	12/28/2000	CONSENT ORDER NOT SIGNED COMPANY CLOSED	$2,500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO#BV-01-02 CENTRAL SOYA COMPANY, INC.	02/21/2002	AO RESCINDED	$100,000	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO#BV-02-02 D.C.L. d/b/a SEWERMAN	04/22/2002	CONSENT ORDER 06/11/02	$30,000.00	$5,000.00	$5,000..00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO#BV-03-02 C.H.N. ANODIZING	6/28/2002	CONSENT ORDER 8/20/02	$1,500.00	$500.00	$500.00	$0.00	$250.00	$250.00	$0.00	$50.00	$100.00	$0.00
AO#BV-04-02 INSTANT SEPTIC ENVIRONMENTAL SERVICES	08/08/2002	HEARING HELD DECISION 8/13/04 COMPLAINT FILED COMPANY OUT OF BUSINESS	$20,000.00	$20,000.00 (AWARDED AT HEARING)	$0.00	$20,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO#BV-05-02 ESTRELA DO MAR	09/23/2002	CONSENT JUDGMENT 3/24/03	$5,000.00	$5,000.00	$5,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-01-03 C.H.N. ANODIZING	03/27/2003	CONSENT ORDER 8/6/04	$50,000	$12,000.00	$12,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-01-05 TANURY INDUSTIRES	9/14/2005	CONSENT ORDER 12/31/05	$108,500.00	$24,000.00 ($94,000.00 W/$70,000.00 SUSPENDED)	$24,000.00	$0.00	$0.00	$0.00	$0.00	$200.00	$200.00	$0.00
AO #BV-01-07 KIK CUSTOM PRODUCTS, INC.	9/10/2007	CONSENT ORDER 07/10/08	$109,500	$73,000	$73,000	$0.00	$0.00	$0.00	$0.00	$500.00	$500.00	$0.00

TABLE 39
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/17
BUCKLIN POINT

ENFORCEMENT ACTION# COMPANY NAME	AO ISSUE DATE	RESOLUTION	ORIGINAL ADMIN. PENALTIES ASSESSED	ADMIN. PENALTIES AWARDED OR AGREED TO	ADMIN. PENALTIES PAID	ADMIN. PENALTIES BALANCE	ENF.COSTS ASSESSED/ AWARDED/ AGREED TO	ENF. COSTS PAID	ENF. COSTS BALANCE	STIPULATED PENALTIES ASSESSED	STIPULATED PENALTIES PAID	STIPULATED PENALTIES BALANCE
AO #BP-01-09 COASTAL COLLISION & TOWING, INC.	07/22/09	IMMEDIATE COMPLIANCE ORDER	$0	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-01-10 COASTAL COLLISION & TOWING, INC.	06/15/10	CONSENT ORDER 09/17/11	$1,000	$1,000	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-01-15 Ecological Fibers, Inc.	10/06/15	CONSENT ORDER 2/8/17	$22,000	$10,000	$10,000	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BP-01-16 Memorial Hospital of Rhode Island	9/22/16	PAID	$2,500	$2,500	$2,500	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

VII. SPECIAL PROJECTS AND PROGRAMS

Introduction

The NBC implements many projects, programs and studies to reduce and control the discharge of toxic and other non-conventional pollutants from industrial, commercial, and residential sewer users. These projects and programs are a collaboration of staff from many sections of the NBC, including the Pretreatment, ESTA, Planning, Laboratory and EMDA sections.

The Pretreatment Section implements many projects and programs and educates users to reduce and control the release of toxics to the sewerage system. The Pretreatment Program controls, reduces and prevents pollutant discharges by issuing discharge permits to industrial and commercial users. These discharge permits may require installation of pretreatment systems and implementation of Spill and Slug Prevention Control Plans.

In addition to the Pretreatment Section reducing toxic discharges through its permitting and educational programs, the ESTA Section further reduces toxic loadings by providing free technical assistance and educational programs to local industries. Through this program, the NBC educates firms about pollution prevention techniques, such as product substitutions, so that hazardous materials can be eliminated from process operations and toxic byproducts are not generated or discharged.

The EMDA Section routinely samples permitted NBC users, providing monitoring data necessary for the Pretreatment Section to evaluate user compliance with discharge limitations. EMDA conducts water quality studies in the receiving waters of the NBC treatment facilities, contributing to the statewide effort of many agencies, institutions and organizations to understand water quality issues and determine the solutions needed to restore Narragansett Bay. EMDA also performs wastewater sampling at the two treatment facilities every day in accordance with RIPDES permit requirements. The Laboratory Section operates daily to analyze and process the thousands of samples delivered annually by EMDA. This Chapter details the projects, studies, and programs that the Pretreatment, ESTA, Permits & Planning, EMDA and Laboratory Sections have worked on in 2017.

Status of Projects, Programs and Studies

Environmental, Safety and Technical Assistance (ESTA) Program

ESTA Pollution Prevention Activities

Throughout 2017 ESTA continued to assist the industrial community with implementing pollution prevention techniques and technologies that result in less waste generation, smoother running and less costly operations, and improved environmental regulatory compliance. Pollution prevention services are free of charge, non-regulatory and confidential.

The goals and objectives of the ESTA Section pollution prevention efforts are to:

- Promote pollution prevention philosophies and methodologies among the industrial users of the NBC system;

- Identify and address regulatory and non-regulatory barriers and incentives to implementing source reduction and pollution prevention activities;

- Develop a readily available, easily accessible and efficient source of pollution prevention information for use by the industrial community.

ESTA staff performs technical assistance site visits of NBC industrial users, organizes and conducts workshops and seminars, and produces educational fact-sheets. ESTA staff conducted 15 individual site visits during 2017 on a variety of pollution prevention, energy efficiency, and environmental regulatory compliance improvement projects including:

- Food Production and Service Establishments
- Metal Finishing Facilities
- Pharmaceuticals Facilities
- Commercial Printing Facilities

ESTA Grant Funds

Since the creation of the Pollution Prevention Program in 1991, NBC has been awarded many PPIS grants and several grants from other sources to initiate a variety of industrial user environmental educational and technical assistance programs. TABLE 40 summarizes the project periods and funding amounts for each of these grant awards. To date, the NBC has secured grant funding totaling $2,524,750 for pollution prevention and technical assistance activities.

TABLE 40
Summary of Grant Awards

Program	Grant ID#	Project Period	Original Grant Award
Initial Pollution Prevention	NP818873-01-0	10/01/91 - 09/30/97	$300,000
Training Grant – CCRI Pollution Prevention Course	NP991705-01-1	10/01/95 - 09/30/98	$60,000
Clean P2 – Regulatory Relief Program	NP991756-01-0	10/01/96 - 09/30/00	$85,000
NBC Metal Finishing 2000 Program	NP991195-01-0	10/01/97 - 09/30/00	$35,000
NBC Metal Finishing Seminars	NP991402-01-0	07/01/98 - 09/30/00	$25,000
Environmental Management Systems	NP991679-01-0	10/01/99 - 09/30/01	$32,000
Environmental Best Management Practices	NP98121801-0	10/01/00 - 03/31/03	$35,000
MP&M Pollution Prévention Audits	NP98142601	10/01/01 - 09/30/03	$50,000
Pollution Prevention in RI Hospitals	NP98154501-0	10/01/02 - 09/30/04	$25,000
Auto Salve Yard Pollution Prevention	NP98182201-0	10/01/03 - 09/30/05	$25,000
Stormwater Pollution Prevention	NP97107901-0	10/01/04 - 12/31/07	$35,000
Energy Conservation	NP97126001-0	10/01/05 - 09/30/08	$35,000
Renewable Energy - Wind	RI State Energy Grant	07/01/06 - 09/30/08	$25,000
Renewable Energy - Biogas	RI State Energy Grant	07/01/06 - 09/30/08	$25,000
Energy-EMS Project	EI-97187901	10/01/08-09/30/11	$275,000
Energy Technical Assistance Assessments	3232910	05/16/11-03/31/12	$86,000
Energy Efficiency Projects	3233807	05/16/11-03/31/12	$311,750
Water Utility Energy Efficiency	N/A	01/01/13 – 12/31/14	$10,000
RI Renewable Energy Fund	N/A	2016	$350,000
RI Energy Efficiency Program	N/A	2017	$500,000
RI Renewable Energy Fund-Biogas	N/A	2017	$200,000
Total Grants Awards To NBC			**$2,524,750**

In addition to grant funded projects, ESTA is involved with many environmental programs and projects that promote the use of pollution prevention and sound environmental management practices among NBC users and the industrial community throughout the State of Rhode Island.

Renewable Energy and Energy Conservation Program

The NBC has been awarded numerous grants over the years to help develop and implement energy movement programs throughout the State of Rhode Island. Municipal wastewater treatment operations utilize tremendous amounts of energy. With current rising energy costs, safety and environmental impact concerns over the storage and use of conventional fuels such as liquefied natural gas and petroleum derived fuels, it is imperative that wastewater treatment facilities have an in-depth understanding of available energy conservation techniques and alternative energy sources.

As part of the efforts the NBC conducts detailed energy audits of its various facilities and operations in order to identify energy conservation opportunities and continued to research feasibility of utilizing renewable energy on a large scale to reduce its dependency on more conventional non-renewable energy sources.

Renewable energy sources being used include:

- Field's Point Wind Turbines
- Coventry Wind Turbines
- Kingston Solar 1 & 2
- Coventry Solar
- Bucklin Point Biogas Combined Heat and Power

Additional energy management related activities conducted in 2017 included:

- Served on multiple NEWEA Committees including the Safety, Sustainability and the Energy Committee
- Conducted Energy Audits of NBC pump stations
- Reviewed proposals, contracts, legislation and attended meetings related to renewable energy
- Tracked and reported quarterly renewable energy production data
- Attended meetings on the Biogas Engine Project
- Helped secure grants and energy incentives
- Conducted Energy Management Presentations/Tours of NBC facilities
- Attended USDOE Better Buildings Summit and participated in monthly teleconferences
- Assited the Rhode Island Convention Center Authority with researching renewable energy opportunities
- Assited the Providence Water Authority with researching and implanting various reneable energy projects

Osprey Camera

The Bucklin Point includes two closed landfills that run parallel to the Seekonk River. These closed landfills have been repurposed as wildlife refuges. Following guidelines established in the DEM Facilities Stewardship Plan for Wildlife, the land was revegetated and a large portion was allowed to grow wild. Three osprey platforms were installed, two on the north landfill and one on the south landfill to encourage the annual return of these birds.

Over the years, staff observed two birds returning to the platforms in the spring and four to five birds depart at the end of the summer. In 2015 ESTA staff began to research ways to monitor and record the nesting activities of the birds. In 2017, a Pan, Tilt, Zoom camera, powered by a photovoltaic system, was installed. This camera allows the observer to maneuver the camera remotely to best view the birds in the nest. The feed from the camera could be accessed through www.narrabay.com. The mating season was chronicled. The incubation, hatching and development of three offspring were documented until the last osprey left the nest to migrate south for the winter.

NBC Environmental Merit Awards Program

In 1995, the NBC developed the Environmental Merit Awards Program to recognize companies that have demonstrated environmental efforts and commitments that go beyond mandated compliance requirements. As part of this awards program, the NBC also recognizes all SIUs that have achieved full compliance with all NBC requirements during the previous calendar year.

In 2017, the NBC recognized numerous firms for their exemplary environmental activities performed in 2016. NBC recognized seventeen companies with Perfect Compliance Awards for achieving 100% compliance with all NBC regulatory requirements. The 2016 award recipients are as follows:

Perfect Compliance Award Winners:

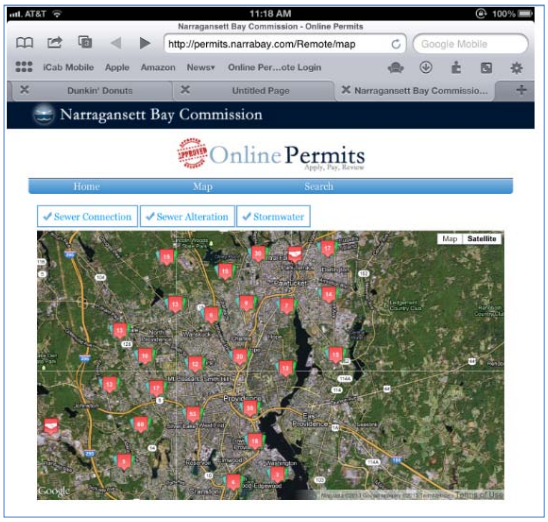
A. Harrison & Company, Inc.
Alloy Holdings, LLC
Dominion Energy – Manchester Street, Inc.
Electrolizing, Inc.
Godfrey & Wing, Inc. d/b/a Impco, Inc.
Induplate, LLC
International Chromium Plating Company
Interplex Engineered Products, Inc.
Liquid Blue
Mahr Federal, Inc.
Providence Journal Company – Production Company
Providence Metallizing Company, Inc.
Stackbin Corporation
Tanury Industries PVD, Inc.
Technodic Inc.
Truex, Inc.
Univar USA, Inc.

Each award recipient received a plaque and had their company name and environmental accomplishments published in the Providence Journal. Applications for the 2017 NBC Environmental Merit Awards will be available on-line in late February 2018 and the presentation of these awards will take place in early April 2018.

Sewer Connection Permit Program

Since 1982, the NBC has been reviewing all requests to connect to its sewer system either directly to NBC owned and maintained sewers, or indirectly to City/Town maintained sewer lines. The sewer connection permit process is necessary to ensure that the structural integrity of the sewer line is preserved, to control and monitor wastewater flow capacity, to minimize storm water discharges, to control toxic pollutant discharges, to maintain quality customer service and to ensure accurate billing of new users.

As the Permit Section receives comments from the various sections, they are compiled and addressed. After all comments have been satisfactorily addressed, a permit is prepared and issued. The Permit Section utilizes software that allows information to be entered and tracked and automatically process permits. In addition applications can be completed and submitted online and fees can be paid electronically. A workstation was installed in the ES&C office area for applicants to use to complete applications.



The software incorporates Google Maps and each sewer connection is displayed on the map once entered by staff. By clicking on the project the viewer will be able to access relevant information such as the location, and type of connection.

In 2017, 294 Sewer Connection Permit applications were processed, the majority of which were for residential connections. Pretreatment reviewed 45 of these sewer connection permit applications to determine if a Wastewater Discharge Permit would be necessary. All of the applications reviewed by Pretreatment were responded to accordingly.

Storm Water Mitigation Program

Permits staff regularly work with building officials and developers to implement Storm Water Management techniques for new construction projects. As part of the Sewer Connection Permit Application process, a Storm Water Management Plan must be developed. This plan must evaluate storm water mitigation for the site, including the use of Low Impact Development (LID) or Best Management Practices to eliminate or reduce storm water flows to the treatment facilities as well as the investigation of alternative options to direct discharges into natural waterways. By requiring Storm Water Management plans and firms installing LID, 739,961 gallons of additional stormflow, was eliminated from the Field's Point sewer system in 2017 for each three month storm event. These are storm water flows that would have impacted the NBC combined sanitary/storm sewer collection system and CSO tunnel. This program, which was established in 2003, mitigated 8.3 million gallons of storm flow from the Field's Point system based on a three month storm event, the design basis for the CSO tunnel. This provides additional capacity in the CSO tunnel for raw sewage requiring capture and treatment. Annually the NBC issues a Storm Water Management Excellence Award to the firm that implements the best storm water reductions by utilizing LID technologies. The success of this program has been recognized on both the local and national levels. In 2008, the National Association of Clean Water Agencies (NACWA) presented the NBC with an Environmental Merit Award and the Environmental Business Council, presented the NBC with the Leadership Award for a Non-Profit Organization for this program.

Mercury Loading Reduction Program

The NBC participated in the Rhode Island Mercury Education and Reduction Group. The objective of this group was to identify sources of mercury discharge and pollution in Rhode Island, educate the public regarding mercury issues and eliminate mercury pollution for future generations. Studies indicated that the majority of mercury loadings observed in the sewer system were the result of mercury/silver dental amalgam. As a result, dental operations were evaluated so that the mercury amalgam issue could be addressed and incorporated into wastewater discharge permits issued to dental facilities.

In January 2004, the NBC completed a Best Management Practice (BMP) document for dental facilities to ensure that dental mercury is properly handled, treated and disposed. The NBC worked closely with the Rhode Island Dental Association during the BMP development process to ensure that the BMP addressed both environmental concerns and those of the dentists.

In the BMP, dental facilities are given two options to discharge wastewater that may be contaminated with waste dental amalgam. The first option requires the installation of an amalgam separator. The second option does not require the installation of pretreatment equipment but requires the dental facility to sample the waste streams potentially contaminated with mercury and be in compliance with stringent mercury discharge limits. All dental facilities are required to implement other programs regarding training of staff and storage and disposal of amalgam waste. To date all dental facilities in the NBC districts have been permitted and installed amalgam separators.

The NBC was awarded a Citation by the Governor of Rhode Island for the development and implementation of the BMP. The NBC Dental Amalgam BMP Program has been recognized on a national level by NACWA, and was awarded on Environmental Achievement Award for developing the BMP.


State of Rhode Island and Providence Plantations
OFFICE of the GOVERNOR
The Governor
of the
State of Rhode Island
Extends His
Greetings and Best Wishes to the
Narragansett Bay Commission
In Recognition of
implementing Environmental Best Management Practices in its Management of Waste Dental Amalgam program, which addresses a significant source of mercury emissions in Rhode Island. NBC's achievements in this area demonstrate a commitment to the environment and the health and public safety of all Rhode Island residents.
In recognition whereof, I have hereby set my hand and caused the Executive Seal of the State of Rhode Island and Providence Plantations to be hereunto affixed this 24th day of September 2004.
Donald L. Carcieri
Governor

The NBC participated in a NACWA sponsored three year international mercury loading study of treatment plants that have implemented mercury amalgam discharge control programs. From 2003 through July 2006 EMDA has collected influent, effluent, sludge and grit samples monthly at Field's Point using "Clean Sampling" techniques and the samples were analyzed by both the Hampton Roads Sanitation District in Virginia and NBC laboratories. The comparison of these results helped the laboratory achieve low level mercury "clean analysis" of <1.0 ppt. To

date the laboratory detection limit for mercury is 2.0 ppt, the lowest levels achievable in the state of Rhode Island. The NBC mercury reduction project has been very successful at reducing mercury loading. Since the inception of the BMP program mercury influent loadings to the NBC wastewater treatment facilities were reduced by 63.9% at Field's Point and 57.1% at Bucklin Point.

In 2011, the EPA began to develop categorical standards for dental facilities. The NBC participated in conference calls with representatives from the EPA, multiple states and other pretreatment programs that have implemented programs to control the discharge of dental amalgam. The EPA used the information obtained during these calls to develop categorical standards. In anticipation of the publication of the EPA Dental Rule, a session on dental/mercury discharges was held at the 2014 NACWA Pretreatment & Pollution Prevention Workshop held in Minneapolis, MN. The development of the NBC Dental BMP program was presented during this session. The proposed rule was published in October 2014. The NBC participated in conference calls with representatives from NACWA and Pretreatment Programs across the country regarding the proposed rule and completed a NACWA Survey. The NBC submitted comments on the proposed rule in early 2015. The final rule, 40CFR441, was published in late 2016 and finalized on July 14, 2017.

The final rule requires dental facilities to install amalgam separators and submit a one time certification to the control authority. The NBC dental amalgam program is more stringent that the federal rule. Therefore, it remains in full effect.

Throughout 2017, the dental facilities permitted by the NBC continued to comply with their permits and follow the BMPs. Annual certifications of adhering to the BMPs continue to be submitted in compliance with permit requirements.

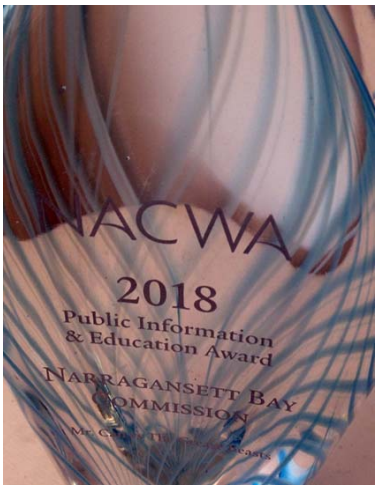
Grease Control Program

In 1990, the NBC instituted a Grease Control Program to control the discharge of grease and animal fats from restaurants and food preparation facilities into the sewer system. At that time, the NBC was experiencing major operational problems within the sewer system and at the wastewater treatment facility, problems directly attributable to grease accumulation. These problems ranged from grease fouling equipment and controls at the wastewater treatment facility to grease completely blocking the flow in sewer lines, resulting in sewage backups into the basements of homes and businesses. The NBC Grease Control Program has essentially resolved these problems.

The NBC Grease Control Program is a permitting program which requires users with the potential to discharge grease laden wastewater from food preparation operations to install one of two acceptable types of grease removal equipment, the automatic electrical mechanical grease removal unit or the in-ground passive grease interceptor. The permit requires the user to implement a series of BMPs which are incorporated into the permit to ensure the proper operation of the grease removal unit. Over the years, the NBC has held many workshops regarding grease removal technologies and is presently conducting studies regarding the effectiveness of the various types of grease removal units.

The Grease Control Program is a well established, successful program. Pretreatment Programs from other municipalities often request assistance from the NBC in establishing their programs and resolving grease related issues.

Pretreatment and Public Affairs staff have been working to develop a Residential Grease Control Program to educate the public on the impacts of fats, oils and grease on the sewer system and proper ways to handle and dispose of grease. In 2017 a mascot, Mr. Can, was created. Mr. Can is a super hero who guards the sewer system from the grease beasts. A story entitled "Mr. Can vs. The Grease Beasts" was created. In the story the grease beasts are wreaking havac on pipes. Mr. Can freezes them and tells the viewer to "Cool It and Can It", his slogan. A short video can be seen on YouTube. In addional, promotional materials, such as pins, posters and coloring books were printed. All of these materials are available in both English and Spanish. This program won Public Information & Education Award from the National Association of Clean Water Agencies.



<u>Spill Prevention Control and Countermeasures and Storm Water Pollution Prevention Plans</u>

During 2010, the Field's Point facility was required to develop a Spill Prevention Control and Countermeasures Plan (SPCC) in accordance with 40CFR112. The task to develop the SPCC was assigned to the ES&C Section. Pretreatment, ESTA and Planning staff reviewed the regulations to determine the best approach. This review revealed that many of the requirements for the SPCC were also the same as the requirements for the Storm Water Management Plan (SWMP) required by the NBC General Storm Water Permit issued by the DEM. These requirements include facility site plans, topographical maps, spill control measures, secondary containment, emergency response procedures, a list of emergency response team members and inspection protocols. Based upon the commonality of the plans it was decided to create an operations manual for Field's Point which incorporated both the SPCC and SWMP. The manual also included standard operating procedures for deliveries of chemicals, waste handling, spill response for oil products and other materials, a list of emergency response contractors, spill/release response forms and checklists to aid in performing required inspections. The SPCC/SWMP Operations Manual for the Field's Point facility was submitted to the EPA on October 26, 2010. PP&R staff evaluated the other NBC properties to determine where SPCCs and SWMPs were required. It was determined that these plans needed to be developed for the Bucklin Point facility and the Ernest Street/CSO Tunnel Pump Station site due to the volume of oil stored at these locations. The operations manuals for the locations were developed during the latter part of 2010 and early 2011. The manual for the Ernest Street/Tunnel Pump Station site was submitted to EPA on January 7, 2011 and

the Bucklin Point manual was submitted on January 31, 2011. In 2013 the upgrades to the Field's Point plant were completed. Throughout 2017, PP&R continued to revise the SPCC/SWMP Operations Manual for Field's Point to comply with the General Storm Water Permit issued in 2013. The revision incorporates the SPCC/SWMP plans for Field's Point campus which includes the Water Quality Science Corporate Office and Interceptor Maintenance buildings and the plant and the Ernest St./Tunnel Pump Station site.

Both the SPCC and SWMP require annual inspections of the facilities and training on the plans. ES&C staff conducted the inspections of Field's Point, Ernest Street/Tunnel Pump Station Site and Bucklin Point in September 2017. The training at both facilities was conducted in August and December of 2017.

Nine Minimum Controls Compliance Program for CSOs

Throughout 2017 the Pretreatment, ESTA and EMDA sections continued to ensure compliance with the pretreatment, pollution prevention and monitoring elements of the Nine Minimum Controls Program for CSOs detailed in the NBC RIPDES permits. The Pretreatment and ESTA sections continued to work with industry to ensure compliance with these requirements. Companies are required to install and implement adequate spill control measures to ensure prohibited materials are not incidentally or accidentally discharged to the sewer system or storm drains. Firms are also required to conduct routine self-monitoring to demonstrate compliance with NBC discharge limitations. Firms experiencing compliance problems are encouraged to contact ESTA staff for help to come back into compliance. These programs ensure that industrial wastewater is properly treated to levels acceptable for discharge and ensure that materials cannot be spilled into the sewer system or through a CSO.

The effectiveness of the NBC Nine Minimum CSO Controls Program is routinely evaluated by sampling conducted by EMDA. EMDA staff collect numerous samples to ensure compliance with the Nine Minimum Controls Program. In addition to the industrial and manhole sampling discussed in CHAPTER IV, EMDA collects twice weekly samples for fecal coliform from the Woonasquatucket, Providence, West, Blackstone, Seekonk, and Moshassuck rivers. Sampling of these rivers is conducted during both wet and dry weather events. The results from these sampling events for fecal coliform are promptly reviewed to identify dry weather discharges and CSOs are immediately inspected by Interceptor Maintenance staff to ensure they are properly functioning. EMDA also re-samples sites that show high fecal coliform bacteria concentrations during dry weather periods. Samples greater than 1000 MPN/100 ml are re-sampled under dry weather conditions. EMDA works with the IM Section to analyze the data in order to identify dry weather overflows or other sources of bacteria to the rivers where combined sewer overflows are located. Other extensive monitoring of the Providence and Seekonk Rivers has indicated the rivers are meeting the EPA aquatic life criteria standards for toxics, including dissolved metals and ammonia. This demonstrates the effectiveness of the Pretreatment and ESTA Programs and the effectiveness of the NBC Nine Minimum Controls Program. This data also has been used to remove the Providence and Seekonk Rivers from the EPA 303(d) list of impaired water bodies for dissolved metals impairment.

In 2017, EMDA staff collected samples at CSOs located in the Bucklin Point district to measure contaminant levels discharged during wet weather overflow events. Samples are collected at various times throughout the storm event, at the first flush, the height of the storm and near the termination of the event. CSO sites located downstream of industrial areas were selected for this sampling. Grab samples were collected for toxics, including total metals, TSS, BOD, VOCs, Oil & Grease, TPH and cyanide. All analytical results from samples collected during 2017 were compared to the NBC local discharge limitations for the district. All samples met the local limits, indicating the NBC Pretreatment and pollution prevention elements of the NBC Nine Minimum Controls Program are effective.

River Restoration Initiative

In response to the chronic pollution visible on the Woonasquatucket River in downtown Providence, Narragansett Bay Commission Chairman Vincent Mesolella established the Woonasquatucket River Restoration Initiative in 2002. With an aggressive goal to involve NBC employees, local business owners and members of the community in reclaiming the Woonasquatucket as a valuable community resource, and guided by the expertise of the Woonasquatucket River Greenway Association, much progress has been made to clean this river.

In 2017 the NBC continued the grant program intended to diversify the positive impact on multiple rivers in the NBC service area rather than focus solely on the Woonasquatucket River. The grant program assisted numerous local organization, cities and towns by providing 18 small grants to 17 organizations totaling $11,000 that allowed the organizations to purchase supplies to organize clean up events and river restorations activities in the NBC service district. The 2017 grant recipients are listed below:

Blackstone Heritage Corridor
Blackstone River Watershed Council/Friends of the Blackstone
City of Central Falls Parks & Recreations
City of East Providence, Department of Public Works
East Providence Police Explorers Post 750
Edgewood Waterfront Preservation Association
Keep Blackstone Valley Beautiful
Miss Rhode Island Scholarship Program Organization
Neutaconkanut Hill Conservancy, Inc.
Partnership for Providence Parks
Save the Bay
Serve Rhode Island
Town of Smithfield
Town of Lincoln Conservation Commission
Town of Smithfield
WaterFire Providence
Waterman Street Dog Park Association
Woonasquatucket River Watershed Council

Emergency Situation/Extreme Conditions Sampling

The NBC has established a program to immediately provide monitoring in the event of an extreme weather condition or an emergency that may adversely affect water quality in the receiving waters. The NBC is prepared to immediately undertake any monitoring necessary to evaluate the impacts from this type of event.

Special sampling performed in response to emergency situations or extreme weather conditions is important to evaluate the effect of these events on water quality and provides data that is critical to water quality management decisions. Fortunately, during 2017 there were natural or manmade events in the upper bay requiring such monitoring.

Regional Ocean Modeling System – ROMS

Since 2004, NBC has funded joint work with the physical oceanography lab led by Dr. Chris Kincaid of the University of Rhode Island Graduate School of Oceanography on circulation and hydrodynamic modeling for Narragansett Bay. The goal of this work is to develop a highly accurate model of circulation and transport within the Providence and Seekonk Rivers and Narragansett Bay to support sound science management decisions. This model provides an important tool to evaluate and predict water quality in Narragansett Bay as nutrient loadings are dramatically reduced, and may ultimately help with the development of a nutrient Total Maximum Daily Load (TMDL) for Narragansett Bay.

Previous work on this project resulted in a high resolution Regional Ocean Modeling System (ROMS) model of Narragansett Bay (NB-ROMS), from an open ocean boundary at the mouth of Narragansett Bay through the Seekonk River. The NB-ROMS model accurately reproduced several features that characterize flow in Narragansett Bay, including the tidally averaged flows that typically circulate in a counterclockwise fashion, up the East Passage and down the West Passage, and the gyre that occurs on Edgewood Shoals. NB-ROMS was used to test dispersion from major riverine and wastewater treatment facility (WWTF) inputs into the Bay through a modelled dye study. These results demonstrated unanticipated flows, such as a northward transport of Taunton River water to the Providence River, and a Pawtuxet River flow that separates into a southerly surface flow, a northerly intermediate depth flow, and a northerly deep flow.

An updated model (SNB-ROMS) was completed to incorporate an accurate grid representation of the Seekonk River coastline and bathymetry and an NPZD (nutrient, phytoplankton, zooplankton, detritus) model which allows for physical and ecosystem modeling. Modeled circulation results from SNB-ROMS closely approximate field data from current meters deployed in Narragansett Bay. Simulations of WWTF nutrient point source releases with the NPZD SNB-ROMS model showed that phytoplankton levels, linked to hypoxic events, are improved when WWTF effluent nitrogen concentrations are reduced from 15 mg/L to 5 mg/L. Phytoplankton populations were not significantly reduced when WWTF effluent nitrogen concentrations are reduced from 5 mg/L to 3 mg/L or 0 mg/L. Other natural effects and parameters such as wind, light extinction, and growth rates for phytoplankton/zooplankton had a greater effect on spatially averaged phytoplankton concentrations than the varying WWTF effluent nutrient concentrations. These results are currently being prepared for publication in an academic journal.

In 2016, ADCP and CTD sensors were deployed at the Bullock Reach site, which is a challenging site to accurately model due to complex hydrography. Analysis of this additional data, which was used to improve the SNB-ROMS model in this location, was completed throughout 2017. Data-model comparisons showed that the SNB-ROMS model accurately reproduces sub-tidal flows and demonstrated strong lateral gradients in both temperature and salinity throughout the region. These sharp gradients likely lead to the hydrographic mismatches seen in the model. Overall, the data was warmer and more saline than the modelled outputs, although perfect data matches were found 300m from the Bullock Reach buoy site, showing that local complexity is the root of the mismatches. It is possible that a gyre exists on the Bullock Reach shoal area adjacent to the buoy. A second analysis task completed in 2017 was a data-model comparison at the Phillipsdale Landing fixed site station. This comparison found a good match between SNB-ROMS and the Phillipsdale data. However, ROMS data was less saline than the Phillipsdale data, indicating that there may be more significant subtidal intrusions of salt water at India Point. For a more detailed history on this project and to access the reports produced for this project, visit: http://snapshot.narrabay.com/app/LearnMore/ModelingProject.

Laboratory Information Management System (LIMS)

A LIMS system is a repository of laboratory data in which many types of functionality can be programmed in. Functionality such as automatic report generation and email notifications helps the Field's Point treatment facility and the Bucklin Point treatment facility make operational decisions rapidly. All laboratory instruments are connected to the LIMS, which will allow for a faster way of entering lab results into the software.

Throughout 2016, LIMS systems were evaluated with specialists from several companies conducting presentations at NBC. In the late 2016, the NBC Information Technology Department purchased a Thermo Fisher Laboratory Information Management System (LIMS) to replace an older LIMS system. This system is a more robust LIMS that has more functionality the the existing LIMS. In 2017, the programming and design of the new Thermo Fisher LIMS began. The new LIMS is scheduled to be on line in 2018.

Monitoring Data Management

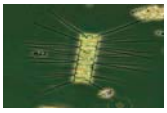
The NBC has been in the process of developing a centralized database for all analytical data generated by the NBC including from industrial, manhole, plant, river and bay sampling events in a electronic format. Staff have been busy locating historical monitoring data in paper format and is working to transfer this data into electronic format.

In 2013 progress was made with the development of this electronic database. As a part of the upgrades to the LIMS a software package, Hachwims, was put online. All data generated by the Perkin Elmer LIMS is electronically transferred to Hachwims. In addition, plant data generated by the plant information system (PI) is electronically transferred to Hachwims. During 2016 the database was made more robust by adding additional data codes and inputting historical data. EMDA staff run reports each month to complete the Discharge Monitoring Report (DMR) from this system.

In 2011, PP&R and IT staff developed and launched a website, "Snapshot of Upper Narragansett Bay" which can be accessed through www.narrabay.com. The website is maintained on a regular basis with information regarding water quality and analytical data from plant effluent samples. Real time data from NBC fixed monitoring sites located Bullocks Reach and Philipsdale Landing is displayed on the site. All of this information is readily available to the public and the site has over 300 visitors daily. Ultimately the data in the centralized database will be able to be accessed by the public through Snapshot.

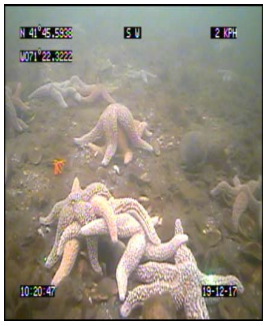
Phytoplankton Monitoring

During 2017, the NBC continued to collect Bay samples for phytoplankton analysis one to three times each month, to better understand the complex dynamics of the Bay ecosystem and how it is impacted by nitrogen reductions by the NBC and other inputs. Phytoplankton samples were collected from the surface at the Bullock Reach water quality station during every month of 2017 except February. The Bullock Reach station was selected as the plankton monitoring location because it is the site of one of the NBC fixed site near-real-time water quality monitoring stations. With chlorophyll concentrations constantly monitored at the site during the spring, summer, and fall seasons, the NBC can collect routine planned samples, and also collect additional samples when near-real-time chlorophyll concentrations indicate a phytoplankton bloom is present. Results are posted in a blog format on the NBC website www.snapshot.narrabay.com.



Two phytoplankton samples are collected on each sample day. One of the samples is collected using a phytoplankton net, which is deployed at the surface for 30 minutes. The plankton net captures the plankton floating near the surface and concentrates them in a sample bottle. The second sample is a whole water sample, also collected from the surface. Laboratory staff examines a sub-sample of the plankton net sample under the microscope to identify all of the types of phytoplankton present. From the whole water sample, a specific volume of water (1 mL) is examined under the microscope to determine the abundance of each phytoplankton taxon present in the sample. Through this complete analysis, the NBC will be able to track changes in the phytoplankton population and community structure as nutrient reductions occur in the upper Bay. Also, the NBC has aligned methods with the University of Rhode Island – Graduate School of Oceanography (URI-GSO), who collects similar phytoplankton data in the lower Bay. Through this collaboration, comparisons can be made between the phytoplankton in these two Bay regions.

Benthos Monitoring



Seastars (*Asterias forbesi*)

During 2017, EMDA continued benthic video monitoring, utilizing an underwater video camera to observe the state of the benthos in the NBC receiving waters. While this monitoring initiative is relatively new to the program, begun in 2014, long-term monitoring of the benthos in this way will allow the NBC to track changes in local benthic conditions as nutrient reductions and other infrastructure improvements occur in the upper Bay. Transects were conducted along three permanent transect paths in the Providence River; surveys were attempted monthly, though unsuccessful due to poor weather conditions on several occasions. Discussions of results and observations made during these video surveys are currently being posted to the NBC webpage in an effort to share these findings with interested members of the public. In addition, the NBC has spearheaded a collaboration among members of the Nature Conservancy, the RIDEM, US EPA, and other researchers to align benthic research methods for active projects in the Bay. These efforts will maximize the utility of the data collected by each group to complement the other projects, promoting a broad understanding of the benthic conditions.

On Going Projects

Over the years the Pretreatment, ESTA and EMDA Sections initiate many projects that have become integral parts of the routine activities of each department. Work continues to be performed on these long established NBC projects. The following is a listing of some of these projects:

Commercial Pesticide Control Program
Copper Sulfate Root Killer Prohibition
Fuel Oil Discharge Control Program
Medical Waste Control Program
Environmental Management Systems Program
Pollution Prevention for Hospitals and Health Care Facilities
Pollution Prevention for Auto Salvage Yards
Septage Permitting Program
Treatment Plant Influent Computer Monitoring Program
Floatables Control Program
Mussel Study
Emerging Pollutants Study
Woonasquatucket River Education Project
Water Audit and Technical Assistance Program
Storm Water Pollution Prevention Program
CSO Tunnel Evaluation
Fixed-Site On-Line Water Quality Monitoring
Computerization of Sewer Maps

The NBC will continue to be a leader, locally and nationally, developing programs, projects and initiatives that will control and reduce the discharge of pollutants to our treatment facilities, and ultimately Narragansett Bay. This work will continue in 2018.

VIII. NBC PRETREATMENT PROGRAM GOALS

Status of 2017 Goals

This chapter outlines the progress made during 2017 toward meeting the goals established in the 2016 Pretreatment Annual Report and defines goals for 2018.

- **2017 Goal:** Publish Pretreatment Program Annual Report

  Accomplishment: The 2016 Pretreatment Program Annual Report was completed and submitted to the DEM on March 13, 2017 in compliance with the NBC RIPDES permits. In order to make the report accessible to the public, it is uploaded to the NBC website, www.narrabay.com annually. The 2016 Pretreatment Annual Report was uploaded to the internet on April 6, 2017.

- **2017 Goal:** Satisfy all EPA and DEM Pretreatment Program mandates such as sampling and inspecting each Significant Industrial User (SIU) at least once every twelve (12) months. As an additional goal, the Pretreatment and Environmental Monitoring personnel will attempt to inspect and sample all SIUs at least twice each twelve month period.

  Accomplishment: The NBC satisfied the EPA and DEM mandates for conducting sampling and non-sampling inspections of each SIU at least once every twelve (12) month period. Each SIU was inspected at least once during this report period, and within twelve months of their previous inspection date. The Pretreatment Section performed well toward satisfying its goal to inspect each SIU twice, as all but one SIU, Orbit Energy Rhode Island, LLC., were inspected two or more times during 2017. The EMDA Section performed well toward satisfying the NBC goal to sample each SIU at least twice. However, two SIUs were not sampled twice during 2017. The two SIUs, Orbit Energy Rhode Island, LLC and Tanury Industries PVD, Inc. were unable to be sampled. Orbit Energy Rhode Island, LLC is a new SIU that will be conducting food waste to energy operations. The construction of the facility was not completed during 2017. This was verified during the one inspection of the facility conducted during 2017. Process discharges are set to begin in mid-2018. EMDA was unable to collect a sample as process wastewater was not generated in 2017. Tanury Industries PVD, Inc. conducts physical vapor deposition operations. The company collects all process wastewater and discharges on a batch basis. EMDA staff contacted the company throughout the year to determine if a batch was ready to be discharged. The company sent all wastewater offsite for disposal. Therefore, samples were unable to be collected. Many SIUs were sampled more than twice due to the implementation of the monitoring procedure to resample any user once a violation is observed as a result of a NBC sampling event. Additional information regarding the NBC sampling and inspection programs is provided in CHAPTER III.

- **2017 Goal**: The Pretreatment staff will attempt to conduct an annual inspection of each non-significant industrial user, annual inspections of 75% of restaurants and food processing facilities to ensure compliance with grease removal regulations, and 50% of all other permitted commercial users.

  Accomplishment: In 2017, the Pretreatment staff conducted 2,045 inspections of commercial and industrial users. Pretreatment staff performed thorough inspections of 100% of permitted non-significant industrial users, performing 402 inspections of this classification of user. During 2017, Pretreatment staff inspected 66.9% of the permitted restaurants and commercial buildings with cafeterias, conducting 732 inspections of facilities in these two categories. Pretreatment staff inspected 53.8% of all other commercial users, meeting the self-imposed goal. There were 311 inspections conducted of commercial users during 2017. Additional information regarding the NBC inspection program is provided in CHAPTER III.

- **2017 Goal:** Perform prompt reviews of user permit applications and plan submittals to ensure that permits are issued in an expeditious manner.

  Accomplishment: All new users located in either district are expeditiously permitted prior to discharging into the NBC sewer system. Formal plan review meetings are conducted weekly by Pretreatment staff to ensure prompt response to user plan submittals and to expedite the permitting process. Permitting of various classes of non-significant users located in both districts was ongoing in 2017, as 351 Wastewater Discharge Permits were issued in various industrial and commercial categories. During the year, permits were issued to metal finishers, chemical manufacturers, restaurants, supermarkets, automotive repair shops, printers, photo processors, dental offices, doctor offices, and other medical facilities using x-ray equipment. Permitting of new users also continued during 2017, as 87 of the 351 permits were issued to new users. The majority of the new permits were issued to non-significant industrial and commercial users.

  The Pretreatment and Permits sections routinely perform expeditious reviews of discharge and sewer connection permit applications and work closely to ensure that contractors and users needs are promptly addressed. During 2017 the Pretreatment Section performed expeditious reviews of 158 process and pretreatment system plan submittals. Of these 158 plan submittals 101 were promptly approved, 24 were approved with conditions to be met, 14 were rejected since NBC requirements were not satisfied and no action was taken initially on 19 plans since additional information was required for approval.

  The Permits Section continued to meet its goal of responding to incomplete Sewer Connection Permit Applications within two business days and issuing permits within ten business days. During 2017, 294 Sewer Connection Permits were issued. Additional information regarding this program is provided in CHAPTER VII.

- **2017 Goal:** Identify new and previously unknown sewer users to ensure compliance with regulations. To achieve this goal, conduct spot inspections of industrial users located in 75% of the mill complexes/industrial areas situated within the two sewer districts to identify new and previously unknown sewer users.

  Accomplishment: The NBC instituted a program of performing unannounced inspections of mill complexes and industrial areas to identify facilities discharging without a permit. This program has been quite successful. In 2017, 37 of the 63 or 58.7% of the industrial areas and mill complexes were inspected at least once. This program of conducting unannounced inspections of industrial areas and mill complexes to locate new and previously operating unpermitted users has been quite successful at locating unpermitted users. In addition to performing mill complex inspections, Pretreatment staff routinely reviews newspapers, social media and directories to locate new and previously unknown sewer users. All of these methods were utilized during 2017.

- **2017 Goal:** Ensure the protection of the two NBC POTWs and Narragansett Bay to minimize incidents of pass through and interference.

  Accomplishment: Pretreatment staff promptly responds to all reports of unusual influent at each treatment plant, illegal dumping, spills, odors, and blockages. The reports can come from other NBC Sections, NBC computer monitoring systems, environmental agencies, fire departments and/or the general public. The purpose of these investigations is to find the source and protect the plants and infrastructure from upset. In 2017, Pretreatment staff conducted 17 investigations. To assist NBC staff in conducting these investigations, Spill Response and Tracking training is provided annually.

  Pretreatment and EMDA staff also respond to notifications from the NBC Laboratory Information Management System (LIMS) of incidents of non-compliance from NBC monitoring events. When notified by LIMS that a sample collected at an industry is out of compliance with NBC discharge limitations, EMDA staff immediately conducts resampling at the facility and Pretreatment staff contacts the facility to immediately begin resampling its effluent. When alerted by LIMS that the concentrations of pollutants in the influent or effluent of the treatment plants have exceeded preset concentrations, EMDA and Pretreatment staff work together to find the source. The activities that staff conducts include installing manhole samplers in key locations and inspecting all facilities in the district with the potential to impact the plant with the pollutant in question.

- **2017 Goal:** Continue regulatory inspections of Septage Haulers as part of the NBC Septage Discharge Control Program.

  Accomplishment: During 2017, Pretreatment staff verified the authenticity of 18 septic system pump-outs reported on manifest forms. In addition, Pretreatment staff conducted 16 inspections at the Septage Receiving Station during 2017. Additional information regarding the NBC Septage Discharge Control Program is provided in CHAPTER VII.

- **2017 Goal:** Improve Data Management.

  Accomplishment: During 2017, Permits staff continued to use a database which incorporates Google Maps. This database better tracks sewer connection permits. The database contains information including the name, address and type of connection (residential or commercial) and whether the connection is direct or indirect. Throughout 2017, Planning staff continued to use an online application process which allows sewer connection permit applications to be completed, submitted and paid for online. A workstation is located in the office where applicants can complete and submit applications electronically.

  The NBC GIS system was further refined to include additional attributes for the receiving water monitoring stations. All bay and river nutrients and bacteria monitoring sites have been entered and remain accurate. Throughout 2017 EMDA staff continued to maintain the "Snapshot of Upper Narragansett Bay" website which gives NBC staff and other interested parties immediate online access to NBC data. The 2005-2017 receiving water nutrient data was QA/QC reviewed and the existing spreadsheets were redesigned to make the data easier to interpret. Data processing for the vertical profiling performed in the Bay were also improved.

  In 2017, the Laboratory began managing the new Water Quality Science Building (WQSB). The building was under warranty in 2016 and therefore the responsibility of the contractor.

  The WQSB is equipped with computer controlled heating and cooling systems that can be monitored remotely. This gives Laboratory staff the ability to ensure these critical systems are working properly at all times. Features such as energy efficient lighting and water efficient plumbing systems make the WQSB a state of the art facility.

  Throughout 2017 IT staff continued to work on upgrading the Pretreatment software. The upgraded system was put online in November 2016. The upgrade increased functionality. Staff can now better track submittals of Certifications of No Discharge and Dental BMP Certifications, and access mapping applications. In addition the software will be available in the field via iPads. In 2017, IT staff improved the functionality of the system by enhancing the software allowing staff to generate vacation/holiday shut down letters directly from the system. Pretreatment and IT staff will continue to work on additional enhancements throughout 2018.

Throughout 2017, ES&C staff continued to use iPads. In mid-2013 iPads were purchased for all Pretreatment technical staff. Apps were downloaded on these iPads that allow staff to use Microsoft Office software and upload documents to the NBC SharePoint system. During 2017 Pretreatment staff continued to use inspection checklists in the field.

Throughout 2017, EMDA staff began to document sample collection activities and coordinate these sample collections with the Laboratory for efficient analyses anad data reporting. In addition, during 2017, EMDA worked closely with the Laboratory, IT and a vendor to develop and implement new software to be used on iPads for sample collection activities. This effort is a result of a new LIMS system underdevelopment and scheduled to be put online in 2018.

- **2017 Goal:** Provide training for OSHA and Safety Awareness. Provide all new applicable employees with 40-hr HAZWOPER training, conduct continuous in-house hazardous awareness training, and provide Infectious Materials Exposure Control training to pertinent NBC personnel.

  Accomplishment: All new employees hired in the Pretreatment, ESTA and EMDA Sections were given initial 40 hour HAZWOPER training. All NBC staff certified in 40 hour HAZWOPER training were given annual 8 hour refresher training which consisted of in-house training to satisfy the 8 hour refresher requirement.

  OSHA related training is given on Incident Command, Confined Space Entry, Hazard Communication, and Hazardous Waste Management. NBC continued to train employees on CPR/AED and First Aid and Hearing Conservation. Audiograms are given annually to NBC employees that have the potential to work in environments where hearing protection is needed. During 2017 NBC staff participated in OSHA classroom and hands-on sessions and had access to NBC University on-line safety training programs. Forty-nine individual health and safety training sessions were conducted.

- **2017 Goal:** Continue to document Pretreatment, EMDA and Laboratory Standard Operating Procedures and NBC Policies and Protocols manuals and update QA/QC programs. The purpose of these manuals is to clearly detail all standard operating procedures in the three sections. These manuals make invaluable reference tools for Pretreatment, EMDA and Laboratory staff and will provide a great resource for NBC employees working outside of these sections.

  Accomplishment: The Pretreatment Section has a Standard Operating Procedures (SOP) manual which consists of all existing SOPs. As existing procedures are reviewed and revised or new procedures are developed, they are documented in this manual. During 2017, Pretreatment staff continued to review SOPs and update them accordingly.

During 2017, EMDA staff continued to detail all standard operating procedures and procedural changes for its section. Staff reviewed current literature to ensure any mandated changes in sampling protocols and/or methods were promptly adopted in NBC protocols and methods. All such changes are incorporated into the EMDA SOP manual. During 2017, SOPs were either updated or developed for Field's Point CSO tunnel effluent, influent, primary influent, primary effluent, final effluent and Bucklin Point aeration grab sampling and plant reuse water.

In 2017, the Laboratory SOP manual and QA/QC programs were updated. All new techniques and EPA methods were incorporated into the laboratory control documents.

During 2017, agency policies continued to be updated. All new policies are distributed to management and supervisory staff to be included in NBC Policy Manuals located throughout the agency. New policies are communicated to all NBC staff.

- **2017 Goal**: Provide free technical assistance.

  Accomplishment: Throughout 2017 ESTA staff continued to work with the industrial community to help reduce pollution at the source of generation. Activities include on-site pollution prevention and regulatory compliance technical assistance, measuring and monitoring water usage, providing assistance with water conservation projects, and collection and reporting of water use data elements. During 2017, five pollution prevention technical assistance site visits were conducted.

- **2017 Goal**: Water Conservation and Reuse.

  Accomplishment: ESTA staff continued to investigate opportunities for the reuse of treated wastewater from the two treatment plants. Throughout 2017 ESTA staff continued to research U.S. water reuse regulations and requirements, met with representatives from DEM to discuss on-site water reuse opportunities and initiated a plant water sample collection and analysis program. In September 2017 a water reuse system was installed at Field's Point that ustilizes treated effluent to irrigate a grassy area adjacent to the Pretreatment Building. This water reuse system has been designed for future expansion.

- **2017 Goal:** Environmental Merit Awards Program - Solicit nominations from companies and staff, evaluate all Significant Industrial User performance data, and hold Awards Ceremony.

  Accomplishment: In 2017, the NBC recognized seventeen SIUs for achieving 100% compliance with all NBC regulatory requirements. The awards were presented to the organizations at a breakfast meeting held on April 13, 2017. Additional information regarding this program is provided in CHAPTER VII.

- **2017 Goal**: Workshops – Participate in workshops and conferences to educate the public on NBC programs and initiatives.

  Accomplishment: During 2017, PP&R staff made numerous presentations at workshops, meetings and/or conferences. These conferences include the 2017 National Association of Clean Water Agencies Pretreatment & Pollution Prevention Workshop, 2017 New England Region Pretreatment Conference, the 2017 Coastal & Estuarine Research Foundation Conference and the 16th Annual Ronald C. Baird Sea Grant Syposium. Further discussions on the workshops and other NBC educational efforts can be found in CHAPTER II.

- **2017 Goal:** Energy Management– Continue to investigate energy conservation and alternative energy opportunities, Monitor measure and report NBC renewable energy generation, participate in the USDOE Better Plants Program and seek grant funding for energy projects.

  Accomplishment: Throughout 2017 ESTA staff continued to track annual energy use measurements from various NBC metered accounts and assessed performance data using EPA Portfolio Manager. NBC monitored the output of three 1.5 MW wind turbines located at the Field's Point and three 1.5 MW wind turbines located in Coventry, RI that are owned and operated by the NBC. Additionally, in August 2017 NBC entered into a Net Metering Credit Agreement to purchase renewable solar energy from a locat 10 MW solar farm and comleted construction of a Combined Heat and Power (CHP) system located at Bucklin Point. The CHP system will utilize biogas to genereate both renewable electricy and useful heat. ESTA staff continues to participate in the USDOE Better Plants Program. ESTA continues to actively research grant opportunities through RIOER and various National Grid rebate programs.

- **2017 Goal**: Assess NBC Greenhouse Gas Emissions – research regulations and guidance documents, refine GHG inventory and assess process emissions.

  Accomplishment: Throughout 2017, NBC continued to collect and analyze electrical, natural gas, biogas and vehicle fuel use to support operations and to help quantify GHG emissions for Field's Point and Bucklin Point. NBC site specific and overall GHG emissions remain below current reporting requirements for both State of Rhode Island and EPA. During 2017, ESTA staff continued to review results from a study, in cooperation with the University of Rhode Island, to quantify nitrous oxide, carbon dioxide and methane emissions from the Field's Point treatment processes and commented on several resulting publications and documents. NBC staff participated in public meetings of the RI Executive Climate Coordinating Council (EC94) and initiated the development of an annual Sustainability Report that will quantify NBC current GHG inventory.

- **2017 Goal:** Conduct weekly manhole monitoring in both districts to ensure user compliance with NBC discharge limitations and to determine the location of previously unknown and unpermitted users. Attempt to sample 6 to 10 manholes per week.

  Accomplishment: EMDA staff conducted weekly manhole monitoring throughout both NBC drainage districts. This monitoring program consists of installing ISCO automatic samplers in surveillance manholes located upstream and downstream of users on a weekly basis to verify users' compliance status. EMDA staff successfully sampled 313 industrial surveillance manholes during 2017, 183 in the Bucklin Point district and 130 in the Field's Point district. In addition to the 313 industrial manholes, EMDA collected samples from 39 sanitary manholes.

  The EMDA Section also attempted to collect samples from eleven additional manholes. However, samples could not be collected due to no flow in the sewer line at the time manhole sampling was conducted or due to sampling equipment malfunction. This is an average of approximately six manholes per week, meeting the goal of 6 to 10 manholes per week. During 2017, 363 manholes were sampled. This is an increase of 8.0% or 27 manholes, when compared to the 336 manholes sampled in 2016. During 2017 surveillance manhole monitoring was conducted up and down stream of 79.5% of the SIUs which is a slight increase from 2016.

- **2017 Goal:** Define the sewer system sampling program to assess loadings from key drainage areas to locate potential areas of concern and drainage area loadings.

  Accomplishment: As in past years, the NBC once again performed well towards satisfying this goal, as it defined strategic manholes throughout both sampling districts, formulated a sampling schedule and conducted routine monitoring of these manholes to evaluate loadings. Flow proportioned sampling of drainage basins as well as analysis of storm water inputs, water supply inputs and sanitary sewers were used to budget inputs and improve the NBC manhole sampling program. A layer on the GIS maps was created in 2013 and used throughout 2017 to graphically depict results of drainage district sampling results in order to make interpretation of the data easier.

  EMDA continued background monitoring of residential areas to better define loadings to the treatment plants. An additional goal to monitor residential sources of pollutants to determine background loading was also satisfied, as 46 sampling events of residential manholes were conducted during 2017.

  During 2015 NBC designed a potable water study to determine background sources of contaminants originating from drinking water supply systems. This study was further refined during 2017 and is nearly ready for implementation. The study performed in 2000 was evaluated and used as a basis to design an improved study. Sampling is scheduled to begin in early 2018.

- **2017 Goal:** Sample at the two NBC POTWs daily for all RIPDES permitted parameters. Research and test new sampling equipment and procedures to continually improve monitoring activities.

  Accomplishment: EMDA staff used clean sampling techniques for all industrial monitoring and treatment plant sampling for metals, cyanide and nutrients conducted in 2017. Throughout 2017, EMDA staff continued to use QA/QC sample collection practices to ensure the highest quality samples were being collected. During 2017, the NBC complied with the RIPDES permit requirements to sample at the two treatment plants every day of the year and met all mandated reporting requirements. EMDA staff continued to sample all process operations at both plants to acquire the data needed to optimize plant performance. During 2017, upgraded samplers were installed at the Bucklin Point treatment plant's East Providence Interceptor (EPI), as well as the Blackstone Valley interceptor (BVI). At the Field's Point treatment plant, the wet weather back-up sampler was upgraded. ISCO 5800 samplers replaced antiquated ISCO samplers.

- **2017 Goal:** To review, evaluate and log all analytical data obtained from EMDA monitoring efforts, to provide interpretation of this information to appropriate NBC staff in a timely manner and to ensure that quality assurance and quality control procedures are maintained.

  Accomplishment: During 2017, EMDA continued to evaluate all monitoring data. Both in monthly interdepartmental data meetings and in comprehensive monthly reports, short and long term trends and alerts to high levels were provided. Data was posted on the NBC webpage "Snapshot of Upper Narragansett Bay" along with blogs interpreting the most recent data. During 2017, EMDA published the data collected from the 2016 monitoring season. During 2017, EMDA continued to work closely with the Laboratory staff regarding LIMS issues, as well as with IT personnel to review existing databases to identify areas of improvement. Also, throughout 2017, EMDA worked closely with Laboratory, NBC's IT, and a vendor to begin the implementation of a new LIMS system, to replace the existing LIMS that will no longer be supported by its company. During 2017, EMDA continued to maintain a log in which any information impacting analytical results such as changes in detection limits or process changes within the treatment plants, was entered. This allows successors to determine what occurred when analytical trends or data differ from historical values.

  EMDA staff analyzes the data on a regular basis to establish trends and notify Operations, Interceptor Maintenance and/or Pretreatment staff of any anomalies. EMDA staff conducts monthly meetings to report the data trends. Pretreatment, Laboratory, ESTA and Operations staff from both facilities routinely attend these meetings. During 2017, the Snapshot webpage received minor updates and it was maintained with regular data analysis blogs and the latest bay monitoring data so it can be quickly available on-line to NBC staff and the general public.

  Throughout 2017, Pretreatment staff continued to work with IT staff on the PT-LIMS interface to download data directly from LIMS to Pretreatment System.

- **2017 Goal:** Monitor the receiving waters of both the Field's Point and Bucklin Point treatment facilities with the fixed site monitoring equipment.

Accomplishment: In 2017, the NBC continued to monitor the receiving waters of both the Field's Point and Bucklin Point treatment facilities at two fixed sites within the Providence and Seekonk Rivers. Continuous online monitoring is conducted for dissolved oxygen, conductivity, temperature, salinity, pH, chlorophyll, pressure (depth) and tidal amplitude. In addition, weekly samples at these and other upper bay stations were collected for fecal coliform, nutrient analyses, chlorophyll-a and turbidity. EMDA staff maintained the sites at Bullocks Reach, a buoy site, and Phillipsdale Landing, a dock site. Quality assurance practices continued to be coordinated with the Narragansett Bay Fixed Site Water Quality Monitoring Network, a state of Rhode Island monitoring collaborative, that has adopted common methods for this baseline assessment. This data is made available to the scientific and general community on a real time basis on the NBC "Snapshot of Upper Narragansett Bay" webpage.

- **2017 Goal**: Conduct tributary river sampling for fecal coliform analysis

Accomplishment: In 2017 EMDA continued to sample twenty locations along five rivers in the Providence metropolitan area: the Woonasquatucket, Providence, West, Blackstone and Moshassuck Rivers. Sampling at Pleasant Valley Parkway, along the Woonasquatucket River, was resumed at the end of 2017, as the sampling site had been relocated due to construction in the area. Weekly sampling of these twenty sites has allowed EMDA to promptly notify the NBC Interceptor Maintenance (IM) section of both dry and wet weather discharges based on the analytical results, and has been a key technique for pinpointing overflow and interceptor malfunctions. The results of the tributary river monitoring for fecal coliform bacteria is provided to IM staff twice-weekly and is used to locate possible maintenance problems. Many fewer wet weather discharges are expected now that Phase II of the CSO Abatement Project has been completed. However, dry weather overflows can occur periodically and are usually the result of blockages in sewer regulators. EMDA scientists also analyze the data to determine trends in fecal coliform bacteria inputs to these waterways. Trend analyses are conducted and reported to NBC staff on a monthly basis through monthly reports and periodic meetings. River sampling data routinely assist IM in identifying and quickly stopping dry weather overflows. This data has provided a baseline to measure the success of the CSO remediation project, and data collected throughout 2017 in conjunction with data collected in future years will be used to evaluate the success of Phase II of the NBC CSO projects in reducing adverse impacts to area tributary rivers and Narragansett Bay.

- **2017 Goal**: Continue to evaluate the effect of the NBC effluent on water quality of the receiving waters.

  Accomplishment: During 2017 EMDA continued water quality evaluations of the receiving waters of the Bucklin Point and Field's Point wastewater treatment facilities. The purpose of this monitoring initiative is to determine the distribution and concentration of contaminants of concern to the health of the environment in both the Seekonk and Providence Rivers. EMDA continued its fecal coliform and nutrients monitoring by boat at multiple stations in the Providence and Seekonk Rivers, as well as continuing bacteria monitoring weekly at multiple stations in four freshwater rivers that are affected by combined sewer overflows. In 2005 EMDA began initial tests for Enterococci bacteria. This testing was expanded in 2006 in river, bay and treatment plant effluent samples in order to assess water quality with the new primary contact standard for fresh and saltwater. This testing continued throughout 2017. In addition, during 2017, EMDA continued the use of an underwater video camera to determine the state of the benthos in NBC receiving waters. Long-term monitoring of the benthos will document how BNR impacts the local benthos.

- **2017 Goal:** Conduct Toxics Compliance Monitoring of two CSO wet weather event discharges as a part of the NBC Nine Minimum Controls Program.

  Accomplishment: To evaluate the effectiveness of the Pretreatment and Pollution Prevention programs at reducing toxic pollutant discharges through CSOs, EMDA monitors several CSOs annually as an element of the NBC Nine Minimum Controls Program. The aim of wet weather sampling events is to characterize the impact of CSO discharges and the efficacy of NBC's current controls when wastewater overflows the collection system during wet weather events. The sampling plan was designed so that three samples are to be collected at the outfall throughout the overflow event. The first sample is to be collected during the initial overflow stage, or first flush, and typically contains wastewater with the least degree of rain water dilution and the highest concentrations of pollutants washed from street and land surfaces into the combined sewer system. A second sample is to be collected of the flow occurring midway through the storm event and a third sample collected near the conclusion of the event. CSO sampling was conducted at two Pawtucket CSO locations during 2017, one located on Moshassuck Street, and the other was at Bucklin Brook. A third sampling event was conducted in East Providence at the North Diversion Structure CSO.

- **2017 Goal:** Conduct border river sampling for nutrient analysis to determine loadings to Upper Narragansett Bay that originate from outside of Rhode Island.

  Accomplishment: This monitoring initiative was begun in 2007 and continued in 2017. This monitoring consists of monthly sampling from the mouths of the Ten Mile, Runnins, Palmer, Warren Reservoir, Cole, and Taunton rivers, as well as from multiple sites on the Blackstone River. In addition, a sample is collected monthly from the mouth of the Pawtuxet River to provide more accurate data on all sources of nutrient loadings to Upper Narragansett Bay. The data shows NBC contributions are not as large a percent loading as first thought. This monitoring has revealed that nutrients loadings to the Bay dramatically increase during rain events.

- **2017 Goal:** Evaluate water quality inside the Providence River Hurricane Barrier to generate a long term data set necessary to measure the success of the CSO abatement project.

  Accomplishment: In 2007, as part of its monitoring plan EMDA began an initiative to sample tributary rivers and/or the upper bay in response to extreme situations or weather conditions that have the potential to adversely affect plant operations and/or receiving water quality. During the latter portion of 2007, EMDA began monitoring within the hurricane barrier for Total Dissolved Oxygen (DO) on a monthly basis. Since this is a low flush area due to the river being partially blocked by the hurricane barrier, it is expected CSO discharges will have a magnified impact on DO levels compared to higher flush areas. Conversely, it is expected that the CSO tunnel will result in fewer oxygen depleting CSOs and have a positive impact on DO levels. EMDA continued to sample multiple locations in the urban rivers and Bay for bacteria and dissolved oxygen before and after rain events. This data has provided a baseline to measure the success of the CSO remediation project. This monitoring continued in 2017. Data collected from these locations is used to evaluate the tunnel's success in reducing adverse impacts to area tributary rivers.

- **2017 Goal:** Continually improve NBC monitoring and analytical capabilities.

  Accomplishment: In 2007, EMDA began replacing antiquated refrigerated automatic samplers located within the treatment plants with sophisticated state-of-the-art samplers requiring much less human intervention. The samplers hold up to four carboys, eliminating the need for off-hour jug change-outs. During 2017, an upgraded sampler was installed at the Field's Point wet-weather back-up location. An ISCO model 5800 sampler replaced an ISCO model 3700. At Bucklin Point, ISCO model 5800 samplers replaced antiquated ISCO 6712 samplers at the Blackstone Valley Interceptor (BVI) and the East Providence Interceptor (EPI), and a Sigma sampler the Primary Treatment Effluent (PTE) #2 sampler. The new samplers are equipped with back-up battery power which will allow the samplers to operate in the event of a power interruption.

Throughout 2017 Laboratory staff continued to improve the turn around of lab data with the use of a new Laboratory Information Management System (LIMS) which was purchased in 2016. In addition, the lab continued to improve test methods and instrument confidence with the use of high quality laboratory equipment. The Laboratory successfully passed an EPA audit and received certification for all testing in the new Water Quality Science Building.

- **2017 Goal:** Participate in community based environmental and educational projects.

  Accomplishment: In 2017, the NBC continued the Earth Day Environmental Grant Program providing small Earth Day clean-up grants to organizations in the NBC service area. Woonasquatucket River. The grant program assisted numerous local organizations, cities and towns by providing 18 small grants totaling $11,000 that allowed these organizations to purchase supplies to organize clean up events and river restoration activities in their communities.

  During 2017, ES&C staff participated in the NBC Watershed Explorers Program, reaching over 700 school students.

- **2017 Goal:** Conduct studies during extreme weather or emergency events.

  Accomplishment: In 2007, as part of its monitoring plan EMDA began an initiative to sample tributary rivers and/or the upper bay in response to extreme situations or weather conditions that have the potential to adversely affect plant operations and/or receiving water quality. The NBC is prepared to immediately undertake any monitoring necessary to evaluate the impacts from this type of event. During 2017, EMDA provided additional data collection and data analysis to Bucklin Point Operations staff during July while the facility was having difficulties with the BNR treatment process. The additional data helped bring the process back under control by the end of the month.

- **2017 Goal:** Improve process operations at the two treatment plants.

  Accomplishment: During 2017 closed circuit television monitoring equipment was installed at all influent and effluent monitoring stations of both treatment plants in order to ensure proper sample collection and maintenance procedures are followed. The recorded footage is periodically reviewed to ensure consistency with established SOPs.

  In addition, during 2017, EMDA assisted to optimize the treatment process at Bucklin Point by developing an automated report each day to compare the accuracy of the on-line nutrient analyzers in the treatment plant with actual laboratory data in order to ensure the data produced from the meters is reliable.

- **2017 Goal:** Provide access to all NBC monitoring data.

  Accomplishment: EMDA staff analyzes the data on a regular basis to establish trends and notify Operations, Interceptor Maintenance and/or Pretreatment staff of any anomalies. EMDA staff conducts monthly meetings to report the data trends. Pretreatment, Laboratory, ESTA and Operations staff from both facilities routinely attend these meetings. EMDA completed and posted its annual data report to www.narrabay.com during 2017. This data is invaluable to all stakeholders involved with Narragansett Bay. Data summary reports were also posted to the NBC "Snapshot of Upper Narragansett Bay" webpage on a weekly or biweekly basis, presenting current data trends and water quality conditions on the bay.

- **2017 Goal:** Implement flow monitoring of rivers not presently on the USGS Streams Gauge Network.

  Accomplishment: In past years, EMDA staff conducted flow monitoring activities on various tributary rivers. A Global Flow probe model FP101 is used to acquire velocity measurements for approximately 10 cross-sectional segments. The depth is also recorded at each segment. Using the data gathered, flow is calculated in cubic feet per second, which can then be converted to gallons or hundreds of gallons per minute. These flow measurements allow NBC to calculate loadings using analytical data. During 2017 the flow meter was not used, as a result of many higher priority projects necessitating completion. Flow monitoring is planned for early spring of 2018.

- **2017 Goal**: Participate in a study to evaluate emerging pollutants in the NBC receiving waters.

  Accomplishment: In 2014, the NBC worked with the EPA Atlantic Ecology Lab collecting treatment plant effluent samples for emerging pollutant analysis. An informational meeting was planned for 2016 to discuss further collaboration, but did not occur. In August 2017 NBC met with Dr. Rainer Lohmann of URI and associates and agreed to partner with him on a RI Research Alliance Grant to develop and field validate a passive sampler to detect and quantify fluorinated contaminants. NBC agreed to deploy the samplers in its Field's Point and Bucklin Point treatment plant final effluent streams and at its Phillipsdale landing fixed site monitoring station in the Seekonk River. In late September into early October, the samplers were deployed at the plants and effluent samples were collected for the URI researchers as a pilot test. NBC is awaiting to participate with the actual study with deployment and retrieval of the sampling devices.

Major Program Goals for 2018

Goal Category	Goal Outline	Goal Description
Inspections	Inspect industries to ensure compliance with regulations.	▪ Inspect each SIU twice (EPA/RIDEM requires one inspection) ▪ Inspect each non-significant industrial user once ▪ Inspect 75% of permitted restaurant and food processing facilities ▪ Biannual inspections of all other permitted commercial users
	Identify new and previously unknown sewer users to ensure compliance with regulations.	▪ Conduct unannounced inspections of 75% of the mill complexes/industrial areas
	Continue regulatory inspections of septage haulers.	▪ Inspect septage vehicles at the receiving station one day per month ▪ Staff will verify at least 12 septage manifest forms per year
Emergency Response Actions	Ensure protection of the two POTWs and Narragansett Bay to minimize incidents of pass through and interference.	▪ Respond to 100% of unusual influent reports ▪ Respond to 100% of reports of illegal dumping, spills and blockages ▪ Investigate all automatic notifications from LIMS of incidents of non-compliance ▪ Investigate all reports of unusual influent as indicated through the PI computer monitoring systems ▪ Conduct annual Spill Response and Tracking training
Pollution Prevention and Technical Assistance Initiatives	Provide free technical assistance.	▪ Reply to all request to 100% of all requests for technical assistance ▪ Seek grant funds to support technical assistance programs
Monitoring and Analytical Initiatives	Sample industrial discharges to sewer system to ensure compliance with regulations.	▪ Conduct sampling of each SIU twice (EPA/DEM requires one sampling) ▪ Resample any SIU found out of compliance
	Conduct sampling to assess loadings from key drainage areas and determine background loadings of pollutants.	▪ Conduct routine residential manhole monitoring ▪ Continue monitoring of residential sources of pollutants to better define background loading ▪ Replicate previously performed potable water study
	Conduct surveillance monitoring in the sewer system to ensure compliance with regulations.	▪ Sample 6-10 manholes per week (including surveillance and routine monitoring) ▪ Sample up and down stream of 70% SIU and Zero Discharge Company at least once
	Monitor Field's Point and Bucklin Point facilities as necessary to ensure and improve compliance with all RIPDES permit requirements.	▪ Sample both wastewater treatment facilities daily ▪ Collect process control samples to provide critical plant operational data to allow Operations staff to optimize plant performance ▪ Research and test new sampling, data scanning and recording equipment and procedures to continually improve monitoring activities ▪ Collect samples to test functionality and optimize BNR facilities

Goal Category	Goal Outline	Goal Description
Monitoring and Analytical Initiatives (continued)	Maintain the two NBC fixed site monitoring systems to evaluate NBC receiving water quality	▪ Maintain the two fixed site stations to continue monitoring downstream of each plant ▪ Deploy a special buoy to evaluate water quality conditions in a dissolved oxygen impaired area of the upper bay ▪ Monitor continuously for temperature, salinity, dissolved oxygen, conductivity, pH, chlorophyll and pressure (depth) ▪ Collect bi-weekly samples at these monitoring stations for fecal coliform, nutrients, chlorophyll-a, and turbidity analysis ▪ Provide data and data interpretation to the scientific and general community on a real time basis. ▪ Continue participation in the Bay Wide Fixed Site Network monitoring collaborative using approved QA/QC protocols
	Continue to monitor NBC receiving waters to evaluate water quality improvements, areas with impairments and causes.	▪ Continue routine monitoring program of the Providence and Seekonk Rivers for nutrients, bacteria, dissolved oxygen and other parameters ▪ Perform additional monitoring in response to extreme situations or weather conditions that could adversely affect plant operations and receiving water quality ▪ Perform benthos monitoring to determine how nitrogen loading reductions impact local benthos
	Conduct tributary river sampling for fecal coliform analysis to ensure compliance with EPA Nine Minimum CSO Control Program	▪ Conduct weekly sampling at multiple sites on the West, Woonasquatucket, Moshassuck and Blackstone Rivers and one site on the Providence River ▪ Provide data to IM staff to allow for timely maintenance activities of the CSOs ▪ Conduct monitoring of CSO events by collecting samples at the first flushmid-storm and late storm flow to characterize the CSO discharge impact and efficiency of CSO controls in place ▪ Conduct toxics compliance monitoring at three locations, two CSOs and the North Diversion Structure at Bucklin Point, during wet weather event discharges
	Border river sampling for nutrient analysis to determine loadings to Upper Narragansett Bay that originate from outside of Rhode Island	▪ Conduct monthly sampling from the mouths of the Ten Mile, Runnins, Palmer, Warren Reservoir, Cole, and Taunton rivers as well as from the Blackstone River where they cross the State line
	Conduct sampling to measure the success of Phases II of the NBC CSO Abatement program	▪ Conduct sampling at multiple locations in the rivers and bay for bacteria before and after rain events to evaluate the success of the CSO abatement tunnel project.
	Conduct periodic monitoring of storm sewer discharges	▪ Conduct monitoring of at least two storm sewer discharges annually, one from each sewer district

Goal Category	Goal Outline	Goal Description
Monitoring and Analytical Initiatives (continued)	Continually improve NBC monitoring and analytical capabilities	▪ Upgrade existing plant samplers as needed to improve monitoring capabilities ▪ Automate temperature monitoring, recording, and notification of staff of system failures at all automatic samplers ▪ Implement periodic flow monitoring of rivers not presently on the USGS Streams Gauge Network ▪ Attain 100% accuracy on all annual proficiency testing and perform routine internal proficiency testing ▪ Ensure all laboratory equipment is calibrated annually ▪ Maintain all Laboratory licensing certifications
Permitting	Expeditious review and issuance of permits	▪ Respond to all incomplete discharge permit applications and renewals within fourteen business days ▪ Review submitted Pretreatment facility plans on a weekly basis ▪ Respond to all incomplete Sewer Connection Permit applications within two business days. ▪ Issue Sewer Connection Program permits within 10 business days
Data Logging Analysis and Reporting	Continue to expand and improve electronic data systems	▪ Improve and expand existing databases ▪ Document all treatment facility process and laboratory changes in meta-data files ▪ Continue to create LIMS reports to migrate data automatically into spreadsheets ▪ Upload river and bay data weekly to Snapshot, the NBC water quality website, for immediate staff and stakeholder access ▪ Continue to computerize past analytical data ▪ Continue to scan DMRs into electronic format
	Provide internal and external access to appropriate NBC monitoring data	▪ Upload annual data report to the internet by April 30th ▪ Promptly prepare updates detailing activities and historical trends to Snapshot ▪ Provide external access to appropriate data via Snapshot ▪ Provide access to NBC staff to all data via LIMS ▪ Provide NBC data in response to specific requests
	Review, evaluate, report and present NBC data to internal and external stakeholders	▪ Prompt data logging and evaluation ▪ Analyze data and report projected short and long term trends via monthly reports and meetings ▪ Timely response on data excursions and alerts to Laboratory, Operations and Pretreatment staff, allowing opportunity for prompt corrective action ▪ Provide trend analysis to NBC and Stakeholders ▪ Publish technical papers, abstracts and present posters ▪ Prepare draft press releases on findings

Goal Category	Goal Outline	Goal Description
Special Studies and Projects	Improve functionality of NBC computer systems	▪ Continue to locate sewer connections, LID projects, industrial and commercial users, and private pump stations in the NBC Permits software system ▪ Continue to locate and update users and surveillance manholes on the computerized maps ▪ Continue to locate and update all monitoring locations on the NBC GIS system ▪ Begin to use GIS/LIMS tools to incorporate sample locations into LIMS ▪ Improve the information on the NBC internet sites ▪ Continue to improve safety training tracking software
	Energy Management	▪ Continue to investigate energy conservation and alternative energy opportunities ▪ Monitor, measure and report NBC renewable energy generation ▪ Continue to participate in US Department of Energy Better Plant Program ▪ Continue to oversee wind energy projects ▪ Oversee solar PV project implementation ▪ Assist with the Biogas CHP project implementation at Bucklin Point ▪ Seek grant funding for energy projects
	Water Conservation and Reuse Projects	▪ Continue to investigate WWTF reuse of wastewater and biosolids ▪ Seek grant funds to support water conservation and reuse programs
	Evaluate environmental sustainability opportunities at the treatment facilities	▪ Coordinate research to increase bio-gas production at Bucklin Point
	Participate in community based environmental and educational projects	▪ Continue Earth Day Grant Program ▪ Participate in the NBC Watershed Explores Program ▪ Participate in statewide environmental stakeholder groups, such as Watershed Counts, RI Monitoring Collaborative, etc.
	Assess NBC Greenhouse Gas Emissions (GHG)	▪ Continue to review and document applicable state and federal GHG regulations ▪ Continue to review and document applicable GHG guidance documents ▪ Continue to refine inventory of NBC GHG sources ▪ Assess actual NBC GHG process emissions
	Storm Water Mitigation Projects	▪ Continue to update and maintain the Storm Water Management Plans (SWMP) for both treatment plants ▪ Conduct site inspections of both plants in accordance with the SWMPs ▪ Conduct sampling in accordance with the SWMPs ▪ Provide annual training on the SWMP to plant employees ▪ Assess internal and external construction projects to ensure compliance with NBC Storm Water Management Plan requirements

Goal Category	Goal Outline	Goal Description
Internal Procedures	Document all Standard Operating Procedures and Protocols	▪ Continue to detail all Pretreatment, EMDA, and Laboratory standard operating procedures and procedural changes for the three sections. ▪ Document all NBC policies in the NBC Policy Manual ▪ Periodically review and update all Section NBC Policy Manuals for completeness and accuracy
Education, Training and Public Awareness	Publish Annual Pretreatment Report	▪ Prepare and submit the Annual Pretreatment Report to DEM by March 15th ▪ Upload the Annual Report to the internet by April 15th ▪ Present the findings of the annual Pretreatment report to the Citizen's Advisory Committee
	Environmental Merit Awards Program	▪ Solicit nominations from companies and staff ▪ Evaluate all nominations and issue Pollution Prevention Awards if appropriate ▪ Evaluate all SIU performance data for perfect compliance ▪ Evaluate sewer connection projects using LID storm water mitigation technologies and issue an award for Excellence in Storm Water Management
	Workshops	▪ Participate in at least two public workshops ▪ Present an update on the NBC environmental initiatives, water quality improvements, and the health of upper Narragansett Bay at a workshop ▪ Conduct one workshop explaining NBC permitting requirements to public officials
	Provide training programs necessary to ensure employee Health and Safety.	▪ Provide all new applicable Pretreatment and EMDA employees with 40-hr HAZWOPER training ▪ Provide 8 hr. HAZWOPER Refresher training annually for all applicable employees ▪ Conduct continuous in-house hazardous awareness training ▪ Provide safety training to all new employees ▪ Provide OSHA required training programs necessary to protect employees such as hearing conservation, confined space entry, safety awareness, etc.
	Improve information on www.narrabay.com, the NBC internet site	▪ Ensure all documents from the older version of narrabay.com have been uploaded to the upgraded site. ▪ Update all information on the site to ensure its accuracy. ▪ Create informational fact sheets to be uploaded to the website. ▪ Continue to promptly update, improve and expand Snapshot, the NBC water quality website. ▪ Upload new presentations and fact sheets about NBC initiatives and water quality improvements to the website