PRETREATMENT PROGRAM

ANNUAL REPORT

JANUARY 1, 2004– DECEMBER 31, 2004

The Narragansett Bay Commission

FIELD'S POINT AND BUCKLIN POINT DISTRICTS

MARCH 15, 2005

The Narragansett Bay Commission
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Vincent J. Mesolella
Chairman

Paul Pinault, P.E.
Executive Director

March 15, 2005

Dear Friends:

I am pleased to present the 2004 Narragansett Bay Commission (NBC) Pretreatment Program Annual Report for the period from January 1, 2004 through December 31, 2004. This annual report is a detailed summary of the many accomplishments associated with the NBC source reduction and control programs utilized in the two sewerage districts. The educational and regulatory source reduction and control program of the NBC Pretreatment and Pollution Prevention 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. This NBC team 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 over 922,469 pounds, 96.7%, while the cyanide loadings were reduced by 76,462 pounds, a 95.1% reduction from 1981 levels.

The toxic pollutant reductions observed at the NBC treatment plants have had a profound effect on the water quality of Narragansett Bay. This is evidenced by the results of the Providence and Seekonk River Study conducted by the NBC in 2001 and 2002. The Providence and Seekonk River Background Study shows that 118 out of 118 samples taken from the Providence River meet established water quality criteria for trace metals, while 103 out of 113 samples taken from the Seekonk River meet water quality limits for trace metals concentrations. The results have been forwarded to RIDEM for review. The NBC has recently been informed both the Providence and Seekonk Rivers have been removed from the RIDEM 303(d) list for impairment from metals.

The NBC accepts its responsibility to protect the receiving waters of Narragansett Bay very seriously. During 2004, the NBC issued 2,159 Notice of Violation letters, enforced one permit suspension, issued four civil suits and two Administrative Orders against violators, assessing $50,000 in fines for various violations of the NBC Rules and Regulations. Funds collected are deposited into the NBC Environmental Enforcement Fund and used to further protect the environment.

The NBC will continue to be a leader in the field of wastewater treatment and environmental protection. The hard work done by the Pretreatment, Pollution Prevention, Enforcement, Environmental Monitoring & Data Analysis and Laboratory staff members at enforcing local and federal environmental regulations, educating local industries about compliance methods and performing monitoring of our industrial users, the sewer system, and the State's waterways will ensure a cleaner Narragansett Bay for all to enjoy. I trust you will find this report to be thoroughly detailed and informative.

Sincerely,

Paul Pinault

Paul Pinault, P.E.
Executive Director

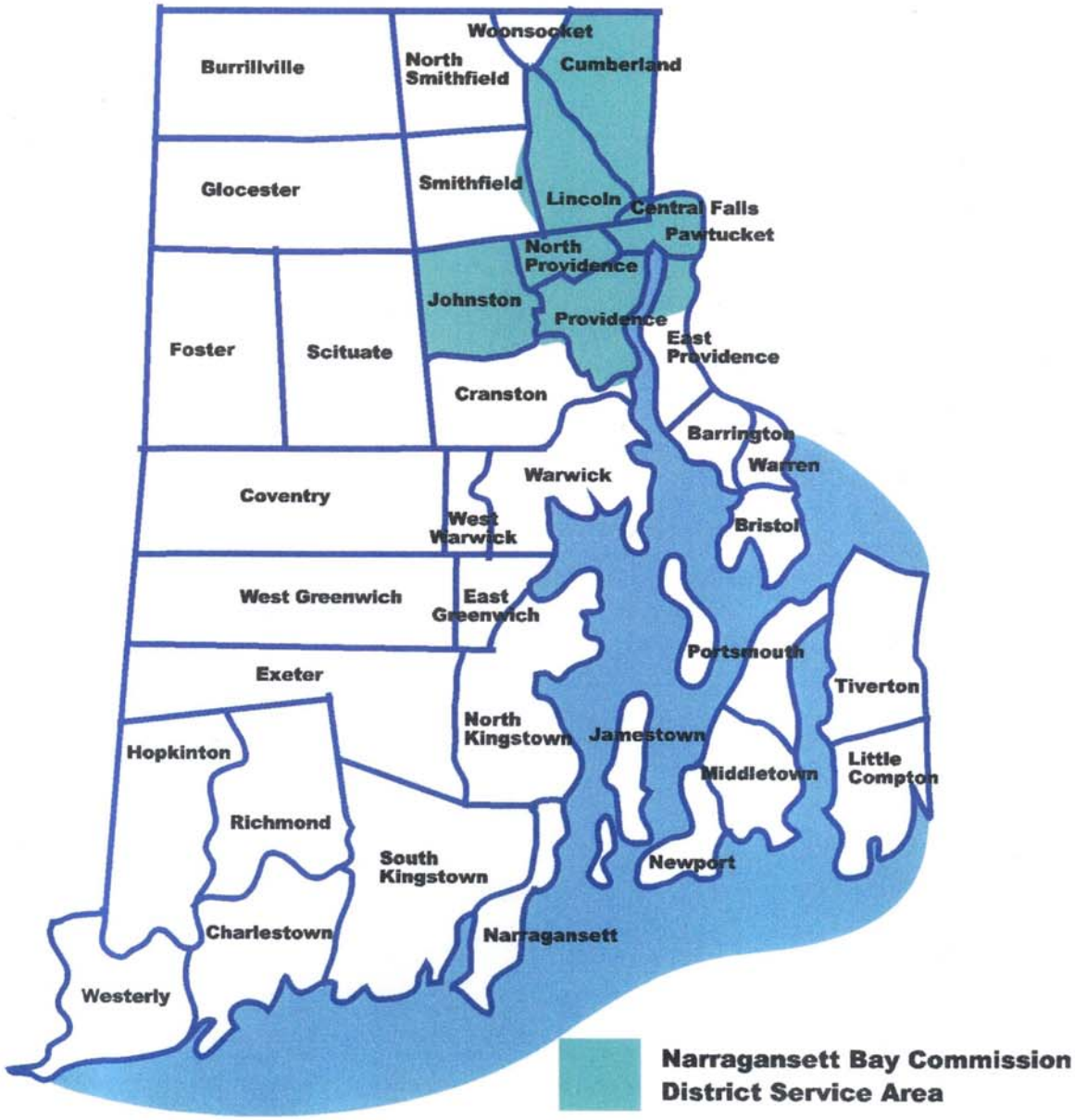
Narragansett Bay Commission
Mission Statement:

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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A special acknowledgment to Cindy Walters, Laboratory Manager, the entire NBC Laboratory Staff and the staff of the Environmental Monitoring and Data Analysis (EMDA) Section. Their hard work allowed the NBC to successfully complete wastewater sampling and analysis of all significant industrial users discharging within the NBC district and to conduct surveillance manhole monitoring of industrial and sanitary drainage districts. The data analysis presentation provided in CHAPTER VI of this report, Impact of the Pretreatment Program on the Control of Toxics and Incompatible Waste, was prepared by John E. Motta, EMDA Manager and the EMDA Staff:

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Laurie Horridge Bissonette, Esq., Chief Legal Counsel, Gloria Ricci, Legal Secretary, and Holly R. Ialongo, Esq. are to be credited for their effective Enforcement Program and their preparation of the Enforcement section, CHAPTER V, of this report. The Pollution Prevention Program sections of this report were written by James McCaughey, P.E., Pollution Prevention Manager, with the assistance Barry Wenskowicz, Pollution Prevention Engineer. The Water Audit & Technical Assistance Program and Sewer Connection Program sections of CHAPTER VII of this report were written by John Zuba, Project Coordinator, with the assistance of Steven Lallo, Permits Technician. Jamie Samons, the NBC Public and Governmental Affairs Officer, is to be acknowledged for her assistance with various sections of this report, including development of the Significant Non-Compliance Public Notice. This assignment was completed under the general direction and supervision of Thomas P. Uva, Director of Planning, Policy and Regulation.

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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. 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 65 million gallons of untreated sewage flowed into Rhode Island's waterways everyday, resulting in temporary and permanent closures of shellfishing beds in Upper Narragansett Bay, violations of federal laws, and most importantly, threatened public health and the region's environmental and economic well-being.

Aerial View - Field's Point Wastewater Treatment Facility

The NBC acquired the facility from the City of Providence in 1982 and has transformed the once failing, antiquated facility 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 has an average dry weather flow to the facility of 45.5 MGD.

In 1992, the R.I. General Assembly expanded the NBC's 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, with an average dry weather flow to the facility of 23.9 MGD. During 1999, supervisory management of this plant was privatized to Professional Services Group (PSG), which became Veolia Water North America. During 2004 the Bucklin Point plant began going through a series of upgrades which will eliminate the wet weather by-pass and allow the plant to process up to 116 MGD through primary treatment during wet weather events. The upgrades also incorporate denitrification operations and disinfection by the use of ultraviolet light.

Aerial View - Bucklin Point Wastewater Treatment Facility

The NBC now owns and operates the state's two largest wastewater treatment facilities and provides quality wastewater collection and treatment services to about 360,000 persons and 7,700 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 staff is charged with protecting these treatment facilities and Narragansett Bay from the discharge of toxic and nuisance pollutants.

In the fall of 2001, the NBC consolidated its operations into a centralized location, One Service Road, across the street from the Field's Point Wastewater Treatment Facility. The new Corporate Office Building brought together NBC administrative, maintenance, construction, engineering, laboratory, pretreatment, and environmental monitoring and data analysis staff to one central location.

Previously NBC staff were divided among four separate locations. With the move into the new buildings at the Field's Point campus, 87% of NBC staff are situated at one central location. A portion of the NBC Operations personnel, the remaining 13% of NBC staff, will remain at the Bucklin Point Wastewater Treatment Facility in East Providence.

Pretreatment Program Annual Report Overview

CHAPTER I of this report provides a brief 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 calendar year 2004, including a list of new significant industrial users of the sewerage system. 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 2 and 3, 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, Pollution Prevention, and Laboratory personnel, a summary of the budgets for these sections, staff training, the pretreatment computerized management information system and public information and education methods used by the Commission.

CHAPTER III details the industrial and commercial user base of the Commission and includes the NBC permit classification system, user inspections and emergency and special investigations. During 2004, Pretreatment staff issued 428 permits to users located in the Field's and Bucklin Point Districts, conducted 1,859 facility inspections, held 25 regulatory compliance meetings with users and responded to 69 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 2004, the NBC conducted 333 sampling inspections, performed 364 manhole sampling events and reviewed 3,445 analytical reports of users located in the Field's Point and Bucklin Point Drainage Districts.

CHAPTER V details the types of enforcement actions used by the Commission and reviews the enforcement actions initiated by the NBC over the past year. During 2004, the NBC issued 2,159 Notice of Violation letters, two Administrative Orders, and assessed administrative penalties totaling $50,000 against violating users located in the NBC Sewerage Districts. The NBC issues some type of enforcement action against 100% of the violators of the NBC Rules and Regulations.

CHAPTER VI 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 the Field's Point Wastewater Treatment Facility increased during 2004 by 1%. The total metals loading to the Bucklin Point Facility decreased by 13%. The cyanide loading to the Field's Point Wastewater Treatment Facility decreased by 198 pounds, or 5% in 2004, and the cyanide loading to Bucklin Point decreased slightly by 26 pounds or 3%.

CHAPTER VII of this report details special projects and programs underway and those already completed by the Planning, Policy & Regulation Division of the Narragansett Bay Commission.

CHAPTER VIII reviews the status of the goals established by the Pretreatment Program, Environmental Monitoring, Pollution Prevention, and Planning sections for 2004 and describes the ambitious goals established by these sections for the year 2005.

Unique Program Elements, Activities, Awards And Accomplishments

The Narragansett Bay Commission utilizes many innovative and unique activities, projects and programmatic elements 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

- Quarterly newsletter issued to all permitted users
- Workshops regarding Pollution Prevention, Pretreatment, and Monitoring topics
- College-level course, Introduction to Industrial Wastewater Treatment and Pollution Prevention, created and offered by NBC staff
- 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 website (**http://www.narrabay.com**)
- Citizens Advisory Committee

Special Projects and Studies

- Charter Member of EPA's Strategic Goals Program for the Metal Finishing Industry

- Lead participant/grant recipient for Rhode Island Metal Finishing 2000 Program in partnership with EPA Headquarters, EPA - New England, Rhode Island Department of Environmental Management, Save the Bay, Inc., and the Rhode Island Council of Electroplaters
- Lead participant/grant recipient for CLEAN P2 - Regulatory Flexibility Program with EPA - New England
- National EPA Project XL program participant
- Environmental Merit Award Programs, include:
    - ~ Pollution Prevention Award and NBC-Certification Seal Program
    - ~ Perfect Compliance Award and NBC-Certification Seal Program
- Grease removal study and program, which has greatly reduced sewage backups and overflows due to grease accumulations in sewer lines
- Silver and Mercury loading reduction and evaluation program
- River Monitoring Program
- Background Contribution to WWTF Influent Loadings Study
- WWTF Effluent Dissolved Metals Study
- Tributary river sampling for fecal coliform analysis
- Residential Septage Hauler Discharge Control Permitting Program
- Narragansett Bay Sediment Data - Research Review Project
- Woonasquatucket River Wet Weather Monitoring Program
- Analysis of fecal coliform bacteria sources
- Legend drug discharge control permitting program
- Potable water pH study for pH limits reevaluation study
- Periodic review of all regulatory activities to reassess methods, procedures and strategies
- EMPACT Study to expand monitoring of Narragansett Bay and provide on line monitoring data to the public
- Save the Metal Finishing Industry Project
- Computerization of Sewerage Mapping Project
- Woonasquatucket River Education Pilot Project
- River Restoration Initiative

Permitting

- Prompt and standardized user plan reviews through weekly internal plan review meetings of engineers and technicians
- Permitting of all users with process wastewater discharges to the sewer system, as well as those having the potential to discharge
- Unique and equitable rate structure with varying rates dependent upon hydraulic/pollutant loadings, which covers the cost to operate the pretreatment program
- Zero discharge facilities are permitted and inspected at least twice annually, 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 and referral program

NBC Monitoring Program

- Aggressive program of sampling users that greatly exceeds EPA requirements. NBC internal goal to sample every Significant Industrial User **twice** per 12 month period, exceeding EPA requirements by a factor of two
- Clean Sampling programs utilized by EMDA Section
- Extensive use and documentation of all standard operating procedures to ensure quality assurance and quality control that greatly exceeds EPA requirements
- 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
- Extensive river, septage, collection system, POTW and industrial user sampling programs

NBC Inspection Program

- NBC internal goal to inspect every Significant Industrial User at least **twice** per 12 month period, exceeding EPA requirements by a factor of two
- Zero discharge firms are inspected at least twice per year to ensure compliance with permit requirements
- Extensive inspections of non-significant users performed annually
- Intensive restaurant inspection program to verify grease trap maintenance
- Development and use of Significant Industrial User annual inspection form ensures thorough and standardized inspections of each SIU
- All NBC inspections stress user education regarding EPA Significant Non-Compliance 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 complaints regarding chemical spills, unusual influents, odors, etc.

User Self-Monitoring

- Four consecutive weeks of resampling indicating full compliance required for any effluent violation recorded. Benefits include: users are brought back into compliance quickly, Significant Non-Compliance (SNC) is reduced due to increased monitoring, reduced loadings to sewer, escalated enforcement due to additional evidence, etc.
- Significant Industrial User 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 connections to all pretreatment, pollution prevention, environmental monitoring and enforcement personnel

- 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

- FREE technical compliance assistance program
- On site consultations and pilot testing
- Routine referrals by regulatory staff in all NOVs and other user correspondence and communications
- Solicitations by P2 staff directly to industries
- Extensive educational efforts noted previously
- Formal agreement with the University of Rhode Island Chemical Engineering Department and its Rhode Island Pollution Prevention Center to augment staff resources through consulting services and to develop new technologies or find new applications for existing technologies
- FREE water audits conducted of businesses, large residential buildings and manufacturing industries

Staff Training

- NBC provides extensive training to its employees
- NBC Pretreatment, Environmental Monitoring and Pollution Prevention staff receive 40 hour HAZWOPER training
- NBC has a tuition reimbursement program to assist employees to further their education and enhance their performance
- Intersectional Cross Training Drills
- Employee Exchange Programs between NBC sections

Enforcement

- Some type of enforcement action issued against 100% of violators
- Cost of SNC Public Notice billed to firms in violation
- Use of innovative settlement agreements, which may include:
    - ~ Community based environmental projects
    - ~ Development of public service announcements
    - ~ Purchase of Pollution Prevention, Reduction 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
- Routinely work with state and federal criminal investigators regarding criminal pollution violations

2004 Accomplishments

~ ***Permitting:***

- 428 Permits issued in 2004, a 7.0% increase from 2003
- 198 New permits issued to previously unpermitted firms
- 230 Revised permits issued

~ ***Inspections and Sampling:***

- 1,859 Non-sampling inspections conducted
- 504 Non-sampling inspections of Significant Industrial Users
- 401 Non-sampling inspections of categorical users
- 104 Non-sampling inspections of significant non-categorical users
- 1,355 Non-sampling inspections of non-significant users
- 25 Regulatory Compliance meetings held with users
- Pretreatment Staff Reviewed 3,445 User Monitoring Reports
- 69 Emergency/Special Investigations Conducted
- 364 User Samples Collected by NBC in 2004
- 333 NBC Sampling Inspections of Industry
- 136 Different Facilities Sampled by NBC
- 313 Sampling Inspections of Significant Users Conducted
- 249 Sampling Inspections of Categorical Users Conducted
- 64 Sampling Inspections of Significant Non-Categorical Users Conducted
- 20 Sampling Inspections of Non-Significant Users Conducted
- 364 Manhole Sampling Events Conducted
- 309 Industrial Surveillance Manhole Samples Collected
- 55 Sanitary Manhole Sampling Events Conducted

~ ***Enforcement:***

- 2,159 Notice of Violation (NOV) Letters Issued
- 2 Administrative Orders Issued
- 1 Permit Suspension in effect during 2004
- $50,000 in Administrative Penalties Assessed
- $3,330 in Administrative Penalties Collected
- 4 Civil Suits were filed in 2004 for non-payment of permit fees
- 21 Firms Listed in the February 28, 2005 Public Notice in the Providence Journal as being in Significant Non-Compliance (SNC)
- 19 out of 21 Firms Listed in SNC back in compliance with cited violations prior to publication of Public Notice

~ ***User Compliance:***

- 9.5% Rate of Significant Non-Compliance (SNC) in Field's Point District for 2004, a reduction from 39% in 1992
- Rate of SIU Significant Non-Compliance reduced in Bucklin Point from 44.8% in 1994 to 7.5% for 2004
- 96.0% Overall Rate of Compliance for All Significant Users
- 95.8% Overall Rate of Compliance for All Categorical Users
- 92.6% Overall Rate of Compliance for All Non-Significant Users
- 95.1% Overall Rate of Compliance for All Users
- 58.8% of EPA categorically regulated users had perfect effluent compliance records with all effluent parameters excluding pH
- 63.0% of Significant Users AND 80.6% of all users had perfect effluent compliance records with effluent pollutants excluding pH
- Rate of Significant Non-Compliance (SNC) has been significantly reduced in both sewerage districts over the past decade through Pretreatment's User Education Methods

Notification of Changes in User Status

During the 2004 report period, 13 users were reclassified from significant to non-significant, while six other users were newly classified to Significant Industrial Users (SIU). Ten of the 13 users reclassified to non-significant were categorical users. These 13 users were reclassified to non-significant because they either ceased categorical operations, went out of business, or moved out of the NBC district. Two of the six firms located in the NBC district that were newly classified as significant industrial users during 2004 were classified as categorical users.

Ten SIUs ceased discharging into the Field's Point sewer system in 2004, eliminating a total process discharge flow of 159,227 gallons daily, while the four new SIUs in this district discharged a combined daily flow of 106,954 gallons. Ten SIUs located in the Field's Point district experienced significant changes in water usage during 2004. Three SIUs, Shank/Balfour Beatty - Ernest Street Facility, Umicore Indium Products, and DiFruscia Industries, Inc., greatly increased their water usage by 2,108,800 gallons per day (gpd) or 1,352%, 22,142 gpd or 184%, and 2,373 gpd or 100%, respectively. Seven other SIUs decreased their water usage in 2004. These SIUs and their decrease in water usage are Calco Plating Company, 2,485 gpd or 51.2%, Evans Plating Corporation, North Providence Facility, 7,552 gpd or 44.4%, Technodic, Inc., 2,312 gpd or 33.3%, Ira Green, Inc., 4,488 gpd or 24%, G. Tanury Plating Company, 9,381 gpd or 18.4%, RIBCO, Mfg., Inc., 5,101 gpd or 15.2%, and Tri-Jay Company, 2,794 gpd or 15%. There were no other significant changes in industrial flow discharges to the Field's Point Wastewater Treatment Facility in 2004, therefore the facility experienced a net increase of 2,046,929 gallons per day of industrial process wastewater. The increased flow has not had an adverse effect on the treatment plant. The influent from the Shank/Balfour Beatty site will be closely monitored to ensure the plant operates properly.

There was an increase in the industrial hydraulic loading to the Bucklin Point Wastewater Treatment Facility as the treatment plant realized a net increase of 20,726 gallons daily in hydraulic industrial loading due to the year 2004 reclassifications. In 2004, three SIUs ceased process discharge, eliminating 34,715 gallons per day of industrial process flow to the Bucklin Point Plant. One of these SIUs was classified as a categorical user.

Two firms were newly classified as SIUs in 2004 in the Bucklin Point service area. One of these SIUs is categorically regulated. The two new SIUs in this district discharge of a combined daily flow of 55,441 gallons per day. Eight SIUs located in the Bucklin Point district experienced significant changes in water usage during 2004. Two SIUs, Slater Screen Print and Chemart Company, increased their usage by 35,501 gpd or 84% and 2,065 gpd or 12% respectively. Six SIUs decreased their water usage in 2004. These SIUs and their decrease in water usage are AAFCO, Incorporated, 14,384 gpd or 47.6%, Vennerbeck Stern-Leach, 9,176 gpd or 46.3%, CHN Anodizing, 13,461 gpd or 45.3%, Impco, Inc., 1,174 gpd or 34.8%, Tanury Industries, 8,333 gpd or 14%, and Vitrus, Division of Evergy, Inc., 4,899 gpd or 13.1%. Therefore, the net change in flow to the Bucklin Point Wastewater Treatment Facility in 2004 was a decrease of 415 gallons daily.

A review of the baseline monitoring reports submitted by the six newly classified significant users of the NBC sewer system indicates that the combined discharge from these facilities should have no adverse effect on the quantity or quality of effluent discharged from the Field's Point or Bucklin Point Wastewater Treatment Facilities. The SIU firms which were reclassified during 2004 and the reason for each reclassification are detailed in TABLE 1.

TABLE 1

2004 Significant Industrial Users Classification Changes
Firms Reclassified to Non-Significant

Field's Point Firms	*Reason for Reclassification*
Antonelli Plating Company	Firm is out of business.
Barletta Heavy Division - Dyer Street	Firm ceased discharges.
Beaucraft, Inc.	Firm is out of business.
Century Plating International	Firm is out of business.
Curtis Jewelry Manufacturing	Firm is out of business.
Excell Manufacturing Company	Firm is out of business.
Microfin Corporation	Firm is out of business.
Oster Alloys	Firm ceased categorical operations.

TABLE 1
(continued)

2004 Significant Industrial Users Classification Changes
Firms Reclassified to Non-Significant

Field's Point Firms	*Reason for Reclassification*
R-One Alloys, Inc. d/b/a Refining One, Inc.	Firm is out of business.
T. Sardelli & Sons, Inc.	Firm sold to new owner.

Bucklin Point Firms	*Reason for Reclassification*
Slater Dye Works - Cumberland Facility	Firm closed this facility.
Tanya Creations	Firm ceased categorical operations.
Union Wadding Company	Firm is out of business.

2004 Significant Industrial Users Classification Changes
Newly Classified Significant Users

Field's Point Firms	*Reason for Reclassification*
Park Lane Associates	This new firm performs categorically regulated metal finishing operations.
Sardelli International	This firm began to discharge categorically regulated metal finishing wastewater in 2004.
Shank/Balfour Beatty – Foundry Shaft Site	This new firm discharges greater than 5,000 gallons per day.
Walsh Construction Company of IL	This new firm discharges greater than 5,000 gallons per day.

Bucklin Point Firms	*Reason for Reclassification*
Cintas Corporation	This new firm discharges greater than 5,000 gallons per day.
Healy Brothers Corporation	This firm began to discharge categorically regulated metal finishing wastewater in 2004.

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 sewerage 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 sewerage system. This is evidenced by the fact that user compliance rates are excellent, no incidents of pass through or interference occurred, and 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. The NBC is the only large Pretreatment Program in the nation to receive this prestigious designation twice.

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

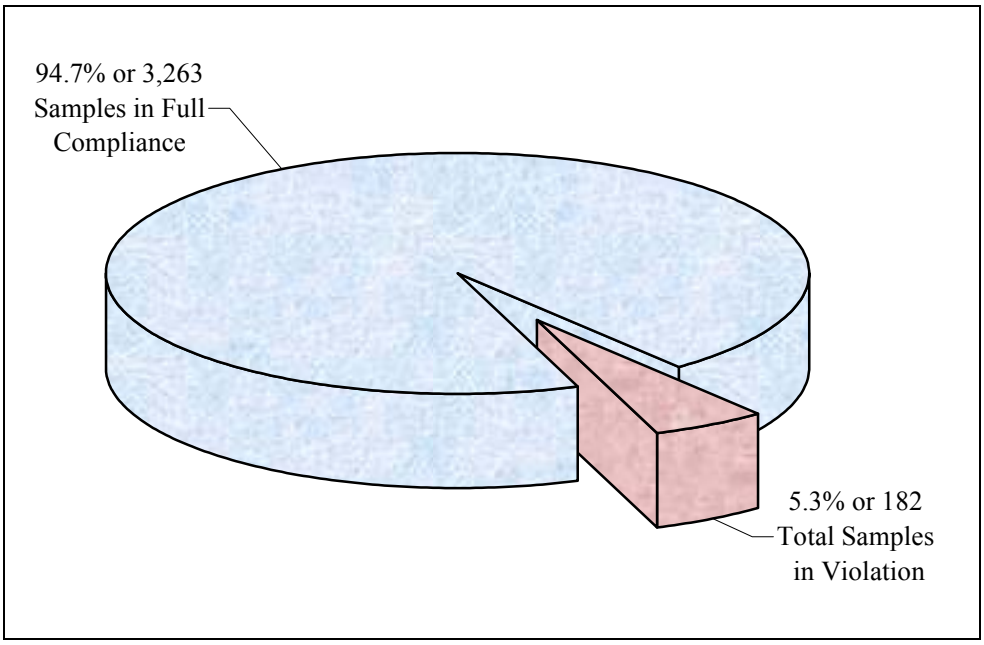
Through extensive user education efforts, quick enforcement response to user violations and regular monthly reminder telephone calls to users, the NBC Pretreatment Section has over the years reduced its Significant Industrial User (SIU) rate of significant non-compliance substantially in both sewerage districts. The combined rate of SNC for significant industrial users located in the two NBC sewerage districts for 2004 was 8.7% down from 9.6% in 2003.

The SIU rate of significant non-compliance was dramatically reduced in the Field's Point District from a high of 39.0% in 1992 to 9.5% for 2004, while the SIU rate of SNC for Bucklin Point was reduced from a high of 44.8% in 1994 to 7.5% in 2004. These impressive reductions in the rate of SIU Significant Non-Compliance are directly attributed to increased user education efforts made by the NBC 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, sending annual 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.

As a result of these efforts, the NBC has been able to maintain SIU rates of SNC below 10% at both facilities. The rate of significant non-compliance for SIUs remained the same in the Field's Point District in 2004, 9.5% as was noted for 2003. The SIU SNC rate for Bucklin Point decreased to 7.5% in 2004, from 9.8% in 2003. Five of the SIUs listed in SNC for 2004 were listed for administrative violations. As can be seen from FIGURE 1, 94.7% of the 3,445 analytical reports reviewed by the Pretreatment Staff during 2004 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



3,445 Total Analyses Reviewed

In addition, as shown in CHAPTER IV of this report, the 2004 rate of compliance of categorical users in the two districts was 95.8%, while the compliance rate for significant users was 96.0%. 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 VI of this report.

Twenty-one firms located in the Field's Point and Bucklin Point Districts were listed in a Public Notice in the Providence Journal on February 28, 2005 as being in SNC for the period from October 1, 2003 through December 31, 2004. Of the twenty-one firms published for being in SNC, twelve users are located in the Field's Point District and nine users are located in the Bucklin Point service area.

The names of nine categorical users were published for SNC, seven from the Field's Point District and two from Bucklin Point. Two significant non-categorical users were published, and both are located in Bucklin Point. Ten non-significant industrial users were listed in the Public Notice, five from Field's Point and five from Bucklin Point. Fifteen of the twenty-one firms were listed as being in SNC solely for administrative violations such as submitting a report late. Four firms listed in the notice were cited as being in SNC solely due to violations of effluent limitations. Two firms were cited for both administrative and effluent violations. At the time of publication of this report, nineteen out of the twenty-one facilities cited as being in SNC were back in compliance.

~ 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. The Pretreatment staff works very closely with the NBC Legal Section and has the capability to issue an Administrative Order or Cease and Desist Order immediately, if necessary, to halt illicit discharges.

During 2004, the NBC issued 2,159 Notice of Violation Letters and two Administrative Orders, one Permit Suspension was in effect during 2004, and the NBC assessed $50,000 in penalties. This is clear evidence of the effectiveness of the NBC Enforcement Program.

~ Sufficiency of Program Funding and Staffing Levels

The NBC has provided continual support and funding to the Pretreatment, Environmental Monitoring, Pollution Prevention, 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 Program

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 VI 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 for the collection system. The findings of this report indicate that the current local limits are both appropriate and enforceable. A review of recommendations from this report is provided in CHAPTER VII.

~ Sufficiency of Statutory Authority and Rules and Regulations

The Narragansett Bay Commission 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 sewerage system. In 2004, the NBC petitioned the DEM to revise the Rules and Regulations. As a part of the petition, the NBC requested the allowable pH limitations be standardized in the two districts. The other revisions concerning the Pretreatment Program were to clarify existing regulations. In addition, the NBC revised the Rules and Regulations regarding sewer connections. The DEM reviewed the submittal and deemed the revisions to be a non-substantial Pretreatment Program modification and approved them. A public hearing on the revisions was held on November 4, 2004. The revised Rules and Regulations became effective on December 13, 2004. The NBC Rules and Regulations satisfy all EPA and DEM requirements and are fully enforceable.

~ Evaluation of Recent and Proposed Program Modifications

The NBC Enforcement Response Plan (ERP) was approved by the DEM and adopted in June 1994. Since that time, there have been many philosophical changes regarding environmental enforcement stemming from the "kinder and gentler" approach advocated by the EPA and implemented by the State of Rhode Island and the NBC.

Since adoption of the ERP in 1994, the NBC has become very *proactive* with regard to user compliance. Many educational user programs have been developed and implemented to educate users and help users achieve and maintain compliance. The NBC Pollution Prevention Program (P2) is one example of the efforts the NBC has employed to implement the "kinder and gentler" approach. The NBC P2 staff is referred to every user in violation of EPA or NBC Rules and Regulations. The NBC has incorporated the "carrot vs. stick" method into its enforcement program. The P2 Program and the educational

approach have been very successful at bringing non-compliant users into compliance and have contributed to a reduction in the percentage of users in Significant Non-Compliance with NBC and EPA Regulations. The 1994 ERP states that the NBC will issue an Administrative Order for many violations that are considered to be minor by today's enforcement philosophies.

The NBC takes non-compliance with its rules and regulations very seriously. As such, no violation goes unaddressed; as the NBC issues a Notice of Violation for every user violation. Escalated enforcement action however, in the form of an Administrative Order, is initiated as necessary to protect the NBC POTWs and as needed the most to protect Narragansett Bay. Further, deferment in the time period before an escalated enforcement action is initiated is necessary to allow Pollution Prevention staff an opportunity to work with industry to address compliance issues from the "kinder and gentler" perspective. Based upon the change in enforcement philosophies over the past few years, the NBC has revised its ERP to more accurately reflect the "kinder and gentler" approach advocated by EPA and utilized over the past few years. This revision is required by the new RIPDES permits issued to the NBC by the DEM. The NBC Enforcement Response Plan was revised in 2002 to accurately reflect the enforcement protocols presently followed at the NBC. The final ERP was approved by the DEM in September 2003.

In 2004, the NBC implemented a non-substantial change in the allowable pH limitations for both treatment facilities. The change standardized the pH limitations to 5.0 standard units (s.u.) - 11.0 s.u. from 5.0 s.u. - 10.0 s.u. in Field's Point and 5.5 s.u. - 9.5 s.u. in Bucklin Point. The NBC requested this modification in a request to revise the Rules and Regulations. The DEM determined the modification to be a non-substantial program modification.

~ 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, commonly referred to as "the bean counts" are provided in the Pretreatment Performance Summary Sheets. The Pretreatment Performance Summary Sheets, one for each NBC sewerage district, are provided in TABLES 2 and 3 and detail the year 2004 accomplishments of the NBC Pretreatment, Environmental Monitoring, and Enforcement Programs.

TABLE 2

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	Paul Pinault, P.E. , Executive Director
	Thomas P. Uva, PP&R Director
	Kerry M. Britt, Pretreatment Manager
Contact Telephone	(401) 461-8848
RIPDES Number	RI 0100315
Reporting Period	January 1, 2004 - December 31, 2004
Total Categorical Industrial Users as of the date of this report (throughout the reporting period)	54 (63) (See Note 1)
Total Significant Non-Categorical IUs as of the date of this report (throughout the reporting period)	10 (11) (See Note 1)
Total # Significant Industrial Users (SIUs)	64 (74) (See Note 1)

2. Significant Industrial User (SIU) Compliance

	Significant Industrial Users	
	Categorical	**Non-Categorical**
1. # Of SIUs Submitting BMRs/# Required	12/12	4/4
2. # Of SIUs Submitting 90-Day Compliance Reports/# Required	3/3	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	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	5	0
7. # Of SIUs in SNC With Effluent Requirements At End of Report Period	2	0

TABLE 2
(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	12/12	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	251	33
5. # Of Sampling Visits Conducted	162	24
6. # Of Facilities Inspected (Nonsampling)	63	11
7. # Of Facilities Sampled	63	11
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	0/0
10. # Of SIUs in SNC with Self Monitoring and Not Inspected and Not Sampled in the Past 12 Months	0	0

TABLE 2
(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	482	33	910	1425
3. Admin. Orders Issued	0	0	2	2
4. Combined Total Of Administrative Orders and Notices of Violation	482	33	912	1427
5. Civil Suits Filed	0	0	1	1
6. Criminal Suits Filed	0	0	0	0
7. Combined Total of Civil and Criminal Suits	0	0	1	1
8a. Published IUs in SNC (See Newspaper Notice in Enforcement Chapter)	7	0	4	11
8b. Rate of IUs in SNC	7/63 = 11.1%	0	N/A	N/A
9a. Amount Of Penalties Collected (Total Dollars/IUs Assessed)	$0/0	$0/0	$4,830/3	$4,830/3
9b. Amount Of Penalties Assessed (Total Dollars/IUs Assessed)	$0/0	$0/0	$50,000/2	$50,000/2
10. # of IUs Subject to Any Enforcement Action	29	17	185	231
11. Other Actions (Permit Suspensions, Sewer Bans, Etc.)	1 (see Note 2)	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.

Thomas McBride — March 15, 2005

AUTHORIZED REPRESENTATIVE **DATE**

TABLE 2
(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: As stated in Article 8.14 of the NBC Rules and Regulations, the NBC may suspend the wastewater discharge permit of any user who ceases operations for any time period exceeding one month. One categorical user located in Field's Point, Century Plating International, did not discharge during 2003, as their wastewater discharge permit was suspended in 2001 and their process discharge connection was sealed. This user is still inspected by NBC personnel, is still classified as a SIU due to their potential to impact NBC facilities.

TABLE 3

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	Paul Pinault, P.E. , Executive Director
	Thomas P. Uva, PP&R Director
	Kerry M. Britt, Pretreatment Manager
Contact Telephone	(401) 461-8848
RIPDES Number	RI 0100072
Reporting Period	January 1, 2004 - December 31, 2004
Total Categorical Industrial Users as of the date of this report (throughout the reporting period)	34 (34) (See Note 1)
Total Significant Non-Categorical IUs as of the date of this report (throughout the reporting period)	16 (18) (See Note 1)
Total # Significant Industrial Users (SIUs)	50 (53) (See Note 1)

2. Significant Industrial User (SIU) Compliance

	Significant Industrial Users	
	Categorical	**Non-Categorical**
1. # Of SIUs Submitting BMRs/# Required	6/6	9/9
2. # Of SIUs Submitting 90-Day Compliance Reports/# Required	1/1	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	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	2
7. # Of SIUs in SNC With Effluent Requirements At End of Report Period	2	0

TABLE 3
(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	9/9	8/8
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	150	71
5. # Of Sampling Visits Conducted	87	40
6. # Of Facilities Inspected (Nonsampling)	34	18
7. # Of Facilities Sampled	34	18
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	0/0
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

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	215	112	407	734
3. Admin. Orders Issued	0	0	0	0
4. Combined Total Of Administrative Orders and Notices of Violation	215	112	407	734
5. Civil Suits Filed	0	0	3	3
6. Criminal Suits Filed	0	0	0	0
7. Combined Total of Civil and Criminal Suits	0	0	3	3
8a. Published IUs in SNC (See Newspaper Notice in Enforcement Chapter)	2	2	5	9
8b. Rate of IUs in SNC	2/35 = 5.7%	2/19 = 10.5%	N/A	N/A
9a. Amount Of Penalties Collected (Total Dollars/IUs Assessed)	$4,000/1	$0/0	$1,620/1	$5,620/2
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	49	6	373	428
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.

Janet M. Bell — March 15, 2005

AUTHORIZED REPRESENTATIVE — **DATE**

TABLE 3
(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.

II. PROGRAM ADMINISTRATION

RIPDES Permit Numbers

On September 30, 1992, the Rhode Island Department of Environmental Management, Division of Water Resources issued RIPDES permit number RI 0100315 to the NBC for its Field's Point Wastewater Treatment Facility. This permit became effective on October 30, 1992 and superseded the permit issued on April 4, 1979. The Narragansett Bay Commission RIPDES permit number for the Bucklin Point Wastewater Treatment Facility is RI 0100072. This permit was issued on January 2, 1991 to the former Blackstone Valley District Commission. On December 31, 2001, the RI DEM issued new RIPDES permits for the two NBC wastewater treatment facilities. The NBC has appealed several conditions of their permits and worked with the DEM throughout 2003 to resolve issues of concern. A Consent Agreement, RIA-330, resolving the appealed conditions was signed by both parties and issued by the DEM in January 2004.

Personnel

At the Narragansett Bay Commission, the control and reduction of toxic and nuisance discharges to the sewer system is a team effort consisting of staff from all sections of the Division of Planning, Policy and Regulation (PP&R) of the NBC. The PP&R team 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 Narragansett Bay, from the wastewater operators that report unusual influents to the legal staff that initiates enforcement actions against violators. The organizational plan of the Narragansett Bay Commission is provided in FIGURE 2, while the organizational plan of the Division of Planning, Policy & Regulation is provided in FIGURE 3.

The PP&R Division consists of the Pretreatment Section, Pollution Prevention Section, Planning Section, Environmental Monitoring & Data Analysis Section (EMDA), and the Laboratory Section. The PP&R Division is charged with 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 Pollution Prevention Section achieves pollutant reduction outcomes through user education efforts and by providing free technical assistance. Both sections rely heavily upon the services and expertise of the EMDA Section and the Laboratory Section. 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 NBC Laboratory Section.

FIGURE 2
Narragansett Bay Commission

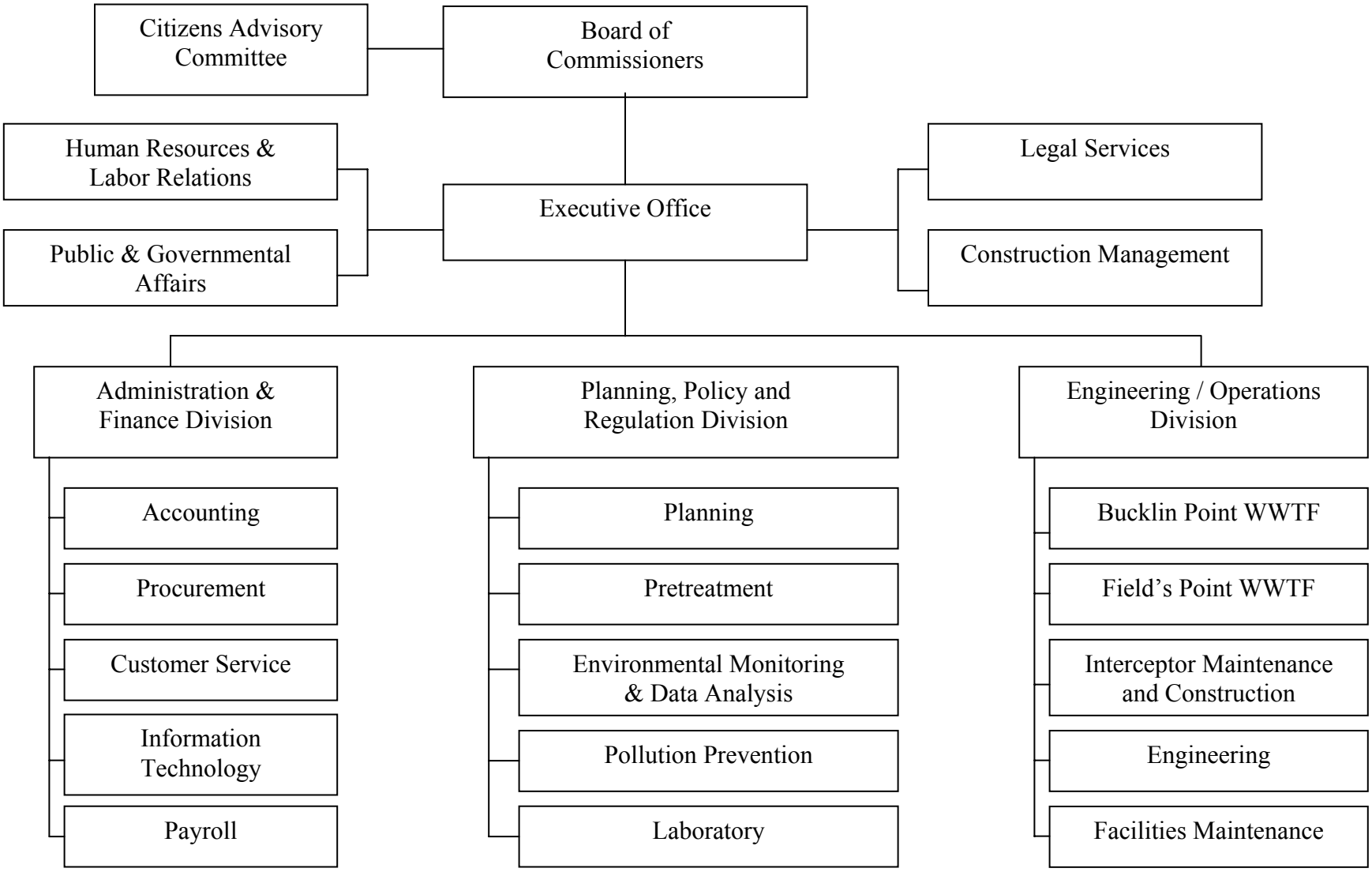
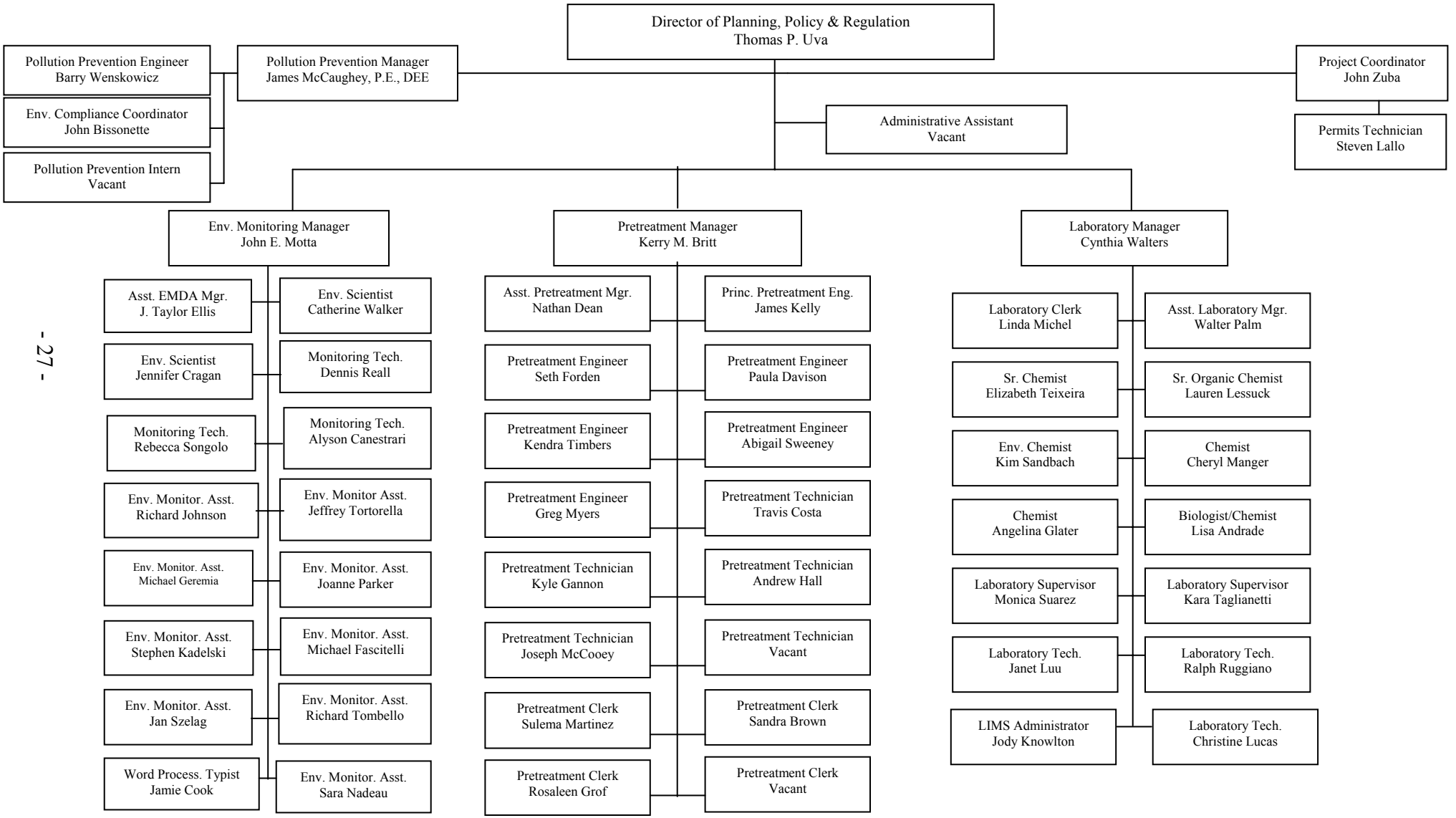


FIGURE 3
Narragansett Bay Commission
Division of Planning, Policy & Regulation
March 15, 2005



During 2004 there were six personnel vacancies within the Pretreatment Section. Kerry Britt was promoted to Pretreatment manager in January 2004 leaving the Assistant Pretreatment Manager position open. This position was posted in February 2004 and filled by Nathan Dean in March 2004 leaving a Pretreatment Engineer position open. John Motta was promoted to Environmental Monitoring Manager in January 2004 leaving his Assistant Pretreatment Manager position open. This position was reclassified to Principal Pretreatment Engineer which was posted in February 2004. The Principal Pretreatment Engineer position was filled in March 2004 by James Kelly leaving a Pretreatment Engineer position. Kathryn Kelly left her position as a Pretreatment Engineer to accept a position in the NBC's Engineering Section as an Environmental Engineer. The three open Pretreatment Engineer positions were filled in May 2004 by Kendra Timbers, Abigail Sweeney, and Gregory Myers. In June 2004 David Zanfagna left his position as a Pretreatment Technician to accept an Environmental Scientist position at the RI Department of Health. The vacant Pretreatment Technician position was filled in July 2004 by Kyle Gannon. In December 2004 Alita McRae vacated her Pretreatment Clerk position to relocate to Chicago, Illinois. The position was posted in early 2005.

During 2004 there were several personnel changes in the EMDA Section. In January 2004, John Motta filled the vacant Environmental Monitoring Manager position. J. Taylor Ellis was promoted to the vacant Assistant Environmental Monitoring Manager position in March 2004 leaving an Environmental Scientist position vacant. Catherine Walker filled the vacant Environmental Scientist position in February 2004. Jennifer Cragan filled the Environmental Scientist position vacated by J. Taylor Ellis in June 2004. Kendra Timbers left her position as an Environmental Monitoring Assistant in May 2004 to fill a Pretreatment Engineer position. The vacant Environmental Monitoring Assistant position was filled by Michael Fascetelli in May 2004. In May 2004 Robert Bohler vacated his position as a Monitoring Technician. Rebecca Songolo filled the vacant Monitoring Technician position in June 2004 leaving an Environmental Monitoring Assistant position open. This position was filled by Sara Nadeau in July 2004. In early 2004 an additional Environmental Monitoring assistant position was created. This position was filled by Jeffrey Tortorella in April 2004.

There was one personnel change in the Laboratory Section in 2004. An additional Laboratory technician was added. Christine Lucas filled this position in July 2004.

There were no personnel changes in the NBC Pollution Prevention and Planning Sections during 2004.

Staff Training

The Narragansett Bay Commission provides extensive training to its employees and has a tuition reimbursement program to assist employees in furthering their education. During 2004, various Pretreatment, EMDA, Pollution Prevention, and Laboratory personnel received training by attending seminars and classes in the following subject areas:

- AutoCAD Basics
- Sapphire (LIMS) Training
- Confined Space Entry
- Spill Reporting Training
- Interdepartmental Cross Training
- Management of Hazardous Waste
- NBC CSO Tunnel Safety Training
- Sampling and Lab Procedures Training
- Gas Meter Operation Seminar
- Civil Rights and Sexual Harassment
- Slip and Fall Prevention Training
- Defensive Driver Training
- Hearing Conservation Training
- Healthy Back
- 40 Hour OSHA HAZWOPER Training
- 8 Hour OSHA HAZWOPER Recertification Training
- 10-Hour OSHA Construction Safety & Health Training
- Personal Protective Equipment
- Right to Know Training
- EMDA Lab Safety Orientation
- EPA Regional Pretreatment Workshop
- Rhode Island ISO 14000 Roundtable
- CPR/AED Training
- Septage Station Sampling Apparatus Training
- Boom Deployment Training
- RI DEM Strategic Plan Workshop
- Traffic Control Safety Training
- Fire Extinguisher Training
- Evacuation Training
- Microbiology/Microscopy Training
- ICP Training
- GC-MS Training
- R/V McMaster Boat Operation Training
- Boat Safety Training
- Asset Management
- Hospital Environmental Compliance
- Pharmaceutical Waste Management
- RI Human Resource Investment Council – Obtaining Grant Funds
- National Environmental Assistance Summit
- MA TURI Workshop – Safe Alternatives for Plating Chemicals
- Small Business Advisory Council Workshop
- Nitrogen Removal Seminar
- Investment Grants Workshop
- NEWMA Pollution Prevention Metrics Workshop
- AESF Regional Conference
- Safety Orientation
- YSI Meter Operation

- Business English
- Survey of Biomedical Chemistry
- Statistics
- Biological Nitrogen Removal Class
- Web & Internet Email Training
- What's New in Office 2003
- NEWEA Trends in Wastewater Analyses for the 21st Century
- Effects of Microorganisms in the Wastewater Treatment Process
- Pyramids of Success
- Evaluating Regulatory Perspectives in Nutrient Control
- 2004 NEWEA's Laboratory Practices Specialty Seminar
- Pollution Prevention for Various Industries
- Windows XP
- Conference on Leadership Development and Team Building
- Managing Projects and Priorities
- Conflict Management and Confrontation.

Staff Participating 40 hr HAZWOPER Training

The NBC provides 40 Hour HAZWOPER training to all new Pretreatment, Pollution Prevention and Environmental Monitoring 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.

Pretreatment staff and WWTF operators participate in a joint unusual influent reporting and response training exercise.

An eight hour HAZWOPER recertification training session is provided annually to Pretreatment, EMDA, and Pollution Prevention 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. During 2003, the NBC began conducting the 8 hour HAZWOPER Recertification Training in house. The recertification program consists of many sessions, such as confined space entry spill tracking, boom deployment, personal protective equipment, basic chemistry and use of air monitoring equipment. The training sessions are held throughout the year. This method of training is a more comprehensive program that is better suited to the NBC's needs.

NBC Toxics Reduction, Control and Monitoring Program Budgets

The Commission is committed to protecting the two NBC Wastewater Treatment Facilities and Narragansett Bay from toxic discharges. This pledge to protect the environment is evidenced by the Commission's continued commitment to ensure adequate staffing and funding levels for the Division of Planning, Policy and Regulation as necessary to ensure environmental protection. The approved fiscal year 2005 Pretreatment budget was $1,013,208, a 0.8% increase from the prior year's budget. This increase was necessary to cover raising healthcare costs as well as the purchase of a new inspection vehicle and remote monitoring equipment for pump stations. The fiscal year 2005 Pretreatment budget allocated 92.6% to personnel cost or $937,942.

The budget for the EMDA Section in fiscal year 2005 was $1,140,751, of which 86.3% or $984,564 was attributed to personnel expense. The FY 2005 EMDA budget decreased by 4.5%, or $53,811, from the previous year.

The Pollution Prevention budget for fiscal year 2005 was $255,706, a slight increase from the FY 2004 budget of $246,496. The approved fiscal year 2005 Laboratory budget was $1,219,056, an increase of 1.23% or $14,864, from the previous year. Personnel costs associated with the Pollution Prevention and Laboratory Sections budgets were 92.1% and 76.4% respectively.

In 1983, the R.I. General Assembly passed Public Law 1983, Chapter 235 which required that the Commission 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). In accordance with an order from the PUC, 100% of the Pretreatment Program budget is recovered from permit fees. On July 1, 1995, a new permit fee rate structure approved by the PUC became effective to ensure recovery of these 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

Since 1987, the Commission has entered into numerous contracts with Digital Equipment Corporation (DEC) to develop software for the Industrial Pretreatment Program. To this date, the Commission has spent approximately $115,000 on pretreatment software development through this private consultant. The Pretreatment Information Management Computer System is a networked computer system with inquiry access available to all Sections of the NBC via their desktop computer terminal.

During late 1996 and throughout 1997, the NBC Information Technology (IT) Section performed extensive computer programming modifications to the Pretreatment software package to improve the software and eliminate possible Y2K bug problems. These software revisions consisted of reviewing twenty-one (21) different programming tasks, including developing new subroutines to track user compliance and Pretreatment staff worker performance. Modifications were made to many existing subroutines to provide additional data outputs. The major portion of this latest phase of software development was completed in 1997. Additional minor programming projects have been completed since this time to improve the software. The Pretreatment software package has the following capabilities:

- Ability to track users in up to twenty separate drainage districts with different local limits and analyze the user data either separately or collectively;

- Ability to create a file for each user which contains information pertinent to the user such as company name, address, permit number, solvents and chemicals used, user classification, user category, water usage, the key manhole that the user discharges to, 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;

- 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. Notice of Violation letters can be 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 files of 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 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 visa versa, the date of the change, and the engineer that made the change;

- Ability to generate mailing labels for various categories or classifications of users;

- 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 late 1999, the NBC began to investigate the conversion of the pretreatment software package to a Graphical User Interface (GUI) system and to enhance the software to perform additional functions. The conversion of the pretreatment software package from a Character Based Legacy system to a GUI system will allow for improved functionality within the PC office environment utilized by the NBC Pretreatment Program. The new pretreatment software was put on line during 2004. The revised software allows entry of photographs of users' sampling locations, pretreatment systems and surveillance manholes to be inserted. The new software was been used in parallel to the existing software through out 2004 to ensure the new software is performing in the same manner as the old. The new pretreatment software will interface directly with the NBC Laboratory's Laboratory Information Management System (LIMS), allowing improved sample tracking and fast reporting of lab results, and will eventually be able to interface with a Geographic Information System (GIS) presently under development at the NBC. It will also interface with existing Customer Service software as well as new Customer Service software currently being developed by NBC IT Staff.

On December 31, 2001, the RIDEM issued new RIPDES permits to the NBC for its two wastewater treatment facilities. These new RIPDES permits require the NBC to significantly expand upon the information reported to the DEM in the Annual Pretreatment Report. The existing NBC Pretreatment Computer System does not track the many new items required to be annually reported. The new pretreatment software incorporates programming to satisfy the new DEM reporting requirements.

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 and Governmental Affairs Office, in conjunction with the staffs of the Pollution Prevention and Pretreatment Sections continually inform users of various NBC activities. The Commission 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 the NBC Newsletter;
- Development and distribution of educational fact sheets and technical bulletins;
- Public Meetings, Workshops, and Hearings;
- Displays at Public Events;
- The Commission's Citizens Advisory Committee.

During the past twelve months, the Commission 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.

Display describing the NBC EMPACT program used during public events.

Mailings

During calendar year 2004, the Pretreatment Section sent twelve informational form letters to various categories of regulated users located within the NBC sewerage district. The first informational form letter was sent to all Significant Industrial Users (SIUs) on February 4, 2004 and notified the users that they were classified by the NBC as SIUs.

This form letter is issued annually to remind the SIUs of their reporting requirements outlined in 40 CFR §403.12.

The second letter was issued on March 8, 2004. This letter was issued to dental practitioners to inform them of the NBC's Best Management Practices for the Management of Waste Dental Amalgam (BMP) program as well as the requirements required by the BMP. The letter also informed the dental practitioners of a half-day seminar on the BMP sponsored by the NBC and included a copy of the BMP.

The third letter was issued on March 19, 2004. This letter was issued to all users who were published in the Providence Journal on March 3, 2004 for being in Significant Non-Compliance for the reporting period October 1, 2002 through December 31, 2003 as mandated by EPA regulations. The letter included an invoice to be paid by the users for its share of the cost to publish the notice.

The fourth informational letter was sent to all industrial users on March 23, 2004 and notified the users of the EPA Significant Non-Compliance (SNC) criteria which is used by the NBC. The letter also explained the NBC's permit and reporting requirements and wished the firms good luck with compliance in 2004.

The fifth letter was issued to all permitted hospitals on March 23, 2004 to inform them of a half-day seminar on Environmental Compliance for hospitals sponsored by the NBC.

The sixth informational letter was issued on April 28, 2004 to dental practitioners informing them of a workshop to answer questions regarding the Dental BMP and assist the dental practitioner with required submittals.

The seventh letter was issued on May 5, 2004 to all permitted users and licensed laboratories to notify them of all required information to be included on Certificates of Analysis.

The eighth form letter was issued to all industrial users on May 25, 2004 notifying them that prohibited substances should not be discharged to the NBC sewer system during the summer vacation shutdown and clean up period. The letter warned users that civil and criminal penalties would be strictly enforced against violators caught illegally dumping. The letter also wished the NBC users an enjoyable summer vacation.

The ninth letter was issued on September 27, 2004 to hospital facilities and members of the Rhode Island Pretreatment Coordinators Association (RIPCA) informing them of a free half-day Roundtable Workshop on hazardous waste management for healthcare facilities sponsored by EPA New England.

The tenth informational letter was sent on December 2, 2004 to all industrial users. The letter reminded the industrial users to manage and dispose of wastes properly during the holiday shut down and wished them a happy holiday season.

The eleventh informational letter was issued on December 8, 2004 to all permitted users notifying them the NBC revised the Rules and Regulations for the Use of Wastewater Facilities and its approved Industrial Pretreatment Program. The letter informed them the allowable pH range in both districts had been standardized in both districts to 5.0 standard units of 11.0 standard units, and the revisions were effective on December 13, 2004.

The twelfth and final form letter was issued to all permitted septage haulers on December 17, 2004 to transmit vehicle identification stickers and to notify the haulers that discharges would not be permitted without a valid sticker.

Copies of these thirteen informational letters are provided in ATTACHMENT VOLUME I, SECTION 1.

Newspaper and Magazine Articles, 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 NBC Pollution Prevention and Pretreatment Programs;
- Wildlife reemergence and water quality of Narragansett Bay;
- Articles regarding NBC personnel;
- Woonasquatucket River Clean Up Initiative;
- NBC Progress on Combined Sewer Overflow (CSO) project;
- Public and community outreach projects;
- Feature stories of local area businesses;
- Capital Improvements planned for NBC facilities;

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 of prohibition of concentrated discharges from industries during their annual summer vacation shutdown and clean-up period;

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

- Public Notice to remind industry of the need to obtain a sewer connection permit;

- Public Notice of 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 a quarterly newsletter which is sent to all permitted users, and develops educational brochures and fact sheets. The NBC newsletter informs 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 2004 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 past years, more than 3,000 visitors would take advantage of the complimentary tours of the NBC's wastewater treatment facilities, on an annual basis. These visitors ranged from school children to university students to foreign visitors from Europe and Asia. 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. However, after September 11, 2001, the NBC joined other utilities around the country in temporarily curtailing facility tours due to security concerns. In lieu of facility tours, the NBC has made copies of its 30-minute video documentary available to schools and community groups at no charge and has made several in-classroom presentation to area schools and neighborhood groups.

- *Reclaiming an Urban Resource:* The Woonasquatcket River Restoration Initiative – the NBC sponsored two large river clean-ups on the Woonasquatucket River, an American Heritage River that runs through several Rhode Island communities on the way to Narragansett Bay. Over eighty members of the NBC staff in addition to volunteers from other state agencies, local businesses and over 100 Providence College students lent their sweat equity to pull countless tires, shopping carts, and other debris from the river.

- *Maintaining a Presence on the World Wide Web (**www.narrabay.com**)* - To further improve communications with our customers, the NBC continued to enhance its web site. Traffic and construction posted relating to the NBC's Combined Sewer Overflow (CSO) project are regularly updated on the site, and this year saw the addition of numerous Pretreatment and Permitting forms in downloadable formats.

- *Advocacy for Clean Water*– In 2004, the NBC worked with over 1600 WWTFs nationwide to advocate for federal funding for clean water infrastructure. NBC's Executive Director testified before the US Senate Committee on the Environment and Public Works, presenting the municipal perspective on infrastructure needs for the next two decades.

- *Teaching Children About Water Conservation and Wastewater Treatment* - Throughout the year, thousands of school children were educated about water conservation and wastewater treatment. In 2004, the NBC introduced over 800 local children to the fascinating world of water monitoring with a year-long educational program entitled "What's in my River?" Students from six communities along the Woonasquatuket River participated. In addition, staff worked very closely with the Met School to introduce urban students to the fields of environmental science and engineering through in-classroom and on-site educational programming.

- *Celebrating the Importance of Narragansett Bay* - For the eleventh year in a row, the NBC sponsored its annual poster contest for elementary school students in kindergarten through sixth grade. Over 650 students enthusiastically illustrated the theme, "A Perfect Day on Narragansett Bay" with colorful, original depictions of the importance of clean water. Winners received a U.S. savings bond and have their artwork showcased in a year 2005 calendar poster. The NBC also sponsored a written word contest for high school seniors which encouraged the students to express their ideas and values regarding clean water in poetry or prose. In addition, the winning posters were exhibited along with other environmentally themed art at a Providence art gallery.

- *Recognizing Students for Environmental Awareness* - For the twelfth consecutive year, the NBC has participated in the Rhode Island State Science and Technology Fair and presented savings bonds 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, public affairs, and environmental monitoring and data analysis.

- *Career Opportunities Outreach* - Through the efforts of the NBC's Affirmative Action Committee, the NBC delivered career day presentations to students in Lincoln, Central Falls 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, several environmental projects were given financial support including: an environmental engineering scholarship at the University of Rhode Island and the River Classroom Programs of the Blackstone Valley Tourism Council.

- *Honoring Industrial and Commercial Users for Environmental Performance* - This year, the NBC recognized fourteen companies in the service district with Environmental Merit Awards for Pollution Prevention and Perfect Compliance Awards with regulatory requirements. The environmental strides made by these companies were honored at a special breakfast of the Providence Chamber of Commerce.

- *Reaching Out to the Business Community* - At the Providence Chamber of Commerce's Business Expo, the NBC provided attendees with information on how to save money and help the environment through proper wastewater treatment. More than 1,500 people stopped by the NBC display booth for information over the two-day event.

- *Supporting the Local Shellfishing Industry* - In 2004, the NBC again sponsored four shellfish relocation efforts, with the participation of the Rhode Island Department of Environmental Management, the University of Rhode Island, the Rhode Island Shellfishermen's Association, and the Ocean State Shellfishermen's Association. In May, shellfishermen gathered in five different locations to scoop more than 850,000 pounds of shellfish from lush beds which lie in restricted fishing areas. The quahogs were transplanted to non-restricted waters throughout the bay and allowed time to cleanse themselves and to reproduce. In December, local shellfishermen harvested the transplanted shellfish. The harvest contributed to a significant boost to the state's economy, and an abundance of shellfish for consumers during a time of year when demand is traditionally high.

- *Keeping Our Stakeholders Informed* - The NBC continued publishing its quarterly newsletter, which is distributed to over 1,000 stakeholders in business, government, and the community. The newsletter offers information on infrastructure improvements, and NBC programs and activities. In addition, the Commission initiated quarterly public information forums on its Combined Sewer Overflow (CSO) project.

- *Bi-lingual Information* – During 2004, 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 American Cancer Society, the Amos House, and the American Heart Association.

- *State Employee Charitable Appeal* - NBC employees participated in the 2004 State Employees Charitable Appeal (SECA) and raised over $14,000 for a host of worthwhile, appreciative charitable organizations.

NBC Speakers Bureau

Several years ago, the Narragansett Bay Commission established a Speakers Bureau to address the many requests received to speak at schools, workshops and meeting, both locally and nationally. During 2004, NBC personnel were quite active educating the public and professional organizations about the NBC and its many programs and accomplishments. The following paragraphs detail a few of these activities:

~Best Management Practices for the Management of Waste Dental Amalgam Workshops

On March 31, 2004 the NBC sponsored a half day workshop to educate the dental community on its Best Management Practices for the Management of Waste Dental Amalgam (BMP). Thomas P. Uva, Director of Planning, Policy and Regulation, opened the workshop with introductory remarks and gave a history of the project. Kerry M. Britt, Pretreatment Manager, and Nathan J. Dean, Assistant Pretreatment Manager, gave a presentation introduce the BMP. The two options available for dental facilities and other requirements were outlined. Other presenters at this workshop included Beverly Migliori of the RI Department of Environmental Management (DEM), who discussed DEM's requirements for managing dental waste and Mark Stone of the U.S Navy, who discussed the Navy's experience with and research on amalgam separators. Representatives from companies that manufacture amalgam separation equipment were present to answer questions regarding their equipment.

On May 12, 2004, Kerry M. Britt, Pretreatment Manager, gave a presentation to the dental community. The presentation was designed to answer the dental community's questions regarding the BMP and to clarify NBC requirements.

~Hospital Workshop

On March 31, 2004, Kerry M. Britt, Pretreatment Manager, and Seth Forden, Pretreatment Engineer, gave a presentation to representatives of Rhode Island hospitals and healthcare facilities. The presentation outlined Wastewater Discharge Permit requirements as they pertain to hospital discharges. In addition, requirements for handling wastewater generated from decontamination operations were outlined. Other speakers at this workshop included representatives from EPA, DEM and the Providence Fire Department.

~Presentation to Cities and Towns

On March 30, 2004 Kerry M. Britt, Pretreatment Manager, John Zuba, Project Coordinator, and Meg Goulet, Interceptor Maintenance Manager, gave a presentation to building officials from the cities and towns in the NBC's service districts. The presentation outlined the Sewer Connection, Pretreatment and Grease Control Programs. The presentation educated the building officials on these programs and how they interact with the NBC's activities.

~EPA-New England Annual Pretreatment Coordinators Workshop

On June 17, 2004 Kerry M. Britt, Pretreatment Manager, gave a presentation at the Annual Pretreatment Coordinators Conference in Concord, New Hampshire. The presentation outlined the NBC's program for handing discharges from hospitals including procedures for handling wastewater generated from decontamination operations. These discharges include normal process discharges such as x-ray processing, medical procedures and physical plant operations.

~Classes at the Community College of Rhode Island

Walter Palm, Assistant Laboratory Manager, is an adjunct professor at the community College of Rhode Island. Courses he taught last year included Basic Skills for Chemistry, Environmental Chemistry, and Biomedical Chemistry.

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.

Pollution Prevention Program Educational Efforts

The NBC Pollution Prevention Program routinely holds workshops and develops educational handouts to inform users of technologies that can be cost effectively implemented to reduce the generation of waste and to conserve water. During 2004, the following pollution prevention educational workshops and public outreach activities were held:

- Introduction to Industrial Wastewater Treatment and Pollution Prevention – This is a three-credit college course sponsored by the NBC and offered through the Community College of Rhode Island (CCRI). As part of this course, issues involving pH chemistry, control equipment and trouble shooting common process problems are covered in great detail. This course is on the CCRI schedule for every spring semester and is offered when a sufficient number of student enroll.

- American Electroplaters and Surface Finishers Society (AESF) – Throughout 2004 NBC's Pollution Prevention Engineer and Pollution Prevention Manager served on the board the local AESF chapter as Education Chairman and Environmental Chairman, respectively. In addition to attending monthly board meetings these NBC employees helped to arrange for speakers on a variety of environmental topics of interest and concern to AESF members.

- American Electroplaters and Surface Finishing Society (AESF). - On January 20, 2004 Barry Wenskowicz, NBC Pollution Prevention Engineer made a presentation to AESF members on various environmental issues affecting Rhode Island metal finishers and introduced the NBC guest speaker for the night, Mr. Mark Dennen of RIDEM. Mr. Dennen spoke about upcoming Hazardous Waste Biennial reporting requirements.

- American Electroplaters and Surface Finishing Society (AESF). - On September 20, 2004 Barry Wenskowicz, NBC Pollution Prevention Engineer made a presentation to AESF members on environmental regulations affecting the metal finishing industry in the State of Rhode Island.

- Rhode Island School of Design (RISD) – Green by Design Forum – On September 18, 2004 NBC's Pollution Prevention Manager made a presentation on wastewater treatment processes to attendees of RISD's Green by Design Forum. This presentation focused on NBC process for treating wastewater and the importance of minimizing industrial pollutants and managing storm water.

- Pollution Prevention for Auto Salvage Yards – On September 23, 2004 NBC Pollution Prevention Manager made a presentation to the members of the Rhode Island Association of Auto Salvage Yards. This presentation focused on pollution prevention technical assistance efforts being offered by NBC, URI and RIDEM.

Environmental Monitoring & Data Analysis Educational Efforts

~2nd Annual Symposium on Rhode Island Coastal Ecosystems

The NBC cosponsored the 2nd Annual Symposium on Rhode Island Coastal Ecosystems "State of Science Knowledge on Nutrients in Narragansett Bay" on November 17 and 18, 2004. The focus of the symposium was the effect of nutrient removal on Narragansett Bay. EMDA staff presented a poster on nutrient reduction initiatives presently in place at the two NBC POTWs.

~Woonasquatucket River Education Pilot Project

On June 14, 2002 EMDA was awarded a grant by the Partnership for Narragansett Bay to design and implement an education project. The approved pilot program, titled '*What's In Your River: A Woonasquatucket River Education Pilot Project*' expands the scope of two successful EMDA education programs, and is specific to one watershed impacting Narragansett Bay.

The project was designed in conjunction with the Woonasquatucket River Watershed Council (WRWC), and is intended to give students from communities along the Woonasquatucket River an interactive learning experience built around a local river system and extending to the diverse ecosystems of the entire watershed. On October 18, 2002, National Water Quality Monitoring Day, NBC staff, along with representatives from the United States Environmental Protection Agency (USEPA), Northern Rhode Island Conservation District (NRICD), and the Providence Office of Cultural Affairs, made presentations to over 200 school children at Water Place Park regarding water monitoring. This program ended for the 2002/2003 school with a summit for the schools involved on May 20, 2003. The program was expanded for 2003/2004 school year to include 800 students. Additional information regarding this program is provided in CHAPTER VII.

Participating schools gathered at Waterplace Park on October 18 to kick-off the Woonasquatucket River Education Pilot Project, and to observe National Water Quality Monitoring Day.

Citizen's Advisory Committee

The Commission has a permanent Citizens Advisory Committee (CAC) established as part of its organizational structure. The CAC meets monthly and is routinely informed of Commission activities by NBC staff. The CAC serves to advise and assist the Commission in its dealings with the public. Its members consist of representatives of the industrial community, environmental advocacy groups, and concerned citizens. Pretreatment and Pollution Prevention staff made an annual presentation to the Citizens Advisory Committee during 2004 to review the progress and achievements of both programs during the prior year.

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 Association of Metropolitan Sewerage Agencies, the Water Environment Federation, and the American Electroplaters & Surface Finishers Society, and the American Academy of Environmental Engineers, to name a few. Various NBC staff routinely attend association meetings and conferences and often are speakers at such events.

III. Industrial And Commercial Users, Permits, and Inspections

User Classification System

To date, the Commission has identified and inspected 5,378 different industrial and commercial users located within the two NBC sewerage districts. During 2004 the Pretreatment staff identified and entered information on 270 previously unknown users into the NBC Pretreatment database. Pretreatment users are categorized according to the classification system shown in TABLE 4. 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 4 through 9. Users in Categories 1, 2 and 3 are of primary concern to the Commission as their discharges contain toxic and conventional pollutants that can have an impact on the Commission's 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 Commission standardized its definition of Significant Industrial User (SIU) in both sewage drainage districts by modifying the NBC Rules and Regulations. This definition was essentially an adoption of the Field's Point SIU definition, and classifies a Significant Industrial User 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 Commission's Treatment Plant;
- Firm is designated as significant by the Commission 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 4
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 4
(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 4
(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 5,378 industrial and commercial users have been identified through user surveys, 3,732 are still conducting business in the NBC service areas and 127 were classified as Significant Industrial Users sometime during 2004. Of the 127 Significant Industrial Users reported for 2004, there were 97 classified as categorical industries which are subject to both NBC and EPA regulations. The Commission has identified 3,605 non-significant industrial and commercial users and 30 significant non-categorical industrial users of the NBC sewer system. During this reporting period, 14 Significant Industrial User firms 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. A total of seven firms were newly classified as significant during 2004. 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 1,434 Wastewater Discharge Permits in effect, which were issued to facilities located in the Field's Point and Bucklin Point drainage districts. Presently, 951 permits are in effect for users in the Field's Point District, while 483 permits are in effect in the Bucklin Point service area. 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 moved out of the NBC District (Category 72).
- The firm has gone out of business (Category 71).
- 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 5 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 44 of the 77 categories listed in TABLE 4. During this reporting period, the Pretreatment staff issued 428 permits to users located in the two NBC drainage districts. Of the 428 permits issued during 2004, there were 198 new permits issued to new or previously operating commercial and industrial users and 230 permits were reissued to existing users because the old permit expired or the firm changed process operations.

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

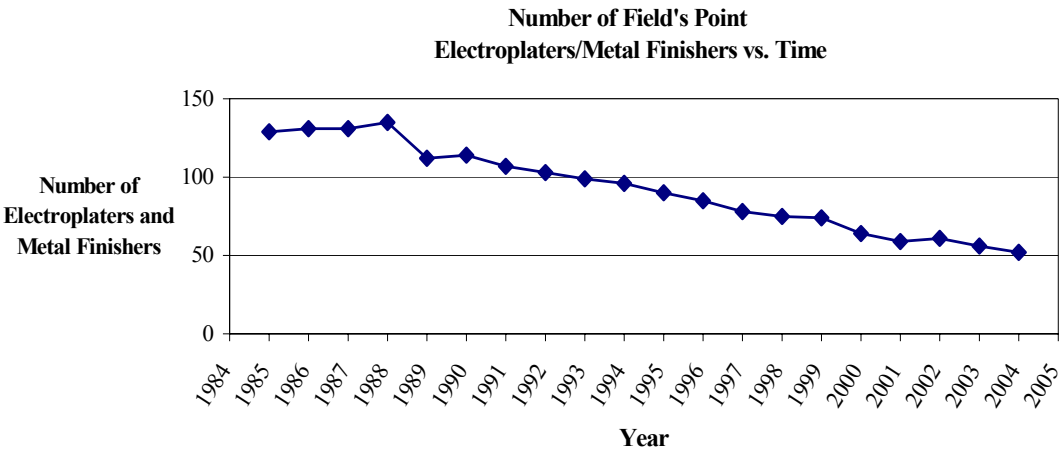
TABLE 5
(Continued)
Narragansett Bay Commission
Summary of Wastewater Discharge Permits in Effect

Category	Company	Field's Point District	Bucklin Point District	Total Permits In Effect
84	Cooling Water/Groundwater/Boiler Discharges	6	1	7
85	Restaurants/Food Preparation Facilities	334	183	517
86	Comm. Buildings With Cafeteria/Laundry	97	23	120
89	Other Commercial Users With Potential to Discharge - Conventional Pollutants	15	0	15
90	Hospitals	11	1	12
91	Cooling Water/Ground Water/Boiler Discharges	1	0	1
92	Laundromats/Dry Cleaners	52	23	75
93	Photo Processing	20	3	23
94	X-Ray Processing	75	34	109
95	Clinical, Medical, And Analytical Laboratories	17	5	22
96	Funeral Homes/Embalming	17	12	29
97	Motor Vehicle Service/Washing	40	12	52
99	Other Commercial Users With Potential To Discharge Toxic Or Conventional Pollutants	22	11	33
	Total Permits in Effect	**951**	**483**	**1434**

There were 44 permits revised and reissued to Significant Industrial Users in the two drainage districts during 2004, while six new permits were issued to this class of users. Seventeen of the 44 revised permits were issued to categorical users during 2004, while the 27 remaining revised permits were issued to Significant Non-Categorical Users.

As can be seen from TABLE 5, 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. The next largest category of permitted users are the electroplaters and metal finishers in Category 11. These users are regulated by federal categorical pretreatment standards as well as NBC local limits. Because of the nature of the electroplating operations, these industries contribute the majority of toxic metal and cyanide loadings to the NBC treatment facilities. The decline of electroplating and metal finishing appears to have stabilized for the first time in years, as there was an increase of two in the number of electroplaters and metal finishers in the two NBC sewerage districts. The dramatic decline of Electroplaters and Metal Finishers over the past decade for the Field's Point district is clearly detailed in FIGURE 4.

FIGURE 4



The NBC has worked with the Metal Finishing Industry and state and federal agencies to investigate what can be done to retain jobs in this industry. Additional information regarding this subject is discussed in CHAPTER VII.

As of this date, 64 firms are operating under Zero Discharge Permits since they have eliminated process discharges and are recycling their process wastewater streams. The NBC has encouraged users to consider recycling their wastewater to eliminate discharges to the sewer containing toxic materials, to implement pollution prevention measures and to encourage conservation of water and raw materials. The 64 facilities that are recycling and are no longer discharging process wastewater to the NBC sewer system are classified in Categories 41 and 42 and can be identified from the list of users provided in ATTACHMENT VOLUME II, SECTION 1. An additional 25 firms recycle the majority of their process wastewater. However, they continue to discharge cooling water, condensate or boiler blowdown to the sewer. These firms are issued discharge permits and are classified in categories 43 and 44. A further discussion of firms recycling their process wastewater is provided later in this chapter.

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 many non-significant commercial users located throughout the two NBC drainage districts. Copies of the various typical Wastewater Discharge Permits issued by the Commission are provided in ATTACHMENT VOLUME I, SECTION 2.

Permits issued by the Commission 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 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;

- 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.;

- 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 4. This sticker is affixed to all tanks which the industrial user is prohibited from discharging.

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 new rate structure for NBC wastewater discharge permit fees. Permit fees range from $217 to $14,492 per year and are based on the time required for NBC personnel to regulate the particular type of industry. Rates are standardized in both NBC drainage districts and most categories are also flow dependent to encourage conservation. The existing NBC wastewater discharge permit fee rate structure is provided in TABLE 6.

TABLE 6
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 6
(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 6
(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 6
(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

Approximately 89 users in the two NBC districts are 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 the NBC 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 the NBC. 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 office routinely issues Zero Process Wastewater-Sanitary Discharge Permits to Category 41 and 42 industries. As previously noted, 64 facilities are presently classified in categories 41 and 42 and do not discharge process wastewater to the sewer system. Users with recycle process operations and diminuous discharges from condensate, boiler or cooling water wastestreams are issued discharge permits. There are 25 of these users which are classified in categories 43 and 44. Of the 89 users classified in categories 41 through 44, 62 facilities are permitted to operate zero process discharge wastewater recycle systems in the Field's Point District, while 27 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 Control Plan;
- Seal all floor drains and cap off all 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 NBC 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 NBC Pretreatment Program user 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 weekly 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 the pretreatment staff to firms which may be in financial trouble or ceasing operations. This allows the Pretreatment inspectors 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.

- *Telephone Book Reviews* - The Pretreatment staff will review the new telephone books when they are published annually to identify new non-domestic users that may require regulation. Particular attention is given to reviewing categorically regulated user categories such as electroplaters, metal finishers, metal formers, etc.

- *Directory Reviews* - The State of Rhode Island, Department of Economic Development publishes a Rhode Island Directory of Manufacturers annually which the Pretreatment staff subscribes to and reviews. This directory lists all manufacturing facilities located within the state by type of manufacturing operation and by Standard Industrial Classification (SIC) code. An annual review of this directory allows the NBC to identify potential non-domestic users that may require a Wastewater Discharge Permit. The Pretreatment office also subscribes to the Polk Directory. This directory lists the names and locations of all businesses and homes located in the metropolitan area. Polk Directory listings are arranged utilizing various methods, including by type of business, premise location, and even by telephone exchange. For example, if a firm is advertising in the help wanted section of the newspaper for an electroplating position and does not list the company name, Pretreatment staff can determine the premise location and company name from the phone number and will then inspect the firm if previously unpermitted.

- *Intra-Governmental Agency, Building and Sewer Connection Permit Referrals* - The NBC Pretreatment Section becomes aware of many new facilities through the building permit issuance process. New facilities under construction in the NBC district 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, RI DEM and EPA New England routinely 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 service district. 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 neighborhoods 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 also met with various user groups and held workshops that focused on educating any new class of users required to obtain a discharge permit. These public education programs have been very effective at identifying new and previously unknown users of the sewer systems.

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 40 CFR §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 include 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. The NBC Pollution Prevention (P2) Program educates users of the many P2 alternatives available instead of discharging toxics into the sewer system, while the Pretreatment staff incorporates user education into every regulatory inspection.

- **Innovative and Effective Inspection Techniques** - The NBC 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 our POTWs 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 Program has made great efforts to thoroughly standardize all aspects of the inspection process from inspection scheduling to writing of the inspection report letter. The Pretreatment Section has standardized and customized annual inspection report checklists for various classes of users, including for Significant Industrial Users (SIU), non-significant industrial users, restaurants, septage haulers, etc. The section 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 that the 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 engineer conducting the facility inspection. The inspection summary form letters may be a Notice of Violation or a "Job Well Done" letter. The Notice of Violation form letter has all routine deficiencies clearly listed. The NBC 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.

~ *Specialized and Innovative Inspector Training Programs* – The NBC provides extensive training to new employees and continued training to existing personnel. Pretreatment, EMDA, and Pollution Prevention personnel 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
- Oil Boom Deployment

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

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

Pretreatment personnel 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. The Assistant Pretreatment Manager and Principal Pretreatment Engineer 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.

Weekly in box reviews are conducted of new members to ensure that they understand users' 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 and senior staff routinely conduct inspections with even the well trained inspector to ensure continued conformity with NBC inspection policies and protocols.

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 Section developed a Pretreatment Inspector Feedback Form 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. Employees are graded on a scale from 0-Missed Completely to 3-Well Done. 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 by the Pretreatment Section is the annual Spill Tracking Drill. Senior staff adds fluorescein dye to the sewer system over a period of time using a metering pump. Senior staff assign a team leader, as is routinely done, to head an investigation to track the "illegal discharge" to the source. For the training drill, the newer employee is typically chosen to be the team leader. The spill is tracked through the sewer system to the firm discharging the dye, 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, the Pretreatment inspector routinely refers the user to the NBC Pollution Prevention Program for FREE technical assistance. All inspection summary letters and Notice of Violation letters also advise the user to obtain the FREE expertise of the NBC Pollution Prevention Program. 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 NBC inspection, nondomestic users are educated regarding all aspects of the NBC including the NBC Mission Statement, the purpose and types of all NBC inspections, and the Significant Non-Compliance (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 Significant Non-Compliance was impressively reduced in the Field's Point District from a high of 39.0% in 1992 to 9.5% in 2004, while the SIU Rate of SNC for Bucklin Point was reduced from a high of 44.8% in 1994 to 7.5% in 2004. The overall rate of SNC for all NBC Significant Industrial Users for 2004 was 8.7%, a decrease from 9.6% observed in 2003. This is within the EPA level of 10% recommended for EPA Pretreatment Program Excellence recognition. These impressive reductions in the Rate of Significant User SNC are clearly attributable to improved user education and prompt resampling requirements for any effluent violation.

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

~ *Initial Inspection* – The initial pretreatment 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 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 Significant Industrial Users (SIU) and covers all the items shown in the Annual Inspection Checklist which is provided in ATTACHMENT VOLUME I, SECTION 3. The annual inspection is an announced inspection which 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 Significant Industrial User at least once every 12 months, as required by EPA regulation. The NBC typically conducts sampling of each SIU twice every 12 months.

~ *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.

~ *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.

From January 1, 2004 through December 31, 2004, the Pretreatment staff conducted 1,859 inspections of users, not including sampling visits. This represents a decrease of 95 inspections over the number of facility inspections conducted by the Pretreatment staff the previous year. The decrease in the number of inspections is directly attributed to the turnover in staff which occurred during 2004. Of the 1,859 non-sampling inspections conducted by the Pretreatment staff, 603 were inspections of SIUs and 1,256 were inspections of non-significant users. The Pretreatment staff conducted 401 facility inspections of categorical users and 104 inspections of significant non-categorical industrial users in both districts, excluding sampling visits.

The Pretreatment staff conducted 25 regulatory compliance meetings with users during 2004. All facilities classified as SIUs were inspected at least twice during the 12 month report period. The NBC Pretreatment Section satisfied and exceeded EPA requirements to inspect every significant industrial user at least once every 12-month period.

During the past year, the EMDA personnel conducted 333 industrial user sampling inspections of 136 industrial user facilities, an increase of 17 from the previous year's reported value of 316 sampling inspections. Of the 333 sampling inspections, 313 sampling inspections were of significant users and 20 sampling inspections were of non-significant users. There were 249 sampling inspections of 97 categorical industries and 63 sampling inspections of 29 significant non-categorical users.

During 2004, the EMDA Section sampled every Significant Industrial User at least once. All SIUs were sampled at least twice in 2004, with the exception of three firms that either did not discharge during the year or had minimal discharges to the sewer during the reporting period. Many SIUs were sampled more than twice due to effluent violations observed at the firms. TABLE 7 summarizes the status of each firm that was not sampled or inspected at least twice in 2004 by the NBC.

TABLE 7
Summary of SIUs Sampled or Inspected Less than Twice in 2004

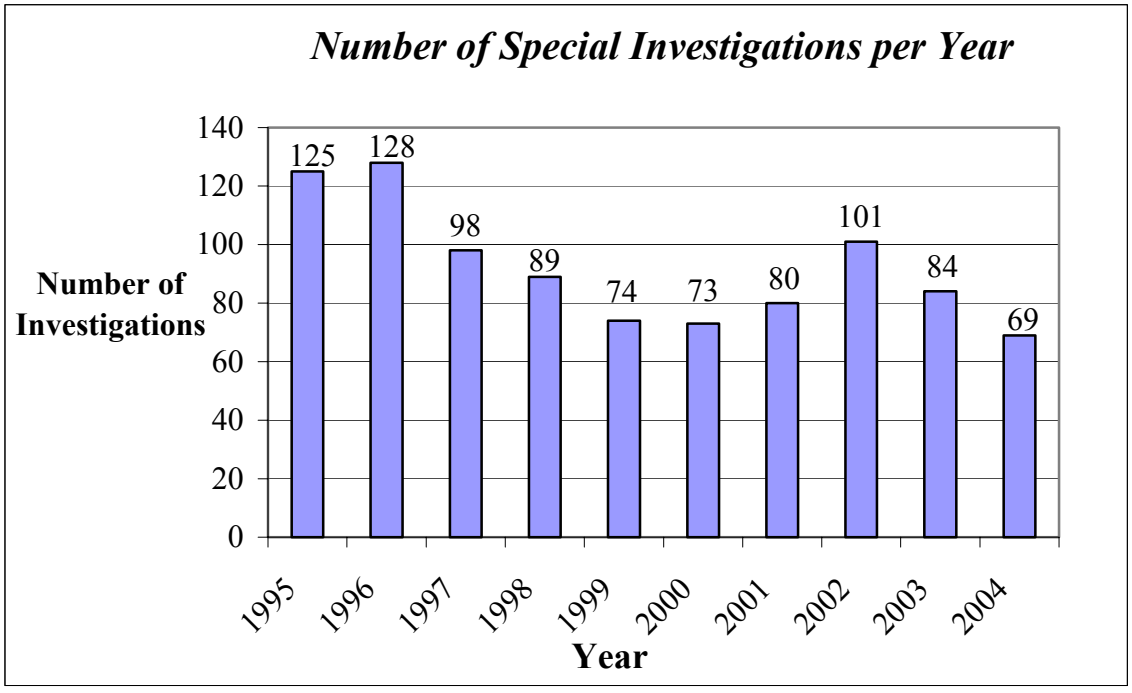
COMPANY NAME	2004 SAMPLE & INSPECTION SUMMARY	EXPLANATION
Field's Point District		
Century Plating International	1 sample only	Firm's permit was suspended and sewer connection was sealed in late 2001 and did not discharge in 2004. Throughout 2004, firm removed wastes from the facility.
Microfin, Incorporated	1 sample only	Firm ceased process operations in 2003 and did not discharge in 2004. Throughout 2004, firm removed wastes from the facility.
Bucklin Point District		
American Insulated Wire (Grand Avenue facility)	1 sample only	Firm ceased process operations n June 2003. The firm had only one batch discharge of non-sanitary wastewater in 2004.

All NBC Significant Industrial Users with discharges were sampled at least once in 2004, and were sampled by the NBC in accordance with the EPA regulations to sample each SIU every 12 months. A summary of the number of types of inspections performed by the NBC this reporting period is provided in TABLES 2 and 3, 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

Over the past year, NBC pretreatment personnel have investigated approximately 69 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. This is a decrease of 15 from the 84 investigations conducted in 2003. A listing of year 2004 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



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 early 1990s. This is attributed to better education of users regarding spill prevention practices and overall environmental awareness by industry.

FIGURE 7

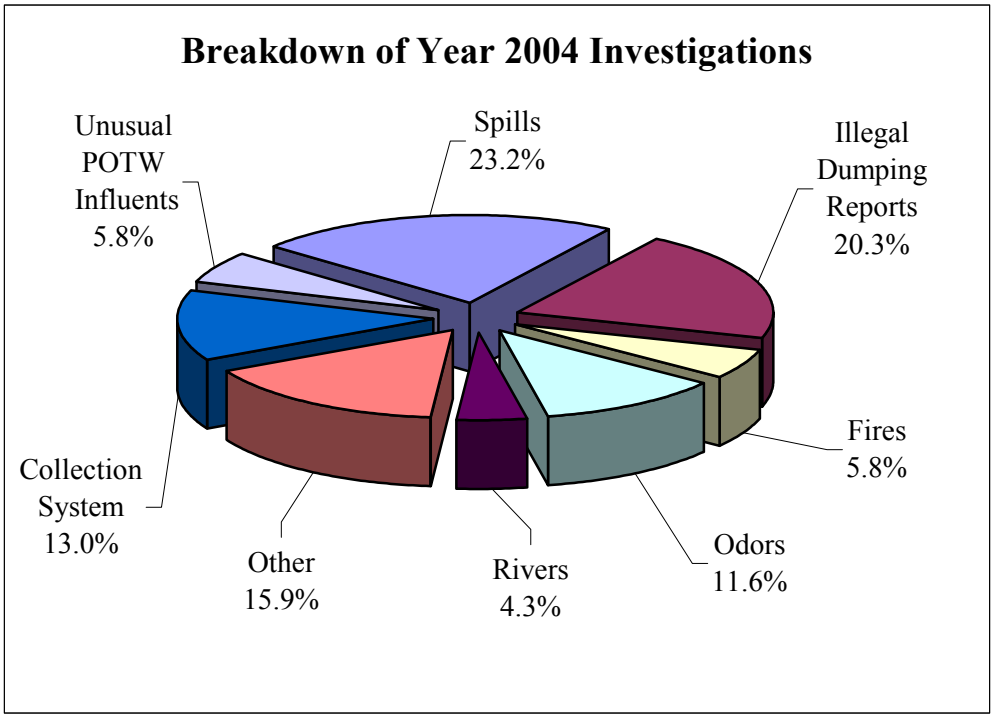


FIGURE 7 is a graphical breakdown of the types of investigations conducted in year 2004. As can be seen from the graph, the majority of Pretreatment special investigations result from spills, 23.2%. Of the 69 special investigations, there were 14 reports of unpermitted discharges or illegal dumping, 20.3% of all investigations reported.

There were sixteen investigations of gasoline, fuel, oil and/or chemical spills, seven reports of grease discharges and blockages in sewer lines, eight odor complaint investigations, four reports of unusual influents, including three reports of colored influent to the NBC treatment plants, and one unusual pH influent investigation. These investigations often require frequent follow-up activities, subsequent inspections and clean-up activities, and often result in the initiation of enforcement actions by the NBC. Numerous follow-up inspections were required as a result of these initial 69 investigations. Those NBC investigations of major concern and interest to the Commission over the past year are described in the following paragraphs:

Colors Impacting the NBC Facilities

The source and chemical characteristics of colored influents impacting the wastewater treatment facilities are initially unknown, therefore, all incidents of colored influent at NBC treatment facilities are thoroughly investigated. Colored influent may potentially be attributed to a toxic chemical, to a pigment ink containing cyanide or heavy metals, or to a non-toxic acid dye.

Upon receiving a report that color is impacting the treatment plant, Pretreatment staff contact companies with the potential to discharge colored wastewater to the affected treatment facility. Facilities are required to immediately submit a copy of pertinent sections of their wastewater effluent color logbook. These records are used to help determine which firm or firms discharged wastewater that impacted the plant. Should the colored influent at the treatment plant be of sufficient duration to allow tracking, Pretreatment staff is deployed to track the colored wastewater through the sewer system to determine its source. Over the past year, Pretreatment personnel investigated a total of three incidents of unusual color entering its treatment facilities, a decrease of 37.5% from the previous year.

Three incidents of colored influent were reported at the Bucklin Point treatment facility during 2004. The three events were of short duration, so the colored influent stopped entering the plant before it could be physically tracked through the sewer system. Nevertheless, the events were able to be attributed to discharges from one, or a combination of several textile firms in the Bucklin Point district.

Various techniques are used successfully by the Pretreatment Section to identify and prevent sources of problematic colored influent at NBC treatment facilities. One administrative control requires that companies routinely record the color of their effluent while discharging. More problematic firms are required to retain samples of each colored wastewater that is batch discharged. Other techniques include the routine installation of automatic sampling devices in strategic surveillance manholes throughout the district and the physical tracking of colored sewage upstream through the sewer system while an event is occurring. Efforts such as these continue to reduce the number of color impacts on the wastewater treatment facilities each year.

Spills

During 2004, Pretreatment staff investigated a total of 16 spills within the NBC service district. Eight spills in the Field's Point district were investigated, while eight spill investigations were conducted in the Bucklin Point district. Of the 16 investigations, five were in response to oil or fuel spills and eleven were in response to chemical spills.

The oil and fuel spills varied in size from a few gallons of gasoline to approximately 80 gallons of diesel fuel that spilled when a delivery truck hit a fire hydrant and ruptured its fuel tank. All of these spills occurred outdoors. These spills did not impact the NBC treatment facilities. However, the spilled oil and fuel from three of the spills reached catch basins in the area of the spills. The responsible party at each one of these events hired contractors to handle the clean-up. Due to the clean-up efforts, none of the material discharged to the NBC sewer system. The other two spills of oil and fuel occurred in areas where access to the sewer system was not available.

NBC staff responded to nine incidents of chemical spills during 2004. None of the spills adversely effected the treatment facilities. Seven of these spills occurred at permitted industrial users. Two of the seven spills occurred at the Shank/Balfour Betty - Ernest Street location. This is the firm constructing the main spine tunnel for the NBC CSO Abatement Project. The first incident was a spill of dust suppression chemicals and the second incident occurred when a hydraulic line broke on the tunnel boring machine. The spilled material in both cases was contained in the sedimentation pond by booms and disposed of off-site. Four of the seven spills at industrial facilities were small and contained on-site. In three of the four events, the firms hired contractors to handle the clean-up and disposed of the spilled material off-site. The fourth firm, a large metal finishing firm, treated the material in its pretreatment system. The remaining spill at an industrial user occurred at Bunge North America (East). The spill of grease occurred when storage tanks were overfilled. The spill was properly contained and did not impact the facility's pretreatment system or the NBC sewer system.

There were two chemical spills dealing with mercury. The first spill occurred at the Bucklin Point treatment plant. Elemental mercury was discovered under electrical equipment that was being decommissioned. The area was isolated and the DEM was contacted. The NBC contracted a firm to clean up the spilled mercury and dispose of it properly. The mercury did not reach the treatment processes. The second mercury spill occurred at an apartment complex in Pawtucket. The mercury had been stored at a warehouse owned by New England Gas Company. Approximately ten pounds of mercury was stolen from the warehouse and brought to the apartment complex. The mercury was found in the parking lot as well as numerous apartments. Pretreatment staff worked with the DEM and its contractor to ensure this material did not further impact the Bucklin Point treatment plant. The influent at the plant was sampled daily for mercury. In addition, samples of grit contained in sumps downstream of the apartment complex were collected and analyzed. The influent showed elevated levels of mercury, however, the treatment was not affected. The mercury levels in the grit samples were normal.

There were two investigations of reports of chemical spills that resulted in facility evacuations. One investigation was of a report of a small chlorine gas leak at Univar USA, Inc. The leak occurred from a scrubber while railcars were being switched. The second investigation was in response to anhydrous ammonia leak at a company located on Dupont Drive in Providence. Both of these spills resulted in releases into the air. Therefore, the sewer system was not adversely impacted as a result of either of these spills.

Pretreatment personnel respond to all reports of spills in the service district to ensure that prohibited substances do not enter NBC-owned facilities or Narragansett Bay. The appropriate local and/or state authorities are contacted by the NBC when it is determined during an investigation that a spill has discharged into a water collection system not owned by the NBC.

Investigations Resulting from Sewer Maintenance Activities

During 2004, Pretreatment staff investigated three reports of unusual wastewater in the collection system. These reports included two of colored material in sewer lines and one of grease in a pump station. Two of these events were a direct result of pressure washing the sewer pipes being performed by a NBC contracted company. The other event was of brown wastewater discharging to the sewer system which was discovered when a sewer line was being videotaped prior to routine maintenance. It was determined the brown colored wastewater originated from a fire hydrant that was being tested. Investigations determined that the unusual characteristics of the wastewater were not a result of current industrial discharges, but rather were a result of disturbing the sediment in the lines. The discharges that resulted in the foul sediment buildup due to lack of system maintenance prior to NBC acquiring system likely occurred over many years, prior to the implementation of the NBC Pretreatment Program.

Unusual Influent at Field's Point (pH, odor, fuel, etc.)

The Pretreatment Section investigates all unusual influents into both wastewater treatment facilities. During 2004, Pretreatment staff responded to one miscellaneous report of unusual influent to the Field's Point Wastewater Treatment Facility. This report was due to high influent pH. This high influent pH was of short duration so it could not be tracked through the sewer system to the source. This unusual influent event was not significant enough to adversely affect the receiving waters of the facility. Unusual investigations such as these can interfere with the normal operations of the treatment facility. Therefore, Pretreatment personnel are on call 24-hours per day to determine the source of all unusual influent events observed at the facility.

Restaurant Related Grease Investigations

During the past year Pretreatment personnel responded to a total of four grease related investigations. There were two investigations conducted in the Bucklin Point District and two investigations conducted in the Field's Point District. Of the four grease investigations conducted by the Pretreatment Section, three investigations were associated with food preparation operations.

Pretreatment staff investigated two areas in Bucklin Point upstream of where grease blockages occurred. The first area was located in East Providence. Three restaurants located in this area were inspected and their records reviewed. Pretreatment staff continues to monitor these restaurants closely. The second area was located in Central Falls. All permitted food preparation facilities in the area were inspected. All but one facility was in compliance. The firm not in compliance was required to properly maintain its grease removal unit. An additional facility requiring a permit was found during this investigation.

In Field's Point, Pretreatment staff responded to two reports of grease blockages. The first blockage occurred downstream of a restaurant located in Johnston. The restaurant was inspected and its records reviewed. The grease removal unit appeared to be operating properly and the restaurant did not observe any problems with drainage. The surrounding area upstream of the blockage was investigated and appeared to be residential. The second blockage also occurred in Johnston in a residential area. It was determined that common residential kitchen practices may have attributed to the grease build up within the collection system.

Illegal Dumping & Unpermitted Discharge Investigations

The NBC Pretreatment Section investigates all reports of illegal dumping and unpermitted discharges into the sewer system, storm drain system, and/or rivers. Over the past year pretreatment personnel have investigated 17 reports of illegal dumping or unpermitted discharges within the Field's Point and Bucklin Point Districts. Of the 17 investigations, three involved illegal and/or unpermitted discharges into local rivers. One river discharge was determined to be green soapy water, most likely from a car wash in the area. Another was of water discharging into the Moshassuck River from an outfall pipe during dry weather. The area was investigated and the lines were traced. The third report was of an oil sheen on the Woonasquatucket River. The source could not be determined since the discharge had ceased.

Five of the 17 investigations involved various reports of dumping into catch basins. Two of the five investigations involved an automotive repair facility located in Providence. Both incidents were referred to the NBC by the DEM and involved oil seen in a catch basin. The catch basins are owned by the City of Providence. The facility in question, as well as other automotive repairs, were inspected. The remaining three investigations involved oil discharged to catch basins by citizens. These reports were forwarded to the municipalities that owned the catch basins.

Three of the 17 investigations involved various reports of companies discharging process wastewater to the street without a permit. Two of the reports were unfounded. One of the reports involved a carpet cleaning company discharging to a street in Providence. Evidence of the activity was seen, however, no catch basins are located in the area. The sewer system was not impacted.

Two of the 17 investigations involved two permitted users. One firm located in Bucklin Point discharged fire suppression chemicals to the sewer system without permission as a result of a fire at the facility. The treatment plant was not impacted. The other investigation involved a firm located in Field's Point, which discharged large volumes of foam in its wastestream causing foam to overflow the manhole. The facility was inspected and it was determined the foam suppression pretreatment system had been disconnected. The firm was required to repair the system.

Two of the 17 investigations involved facilities discharging without permits. One facility was a restaurant, which failed to obtain a permit prior to opening for business. The restaurant was inspected and the firm was required to apply for and obtain a Wastewater Discharge Permit. The other facility was a Zero Discharge facility. The reported facility had the potential to discharge via a pipe that was through the wall and into the ground. The firm was inspected and the pipe was seen. It did not appear anything had discharged. The firm was required to permanently seal the pipe.

The two remaining investigations were various in nature. One involved a report of discharges from a groundwater dewatering operation. An investigation of the project determined the groundwater was to be injected back into the ground. The other investigation was conducted in response to a report of discharges from a vent pipe on a building. The building and vent pipe were inspected and the report was unfounded.

Pass-through and Interference

During 2004, the NBC Pretreatment Section conducted 69 special or emergency investigations within the Field's Point and Bucklin Point districts. Over 26.1% of all investigations involved either an unusual influent to the Bucklin Point or Field's Point treatment facilities, illegal dumping or spills. The most common type of emergency investigation was spills, 23.2% of all investigations. Likewise, most unusual influent reports involved an unusual color in the influent to the treatment facilities, of which there were three incidents, all at Bucklin Point.

The next most common types of investigations were illegal dumping and/or unpermitted discharges with 17. These investigations involved primarily oils, gasoline, and grease either being intentionally dumped or accidentally spilled and discharges to rivers.

All reports of spills, dumping activities, unusual influents and other related incidents during 2004 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, which are necessary to treat the sanitary waste. Many of the unusual color influent reports were the result of non-toxic dyes or pigments discharged from textile firms or pigment/dye manufacturers. Nonetheless, each report must be investigated to ensure that the color does not pass through the facility and cause a discoloration of the receiving body of water, which would result in NBC being in violation of its RIPDES permits. None of the unusual color influent incidents or other unusual influents investigated during 2004 resulted in interference or pass-through situations at either of the NBC wastewater treatment facilities.

IV. COMPLIANCE MONITORING

Compliance Monitoring

The Narragansett Bay Commission utilizes two types of monitoring to determine user 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 monitoring 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 standards as demonstrated by self-monitoring required under the terms of a permit or by NBC sampling results. Once the user has demonstrated full compliance during four consecutive sampling dates, 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 40 CFR §403 and analytical techniques specified in 40 CFR §136. Results must be submitted with a properly completed Self-Monitoring Compliance Report (SMCR) form. The SMCR form 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 form. The SMCR form 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 form 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 Self-Monitoring Compliance Report form is provided in ATTACHMENT VOLUME I, SECTION 3.

In 1993, the Pretreatment Staff developed the Twenty-Four 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 was satisfied by the user. A sample Twenty-Four Hour Violation Notification Fax form is provided in ATTACHMENT VOLUME I, SECTION 3.

Samples taken 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 treated on a batch mode 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 sample results are evaluated for compliance with the NBC's discharge limitations shown in TABLE 8. This table indicates the discharge standards that must be maintained by users located in the Field's Point and Bucklin Point Drainage 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 file 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 mode 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

NBC EMDA personnel conduct compliance monitoring of industrial and commercial facilities to assess the 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 the NBC monitoring personnel conducting the sampling event 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 denial signed by the user. Copies of these sampling and chain of custody documents are provided in ATTACHMENT VOLUME I, SECTION 3.

TABLE 8

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 - 10.0 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)	5.5 - 9.5 standard units†

* **All limitations are in units of mg/l unless otherwise specified.**
** **Exceeding these limitations may be permitted but exceedance will 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.**
† **Effective December 13, 2004 the pH range (at all times) became 5.0 - 11. 0 standard units.**

The EMDA Program utilizes many controls to insure the legal integrity of the samples collected for compliance and enforcement monitoring. Quality Assurance and Quality Control 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. These bottles are replaced annually. Preservatives purchased are reagent grade with ultra low levels of impurities.

EMDA Staff Member Transferring Samples to NBC Lab for Analysis

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 Standard Operating Procedures Manual is kept in the 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 have been 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, which is performed twice a year. 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 lab with the samples that are collected with that sampler. In addition, the Nanopure© Deionized Water System used by the program 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's results. The user is notified of the NBC's 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 sample users without them being aware that sampling is being conducted.

NBC Lab Staff Member Performing Pollutant Analysis

The majority of samples collected in 2004 by the EMDA personnel were analyzed at the NBC laboratory located at Fields Point. The NBC Bucklin Point and Field's Point Laboratories were consolidated as of November 2001. A state of the art, full service wastewater laboratory was constructed to combine the two NBC labs and to accommodate new EPA regulations that call for more sensitive detection of various materials contained in wastewater.

The EPA has outlined several analyses that will 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 using various methods. To achieve these ultra low levels, the instruments must be kept in an environment free of contaminants. The major contaminant of concern is metals. An area of the lab is classified as being a Class 1000 Clean Room. 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. Those who work in this area are required to wear special coveralls and gloves.

There are separate areas of the clean room 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 2.4 parts per trillion (ppt). The detection limit is expected improve as protocols for this new equipment are further refined. The laboratory's final 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 limit (ML) of 0.2 ppt. The ICP/MS is used for ultratrace multi-elemental analysis. The method used is EPA Method 200.8 for trace metals at EPA Water Quality Criteria levels.

The lab facility has a microbiology lab dedicated to 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. This is important to control contamination concerns. To accommodate the many research projects conducted by NBC and to satisfy new EPA regulations, it was vital to construct a consolidated state of the art lab.

"State of the Art" NBC Laboratory Building

Between the period of January 1, 2004 through December 31, 2004, NBC personnel conducted 333 sampling inspections of industries located within the NBC Field's Point and Bucklin Point Drainage Districts, resulting in the collection of 364 composite and grab samples. Of these 364 samples, 317 were in full compliance with the NBC standards and 47 were not in compliance, resulting in a user compliance rate of 87.1% based upon NBC analyses, an increase from the 86.6% rate of compliance reported for 2003 NBC monitoring results.

NBC personnel collected samples from all significant categorical and non-categorical users that discharged into the NBC sewer system during calendar year 2004. In fact, most Significant Industrial Users were sampled at least twice in 2004, with the exception of three users that could only be sampled once due to operational situations occurring at these firms. These three firms were detailed in CHAPTER III. Two did not discharge in 2004. The other firm had only one discharge of non-sanitary waste during 2004 . The NBC satisfied all EPA requirements regarding sampling SIUs, as all NBC significant users with discharges were sampled in 2004, well within the EPA requirement to sample each SIU at least once every twelve months.

The NBC conducted sampling of 127 Significant Industrial User facilities and ten non-significant user facilities in the two NBC districts during 2004. Of the 127 total facilities sampled by the NBC, 97 facilities were classified as categorical industries at the time of the sampling event. There were 30 firms classified as Significant Non-Categorical facilities when sampled by the NBC during 2004.

Computer printouts of the past year's sampling results for electroplaters and non-electroplaters, 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 and oil and grease.

Analysis Of Monitoring Results

NBC permits required industrial and commercial users to submit 2,331 wastewater monitoring reports for the period from January 1, 2004 through December 31, 2004. For this period, the industrial and commercial users submitted 3,082 sample results, 2,947 of which were in full compliance with the NBC and EPA standards. This is a user self monitoring report rate of compliance of 95.6%. The users submitted 32.2% more analyses than required by permits due to the NBC's requirement to conduct weekly sampling once non-compliance has occurred.

The month to month compliance status of all significant users for the period of January 1, 2004 through December 31, 2004 is provided in ATTACHMENT VOLUME II, SECTION 7. The number one "1" in this printout indicates that the firm was in full compliance with all parameters for that particular sampling month. A zero "0" indicates that the firm was in non-compliance with at least one parameter for that sampling month. The letters NR indicate that the firm was not required by permit to submit a report for that particular month or not required to submit a report since the firm may not have been operational. The letters NS indicate that the report was not submitted.

TABLE 9 provides a summary of the batch and non-batch compliance monitoring results for categorical and non-categorical industries located in both NBC sewerage districts for the period from January 1, 2004 through December 31, 2004. TABLE 10 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 9 and 10 is shown graphically in FIGURES 8 and 9. TABLE 11 is a comparison of the percent compliance for both self-monitoring and NBC sampling results for the aforementioned period. This table clearly 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 97.7%, NBC results indicate only an 86.5% compliance rate for this class of users.

TABLE 9

Narragansett Bay Commission
Field's Point and Bucklin Point Districts

Summary Of All Compliance Monitoring Results For Categorical And Non-Categorical Users

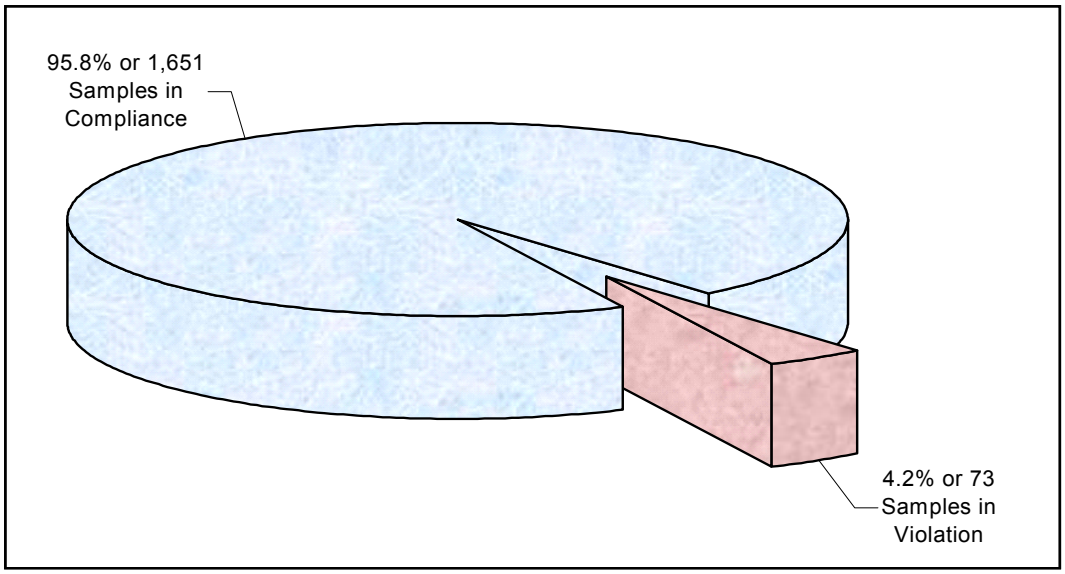
January 1, 2004 - December 31, 2004

User Self-Monitoring Results	**Categorical**	**Non-Categorical**	**Totals**
Total Samples Required	**1,052**	**1,279**	**2,331**
Total Samples Submitted	**1,461**	**1,621**	**3,082**
Total Samples In Compliance	**1,430**	**1,517**	**2,947**
Total Samples Not In Compliance	**31**	**104**	**135**
NBC Monitoring Results			
Total Samples Collected	**263**	**101**	**364**
Total Samples In Compliance	**221**	**96**	**317**
Total Samples Not In Compliance	**42**	**5**	**47**
All Results			
Total Samples Reviewed	**1,724**	**1,721**	**3,445**
Total Samples With Violations	**73**	**109**	**182**
Total Samples In Compliance	**1,651**	**1,612**	**3,263**
Total Users Sampled	**97**	**398**	**495**
Total Users With Violations	**40**	**56**	**96**
Total Users Without Violations	**57**	**342**	**399**

FIGURE 8

2004 Rates Of Compliance For Categorical And Non-Categorical Users Field's Point & Bucklin Point Districts

Categorical User Analyses
Total Number Of Samples = 1,724



Non-Categorical User Analyses
Total Number Of Samples = 1,721

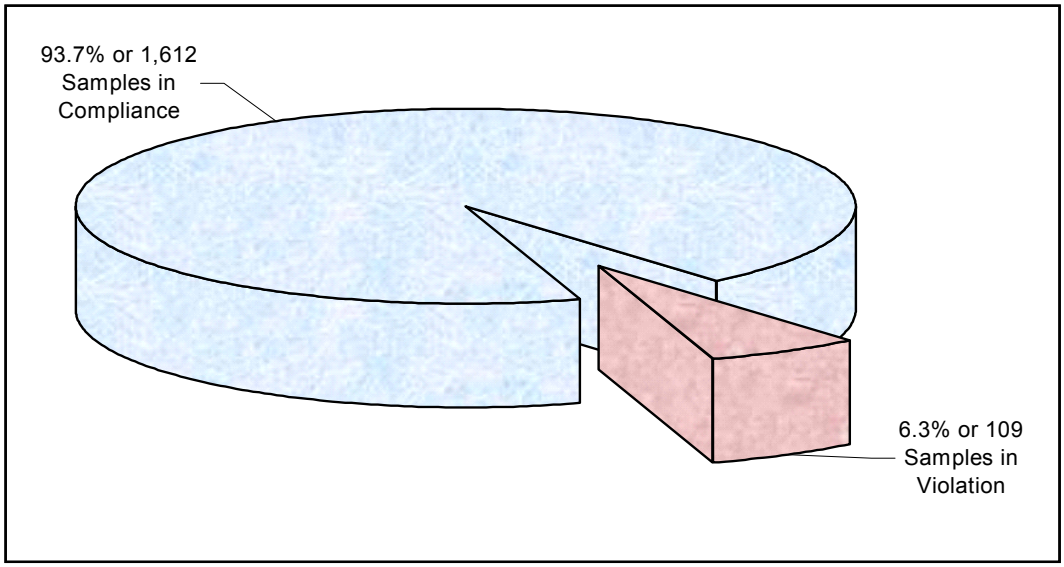


TABLE 10

Narragansett Bay Commission
Field's Point And Bucklin Point Districts

Summary Of All Compliance Monitoring Results For Significant And Non-Significant Users

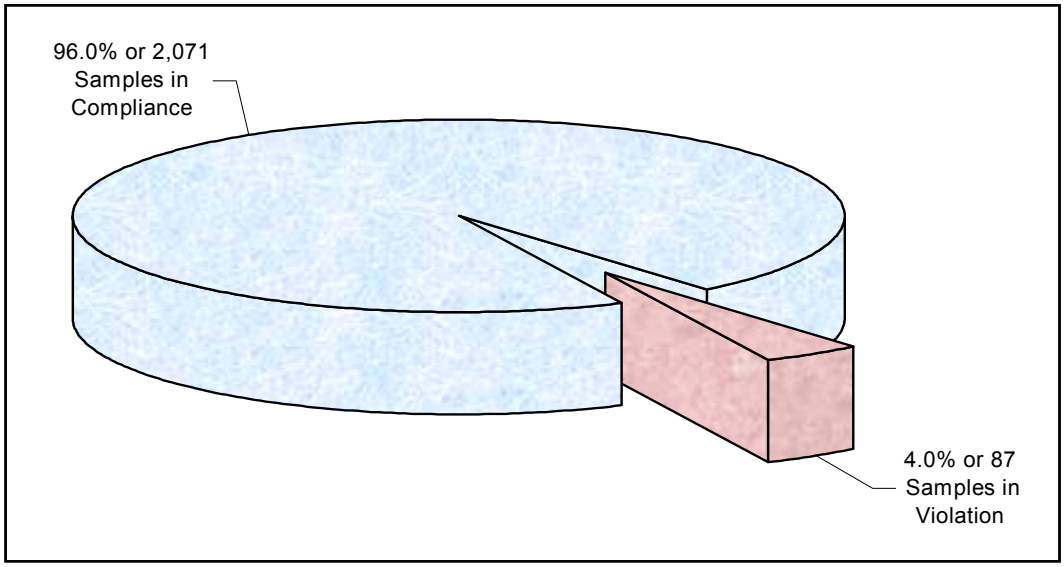
January 1, 2004 - December 31, 2004

User Self-Monitoring Results	Significant Users	Non-Significant Users	Totals
Total Samples Required	**1,302**	**1,029**	**2,331**
Total Samples Submitted	**1,816**	**1,266**	**3,082**
Total Samples In Compliance	**1,775**	**1,172**	**2,947**
Total Samples Not In Compliance	**41**	**94**	**135**
NBC Monitoring Results			
Total Samples Collected	**343**	**21**	**364**
Total Samples In Compliance	**297**	**20**	**317**
Total Samples Not In Compliance	**46**	**1**	**47**
All Results			
Total Samples Reviewed	**2,158**	**1,287**	**3,445**
Total Samples With Violations	**87**	**95**	**182**
Total Samples In Compliance	**2,071**	**1,192**	**3,263**
Total Users Sampled	**127**	**368**	**495**
Total Users With Violations	**47**	**49**	**96**
Total Users Without Violations	**80**	**319**	**399**

FIGURE 9

2004 Rates Of Compliance For Significant And Non-Significant Users
Field's Point & Bucklin Point Districts

Significant User Analyses
Total Number Of Samples = 2,158



Non-Significant User Analyses
Total Number of Samples = 1,287

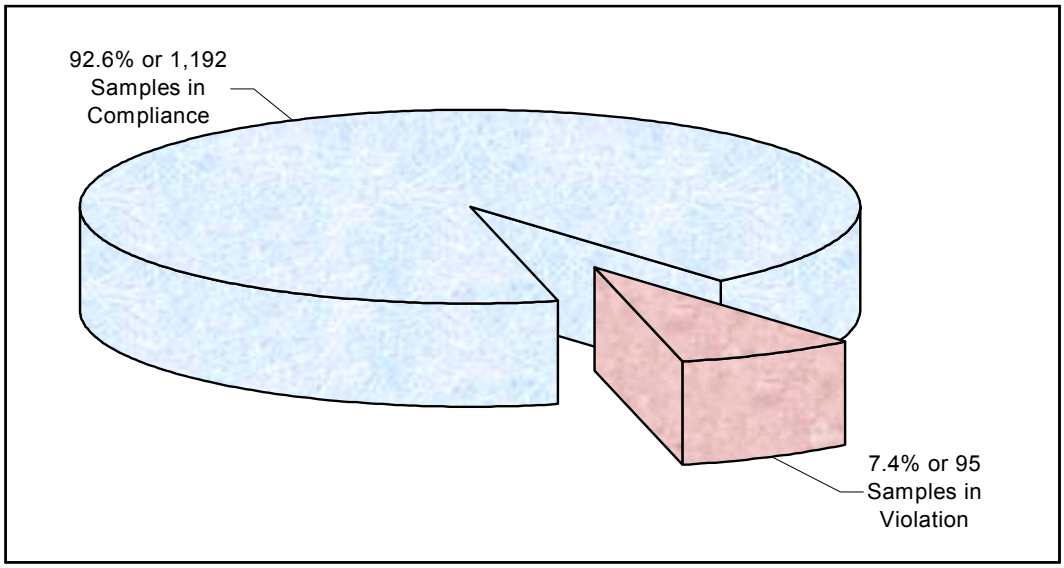


TABLE 11

Narragansett Bay Commission
Field's Point And Bucklin Point Districts

Comparison Of Compliance Rates For Self-Monitoring And NBC Sampling Results

January 1, 2004 - December 31, 2004

	User Self-Monitoring	NBC Monitoring	All Results
Significant Users			
Compliance Rate	**97.7%**	**86.5%**	**96.0%**
Non-Compliance Rate	**2.3%**	**13.5%**	**4.0%**
Non-Significant Users			
Compliance Rate	**92.6%**	**95.2%**	**92.6%**
Non-Compliance Rate	**7.4%**	**4.8%**	**7.4%**
Categorical Users			
Compliance Rate	**97.9%**	**84.0%**	**95.8%**
Non-Compliance Rate	**2.1%**	**16.0%**	**4.2%**
Non-Categorical Users			
Compliance Rate	**93.6%**	**95.0%**	**93.7%**
Non-Compliance Rate	**6.4%**	**5.0%**	**6.3%**
All Users			
Compliance Rate	**95.6%**	**87.1%**	**94.7%**
Non-Compliance Rate	**4.4%**	**12.9%**	**5.3%**

This data review indicates a slight improvement in the overall SIU compliance rate based upon user monitoring and NBC results, when compared to the previous reporting year, as the overall SIU rate of compliance increased slightly from 95.6% in 2003 to 96.0% in 2004. There was a 11.2% 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 was even greater at 13.9%.

User self monitoring reports submitted by categorical users indicated full compliance, 97.9% of the time, while NBC monitoring found categorical users to be in compliance for only 84.0% of NBC sampling events. These differences in NBC and user monitoring compliance rates clearly indicate that some users may not be properly collecting samples or reporting results that are 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.

TABLE 12 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 very similar. The overall rate of compliance for Field's Point users was 94.5%, while it was 95.1% in the Bucklin Point District.

The Fields Point categorical users were in full compliance for 95.8% of the sampling events at their facilities in 2004. This compliance rate increased slightly from 95.1% in 2003. Significant industrial users in the Bucklin Point District had a rate of compliance of 96.2%, slightly higher than the 95.8% SIU compliance rate observed in the Field's Point District.

The overall 2004 rate of SIU compliance in both districts was 96.0%, a slight improvement over the 95.6% compliance rate observed in 2003 for this class of user. As can be seen from TABLE 12, significant users in Bucklin Point had the highest rate of compliance, 96.2%, while the non-significant users located in the Bucklin Point District had the highest rate of non-compliance, 7.4%. The rate of user compliance for all users in both districts decreased slightly in 2004 compared to 2003, from 95.1% to 94.7%.

TABLE 13 provides an analysis of the percentage of firms in each user class with perfect compliance records for effluent monitoring occurring during 2004. This analysis indicates that 58.8% of categorical users and 63.0% of significant users had perfect compliance records for all effluent parameters and sampling events. Non-significant users had the highest percentage of firms with perfect compliance records, 86.6%. During 2004, of the 495 firms that sampled their wastestream, 399 firms or 80.6% 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 10. 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 80.6% in 2004. The rate of compliance for SIUs and categorical users has also shown improvements over the same period. In 1995 the compliance rate for SIUs and categorical users was 51.1% and 52.7% compared to the 2004 compliance rates of 63.0% for SIUs and 58.8% for categorical users.

FIGURE 10
Rate of Perfect Compliance with Effluent Parameters for All Users, Significant, and Categorical Users

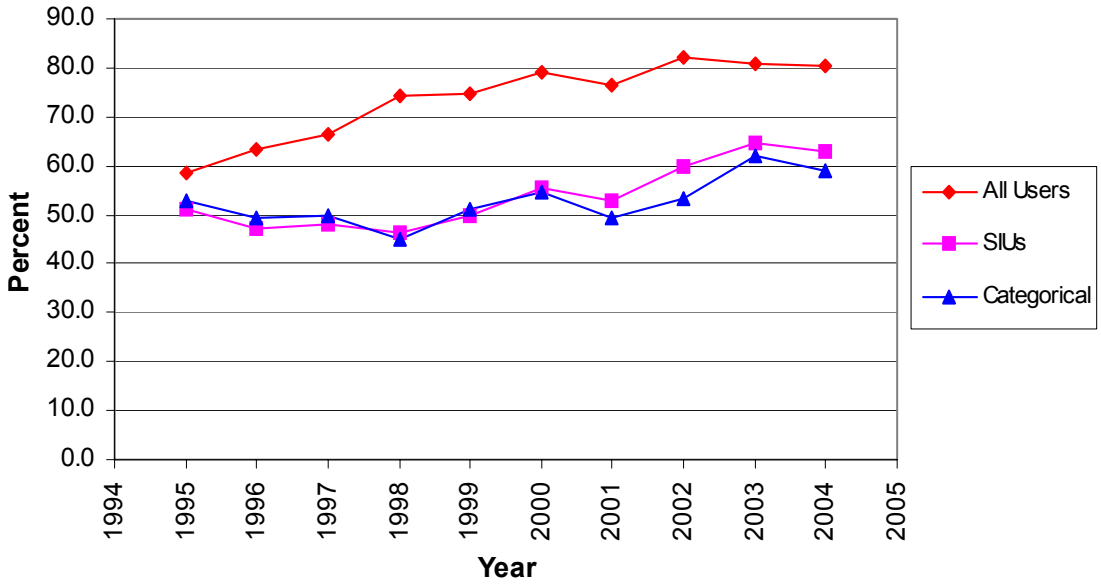


TABLE 12

Narragansett Bay Commission

Comparison Of Compliance Rates
Between Field's Point And Bucklin Point Districts
For All Monitoring Results

January 1, 2004 December 31, 2004

	Field's Point District	Bucklin Point District	Both Districts
Significant Users			
Compliance Rate	**95.8%**	**96.2%**	**96.0%**
Non-Compliance Rate	**4.2%**	**3.8%**	**4.0%**
Non-Significant Users			
Compliance Rate	**96.2%**	**92.6%**	**92.6%**
Non-Compliance Rate	**3.8%**	**7.4%**	**7.4%**
Categorical Users			
Compliance Rate	**95.8%**	**95.7%**	**95.8%**
Non-Compliance Rate	**4.2%**	**4.3%**	**4.2%**
Non-Categorical Users			
Compliance Rate	**93.1%**	**94.5%**	**93.7%**
Non-Compliance Rate	**6.9%**	**5.5%**	**6.3%**
All Users			
Compliance Rate	**94.5%**	**95.1%**	**94.7%**
Non-Compliance Rate	**5.5%**	**4.9%**	**5.3%**

TABLE 13

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, 2004 - December 31, 2004

	% Firms Without Effluent Violations*	% Firms With Effluent Violations
Categorical Users	**58.8%**	**41.2%**
Non-Categorical Users	**85.9%**	**14.1%**
Significant Users	**63.0%**	**37.0%**
Non-Significant Users	**86.7%**	**13.3%**
All Users	**80.6%**	**19.4%**

*** Excludes pH Parameter Violations.**

Of the 3,445 analytical reports reviewed during 2004, there were 182 reports that indicated non-compliance with one or more of the NBC or EPA effluent parameters (excluding pH). Of these 182 non-compliant sample reports, 87 analyses were of samples collected from 47 significant industrial user facilities and 95 non-compliant samples were collected from 49 non-significant facilities.

Four of the 47 Significant Industrial Users that had effluent violations during 2004 had five or more effluent parameter violations during the report period. In fact, of the 9,925 various pollutant parameters tested by Significant Industrial Users, these four firms were responsible for 28 parameter violations out of a total of 109 parameter violations reported by all significant users during 2004. These four firms accounted for 25.7% of all SIU parameter violations over the past year. The NBC has initiated enforcement actions against all of the following firms, and escalated enforcement actions may be pending against some of these users at this time. A listing of each of these four firms and the current status of each of these users is provided in TABLE 14.

TABLE 14

Narragansett Bay Commission

Status of Significant Users With 5 or More Parameter Violations

January 1, 2004 - December 31, 2004

Company Name	Number of Parameter Violations	User Status
Denison Pharmaceuticals	10	Over the past year, this Bucklin Point pharmaceutical manufacturer experienced two zinc violations and eight acetone violations. The firm has implemented pollution prevention measures to reduce the number of acetone violations and will install pretreatment for acetone. Resampling for acetone has not yet been completed.
Evans Plating Corporation – North Providence Facility	6	As part of an EPA enforcement action, this Field's Point electroplating firm is required to perform weekly sampling from their final wastewater discharge location and to achieve compliance with the NBC discharge limitations. Over the past year, this firm experienced one cadmium, one copper, one nickel, one zinc, and two cyanide violations. The violations are attributed to inadequate pretreatment. The pretreatment system has been required to be upgraded. Resampling for all violations has been completed.
Monarch Metal Finishing Company, Inc.	7	This Field's Point electroplating firm experienced four cyanide violations, one copper violation, one nickel violation, and one silver violation. The firm attributed the cyanide violations to inadequate chemicals being fed to the pretreatment system. The firm corrected the cyanide problem with additional chemical treatment. The firm attributed the metals violations to tank configuration where concentrated cyanide solutions mixed with acid based solutions. This configuration has been eliminated. The firm has completed all required sampling.

TABLE 14
(continued)

Narragansett Bay Commission

Status of Significant Users With 5 or More Parameter Violations

January 1, 2004 - December 31, 2004

Tanury Industries	5	This Bucklin Point electroplating firm experienced three cyanide violations, one copper violation, and one nickel violation. The copper and nickel violations were from an NBC sampling event. The firm attributes the violations to poor plating techniques. The firm is currently in the process of resampling for a cyanide violation.

2004 Industrial User Compliance Status Summary

During 2004, 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 were issued for all instances of non-compliance. A total of 2,159 Notice of Violation letters were issued in 2004. A table detailing each type of Notice of Violation letter issued to each firm can be found in ATTACHMENT VOLUME II, SECTION 9. A summary of the monthly compliance status for Significant Industrial Users can be found in ATTACHMENT VOLUME II, SECTION 7. The NBC issued two Administrative Orders (AO) during 2004 and assessed a total of $50,000 against these two firms. One permit suspension, which was issued in 2001, was enforced throughout most of 2004. A summary of NBC Enforcement Actions including the penalties assessed is also provided in CHAPTER V.

Industrial Surveillance Manhole Monitoring Program

In June 1993, a new NBC Section, EMDA, was created to conduct user and manhole sampling as well as analyze data, determine long and short term loading trends and conduct other special studies. This sampling had previously been conducted by Pretreatment staff. This change was facilitated by internal restructuring which allowed for more efficient Pretreatment and Monitoring Programs to be implemented through the specialization of personnel duties.

During 2004, EMDA staff conducted sampling of an average of six industrial manholes each week. The automatic samplers for industrial manholes are typically programmed to take a grab sample every 15 minutes over an approximately 32 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 32 hour sampling period. At the lab, EMDA technicians check 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 non-compliance, the NBC Pretreatment Section attempts to determine the possible source of these non-compliant discharges. Manhole monitoring results continue to indicate declines in the quantities of toxics discharged into the sewer system.

During 2004, the NBC collected a total of 364 manhole samples from manholes located throughout the two NBC sewer districts. Out of the 364 samples, 309 were from industrial manholes and 55 were from sanitary manholes. This is a slight decrease from 386 manhole samples collected in 2003. Ten manholes were sampled, however, due to low flow conditions or mechanical problems, effluent could not be collected by the automatic samplers. The NBC personnel collected 138 samples from industrial surveillance manholes located in the Bucklin Point District. The compliance rate for industrial manhole samples for the Bucklin Point District was 96.4%. NBC personnel collected 171 samples from industrial manholes located in the Field's Point District. The rate of compliance for industrial manhole samples in the Field's Point District was 90.1%. These results show that at various times and in several locations, NBC discharge standards may have been violated. A discussion of the results of sanitary manhole monitoring is provided in CHAPTER VI 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 the past year are provided in ATTACHMENT VOLUME II, SECTION 8.

INDUSTRIAL SURVEILLANCE MANHOLE VIOLATIONS

FIELD'S POINT DISTRICT

Industrial Surveillance Manhole 07

Industrial Surveillance Manhole 07 is located on Ellenfield Street in Providence downstream of the Ellenfield industrial area. There are many metal finishing firms located in this area. On December 24, 2004 the concentration of copper was in excess of the NBC discharge limitation of 1.20 ppm. The companies in the industrial area have been inspected to determine a potential source. Continued industrial manhole monitoring will be conducted by NBC personnel in 2005 to monitor the compliance status of this area.

Industrial Surveillance Manhole 08A

Industrial Surveillance Manhole 08A is located on Toronto Street in Providence downstream of Ira Green, Inc. which conducts metal finishing operations. On February 20, 2004 the concentration of nickel was in excess of the NBC discharge limitation of 1.62 ppm. A Notice of Violation was issued to the firm. The firm has since upgraded their treatment system to further treat soap solutions which they believed to be the cause of the high concentration. Subsequent monitoring of this manhole showed the concentrations of all parameters to be in compliance with NBC limitations. Continued industrial manhole monitoring will be conducted by NBC personnel in 2005 to monitor the compliance status of this firm.

Industrial Surveillance Manhole 12B

Industrial Surveillance Manhole 12B is located on Virginia Avenue in Providence upstream of RIBCO Manufacturing, Inc. which conducts metal finishing operations. On February 12, 2004 the concentration of nickel was in excess of the NBC discharge limitation of 1.62 ppm. The area was investigated. International Insignia Corporation, which conducts metal finishing operations, was found to discharge to Surveillance Manhole 12B. The up and downstream manholes of International Insignia were verified and the company was inspected. Continued industrial manhole monitoring will be conducted by NBC personnel during 2005 to monitor the compliance status of this firm.

Industrial Surveillance Manhole 20A

Industrial Surveillance Manhole 20A is located on Seymour Street in Providence downstream of R. E. Sturdy Company, which conducts electroplating operations. On January 16, 2004 and March 19, 2004 the concentration of copper was in excess of the NBC discharge limitation of 1.20 ppm. Notices of Violation were issued to the firm. The firm has been inspected and sampled. The firm attributed the violations to spent ion exchange resin and has since replaced the resin. Continued industrial manhole monitoring will be conducted by NBC personnel during 2005 to monitor the compliance status of this firm.

Industrial Surveillance Manhole 39A

Industrial Surveillance Manhole 39A is located on Chestnut Street in Providence downstream of Regal Plating Company which conducts electroplating operations. On October 9, 2004 the concentration of copper was in excess of the NBC discharge limitation of 1.20 ppm. A Notice of Violation was issued to the firm, and the firm was inspected. The firm submitted a report indicating that the high concentration may have been due to a chelating problem with their soaps. They are investigating alternative soaps to address the issue. Continued industrial manhole monitoring will be conducted by NBC personnel during 2005 to monitor the compliance status of this firm.

Industrial Surveillance Manholes 45A and 45B

Industrial Surveillance Manholes 45A and 45B are located on Dupont Drive in Providence up and down stream of C&J Jewelry Company, Inc., which conducts metal finishing operations. On October 16, 2004 the concentration of copper was in excess of the NBC discharge limitation of 1.20 ppm, and the concentration of cyanide was in excess of the NBC discharge limitation of 0.58 ppm in the down stream manhole, Surveillance Manhole 45A. In addition, on the same day the concentration of cyanide in the up stream manhole, Surveillance Manhole 45B, was in excess of the NBC discharge limitation. A Notice of Violation was issued to C&J Jewelry for the down stream exceedances and the facility was inspected. In addition, the companies up stream of Surveillance Manhole 45B were inspected. The source of the high cyanide concentration is continued to be investigated. Continued surveillance manhole monitoring will be conducted by NBC personnel of these manholes during 2005 to monitor the compliance status of this firm and the firms in the up stream area.

Industrial Surveillance Manhole 53A

Industrial Surveillance Manhole 53A is located on Plymouth Street in Providence downstream of Cannon and Brown, Inc., which conducts electroplating operations. On October 30, 2004 the concentration of nickel was in excess of the NBC discharge limitation of 1.62 ppm. A Notice of Violation was issued to the firm. The firm reported that the high concentration was the result of operator error not transferring dragout solution to the plating bath at the end of day causing elevated concentrations of nickel in subsequent rinses. The firm has corrected the problem. Continued industrial manhole monitoring will be conducted by NBC personnel during 2005 to monitor the compliance status of this firm.

Industrial Surveillance Manhole 111A

Industrial Surveillance Manhole 111A is located on Railroad Avenue in Johnston downstream of G. Tanury Plating Company which conducts electroplating operations. On July 17, 2004 the concentration of nickel was in excess of the NBC discharge limitation of 1.62 ppm. A Notice of Violation was issued to the firm. The firm has been inspected. Continued industrial manhole monitoring will be conducted by NBC personnel during 2005 to monitor the compliance status of this firm.

Industrial Surveillance Manhole 111B

Industrial Surveillance Manhole 111B is located on Railroad Avenue in Johnston upstream of G. Tanury Plating Company and downstream of Evans Plating Corporation's Johnston facility. Both facilities conduct electroplating operations. On July 17, 2004 the concentration of lead was in excess of the NBC discharge limitation of 0.69 ppm. The concentrations of lead were in compliance in the manholes directly up and down stream

of this manhole. The area was investigated. An auto body facility, Hillview Auto Body, is located in the area upstream of Surveillance Manhole 111B, but downstream of Evans Plating Corporation. The firm was inspected and issued a Wastewater Discharge Permit. The firm also installed a pretreatment system. Continued industrial manhole monitoring will be conducted by NBC personnel during 2005 to monitor the compliance status of this firm.

Industrial Surveillance Manhole 126A

Industrial Surveillance Manhole 126A is located on Plainfield Street at Pocasset Street in Johnston. This manhole is downstream of the industrial area in southeastern Johnston. On December 24, 2004 the concentration of copper was in excess of the NBC discharge limitation of 1.20 ppm. The companies in the area were inspected to determine a potential source. Continued industrial manhole monitoring will be conducted by NBC personnel in 2005 to monitor the compliance status of this firm.

Manholes 191 I through P

Manholes 191 I through P are located on Kinsley Avenue in Providence. There are mill buildings along this area. The buildings housed metal finishing companies in the past that are now defunct. Strong solvent odors were observed when the sewer line on Kinsley Avenue was being cleaned as part of maintenance activities. Samples were obtained from the grit in these manholes and the concentration of total toxic organics was in excess of the NBC discharge limitation of 2.13 ppm in both the solid and liquid phases. Pollutants settled into the grit from past discharges prior to regulation and were released into the wastewater and air when the grit was disturbed during the cleaning operation. The grit was removed from the manholes and disposed of properly off-site as hazardous waste.

BUCKLIN POINT DISTRICT

Industrial Surveillance Manhole 32B

Industrial Surveillance Manhole 32B is located on Patterson Avenue in Pawtucket downstream of CHN Anodizing which conducts anodizing operations. On August 28, 2004 the concentration of nickel was in excess of the NBC discharge limitation of 1.62 ppm. NBC met with the firm to discuss the results. A Notice of Violation was issued to the firm. The firm submitted a report indicating the suspected cause of the high concentrations to be operator error within the facility. Continued industrial manhole monitoring will be conducted by NBC personnel during 2005 to monitor the compliance status of this firm.

Industrial Surveillance Manhole 41B

Industrial Surveillance Manhole 41B is located on Bacon Street in Pawtucket downstream of Bliss Manufacturing Company which conducts metal finishing operations. On May 29, 2004 the concentration of cyanide was in excess of the NBC discharge limitation of 0.50 ppm. Subsequent monitoring of this manhole has shown compliance with NBC discharge limitations for all parameters. Continued industrial manhole monitoring will be conducted by NBC personnel during 2005 to monitor the compliance status of this firm.

Industrial Surveillance Manhole 92B

Industrial Surveillance Manhole 92B is located on New England Way in Lincoln downstream of Tanury Industries which conducts electroplating operations and Tanury Industries PVD, Inc. which conducts metal finishing operations. On December 31, 2004 the concentration of nickel was in excess of the NBC discharge limitations of 1.62 ppm. A Notice of Violation was issued to both firms. Tanury Industries responded to the NOV by stating they were responsible for the high concentration of nickel due to improper rinsing on a plating line. Continued industrial manhole monitoring will be conducted by NBC personnel during 2005 to monitor the compliance status of this firm.

Industrial Surveillance Manhole 92C

Industrial Surveillance Manhole 92C is located on New England Way in Lincoln downstream of Chemart Company which conducts metal finishing operations, Tanury Industries which conducts electroplating operations, and Tanury Industries PVD, Inc. which conducts metal finishing operations. On February 6, 2004 the concentration of cyanide was in excess of the NBC discharge limitation of 0.50 ppm. On October 2, 2004 the concentration of nickel was in excess of the NBC discharge limitation of 1.62 ppm. The area was investigated in response to both instances. Continued industrial manhole monitoring will be conducted by NBC personnel during 2005 to monitor the compliance status of these firms.

V. ENFORCEMENT

NBC Enforcement Actions

The Narragansett Bay Commission (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 is 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 the past year and 2,159 Notices of Violation were issued for various violations of NBC Rules and Regulations. During 2004, the NBC issued two administrative orders and assessed a total of $50,000 dollars in penalties against violators. The NBC also enforced one Wastewater Discharge Permit suspension during 2004 against a categorical user which was issued in late 2001. The following is a description of the most common types of enforcement actions initiated by the Commission 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 discussion sheet documenting the conversation is prepared and placed in the user's 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 are computer generated and may be tailored by the relevant engineer or technician as appropriate. A Notice of Violation specifically states that its issuance does not prohibit other enforcement action. It also informs the violator that the non-compliance may result in publication of the firm's name in the state's largest daily newspaper and explains that inclusion on that list will subject the violator to liability for payment of the publication. In addition, the Notice of Violation letters refer the user to free technical and compliance assistance from the NBC Pollution Prevention Program. The most typical Notices of Violation are described below. Examples may be viewed in ATTACHMENT VOLUME I, SECTION 4.

    - *Letters of Deficiency* are Notice of Violation letters issued to notify the industrial user of deficiencies observed during a facility inspection. The Letter of Deficiency is prepared and issued by the engineer or technician that conducted the inspection or observed the violation, is sent to the user via Certified Mail, and requires the user to correct the noted deficiency within a specific time period. The NBC issued 170 Letters of Deficiency to users during 2004. An example of a Letter of Deficiency is provided in ATTACHMENT VOLUME I, SECTION 4.

~ *Notices for Failure to Meet Standards* are issued by the Pretreatment Staff each time NBC or user self-monitoring results indicate a violation of NBC or EPA discharge limitations, including violations of the monthly average limits. The NBC issued 168 notices of this type to industrial and commercial users during the past year.

~ *Notices of pH Violations* are issued by the Pretreatment Staff each time a user submits a monthly pH self-monitoring report that reveals violations of NBC pH discharge limitations. The NBC issued 405 notices of this type during 2004.

~ *Notices of Failure to Submit Monitoring Reports* are Notice of Violation letters issued to users for failure to submit a Self-Monitoring Compliance Report, pH Monitoring Report or Zero Discharge Certification on time. A similar letter is issued for failure to properly complete or sign a Self-Monitoring Compliance Report or pH Monitoring Report. The NBC issued 686 Notices of Violation to industrial and commercial users during the past year detailing these various types of violations. A similar Notice of Violation is issued for failure to sample or analyze for all required parameters. During 2004, thirteen such letters were issued to users that either failed to sample or analyze for all required parameters.

~ *Notices of Failure to Immediately Report Violations* are issued to users that fail to notify the NBC within twenty-four (24) hours of becoming aware of a violation of NBC effluent limitations in accordance with EPA regulation 40 CFR§403.12(g)(2). During 2004, there were 30 notices of this type issued to violators of this regulation.

~ *Notice of Failure to Satisfy NBC Requirements* are issued by the Commission when a user exceeds a specified deadline for submission of any of a number of various types of documents or for exceeding the completion date specified for tasks required by the NBC. Examples of such tasks may include installation of spill control facilities, pretreatment equipment, flow meters, sampling ports, etc. During 2004, the NBC issued a total of 467 notices of this type.

~ *Failure to Pay Permit Fees* is a Notice of Violation issued by the Pretreatment Section to firms greater than ninety (90) days late in paying permit fees. During 2004, the Pretreatment staff issued 184 letters of this type to users in the NBC district.

- ~ *Letters requiring an increase in frequency of self-monitoring* are issued to users who violate NBC discharge limitations and require the user to sample their wastewater weekly, or even daily, to demonstrate progress toward meeting effluent limitations. Once the user violates NBC discharge limitations, the Failure to Meet Standards Notice of Violation letter is automatically issued. During 2004, the Pretreatment Section issued 168 Notice of Violation letters that required resampling to be conducted immediately by violating users. This Notice of Violation requires weekly sampling to be conducted and continued until the user demonstrates at least four (4) consecutive monitoring reports indicating full compliance with effluent standards. This enforcement protocol is effective at bringing the user into compliance with effluent standards because the added expense and burden of weekly sampling encourages the quick correction of existing problems.

- *Letters of Wastewater Discharge Permit Suspension* are typically issued to Significant Industrial Users 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 2004, the NBC did not issue any letters of suspension; however one permit suspension was still in effect from 2001**.** 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's 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 the user's name in the state's largest daily paper will result if a violator meets the criteria for Significant Non-Compliance as defined in 40 CFR 403.8(f)(2)(vii). All Notices of Violation 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 twenty-one firms found to be in Significant Non-Compliance with NBC regulations were listed in an advertisement in the PROVIDENCE JOURNAL on February 28, 2005 for violations occurring between October 1, 2003 and December 31, 2004**.** A copy of this public notice is provided later in this chapter in FIGURE 10.

- *Meetings with the user* are held to discuss problems or violations the firm may be experiencing, often producing 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 their potential financial liability should their 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. Administrative Orders are classified into one of four general types (Compliance Orders, Cease and Desist Orders, Consent Orders and Termination/Suspension of Permit/Service Orders). The Administrative Order may or may not assess an administrative penalty. Depending on the type of Administrative Order issued, the user may be required to immediately cease discharging or achieve compliance with NBC rules and regulations within a specified time frame. Administrative Orders are considered the harshest control vehicle for ensuring compliance with NBC regulations. All Orders 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. Administrative Orders are issued by NBC's General 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 2004, one civil suit was initiated to enforce the terms of a Consent Order. The civil suit was filed against a commercial firm located in the Bucklin Point district. Three additional civil suits were filed to collect unpaid permit fees during 2004. Two were filed against industrial firms, one was located in Field's Point and the other one was located in Bucklin Point. The other civil suit was filed against a commercial firm located in Bucklin Point.

2004 Administrative Orders

During 2004, the NBC issued two Administrative Orders (AO) for violation of NBC rules and regulations and/or permit requirements. Both AO's issued in 2004 were issued to users located in the Field's Point District.

A sample Administrative Order is provided in ATTACHMENT VOLUME I, SECTION 4. A listing of Administrative Orders issued during 2004 is found in TABLE 15, while TABLE 16 provided at the end of this chapter provides a history of all enforcement actions taken by the NBC as of December 31, 2004, the penalties assessed, the penalties paid and the present status of each enforcement action. A brief summary of each Administrative Order issued during the past calendar year is provided below.

TABLE 15
Administrative Orders Issued
January 1, 2004 through December 31, 2004

Field's Point District

AO #	Company	Issue Date
#FP-01-04	Elmhurst Extended Care	03/05/04
#FP-02-04	Roger Williams Medical	03/05/04

Field's Point District

- AO #FP-01-04 was issued against Elmhurst Extended Care on or about March 5, 2004. The AO cited Elmhurst Extended Care for failing to submit Self-Monitoring Compliance Reports; failing to maintain and operate its required grease removal units; and failing to submit written certification that its grease removal units had been serviced. An administrative penalty of $20,000 was assessed. Elmhurst Extended Care was further ordered to immediately provide NBC with written verification that its grease removal units were operational, and that all past due compliance monitoring reports were submitted. Elmhurst Extended Care preserved its right to hearing. Negotiations resulted in the execution of a Consent Order on October 27, 2004 wherein Elmhurst Extended Care agreed to pay an administrative penalty of $7,500 over a 12 month period. Stipulated penalties of $250 for each occurrence of non-compliance with NBC and/or categorical discharge limitations for a one year period were also imposed. Elmhurst Extended Care is currently in compliance with all pretreatment requirements.

- AO#FP-02-04 was issued against Roger Williams Medical Center on or about March 5 2004. The AO cited Roger Williams Medical Center with failure to comply with the NBC's effluent limitation for silver; failure to submit Self-Monitoring Compliance Reports; failure to submit resampling results and/or reports explaining the reasons for violations and the corrective action(s) taken to prevent future noncompliance; failure to properly maintain a required grease removal unit; and failing to notify the NBC in writing verifying that its grease removal unit had been serviced and was operational. An administrative penalty of $30,000 was assessed. The AO further ordered Roger Williams Medical Center to immediately provide NBC with written verification that its grease removal unit was operational, all past due compliance monitoring results, and its resampling results for silver. Roger Williams Medical Center preserved its right to hearing. Negotiations resulted in the execution of a Consent Order on October 27, 2004 wherein Roger Williams Medical Center agreed to pay an administrative penalty of $12,500 over a 12 month period. Stipulated penalties of $250 for each occurrence of non-compliance with NBC and/or categorical discharge limitations for a one year period were also imposed. Roger Williams Medical Center is currently in compliance with all pretreatment requirements.

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 2004, no Letters of Wastewater Discharge Permit Suspension were issued. However, one permit suspension that was issued in 2001 was still in effect during 2004. A brief summary of the letter of Wastewater Discharge Permit Suspension is provided below:

- Century Plating International located on Potters Avenue in Providence was issued a Letter of Wastewater Discharge Permit Suspension on December 12, 2001. The firm had not discharged process wastewater for at least a month prior to the issuance of the suspension letter and the firm discharged very infrequently for at least a year prior to that time. The discharge line from the firm's final pH adjustment tank was permanently sealed by NBC personnel on January 24, 2002 to prevent illegal or unpermitted discharges that could adversely impact NBC facilities. This permit suspension was in full effect throughout 2002, 2003 and up until April 30, 2004 when the firm closed for business.

Update of Past Enforcement Actions

Field's Point District

- AO #FP-01-03 was issued against the Town of Johnston on or about September 10, 2003. The AO cited the Town of Johnston with failing to apply for a Building Sewer Connection Permit prior to commencing construction of a fire station which will be serviced by the NBC owned facilities. An administrative penalty of $10,000 was assessed. Additionally, the Town of Johnston was ordered to immediately cease and desist from any further construction activity near the NBC facility, immediately remove any illegal connections to the NBC facility, and submit a required Building Sewer Connection Permit application. The Town of Johnston preserved its right to a hearing. Negotiations are ongoing to resolve this AO and AO #FP-05-02.

- AO #FP-02-03 was issued against Victory Finishing Technologies (Victory) on or about September 10, 2003 for failing to comply with the NBC's effluent limitations for pH, cyanide, nickel, and silver; failing to operate and maintain its pretreatment system; failing to maintain records of its pretreatment system; failure to submit pH monitoring compliance reports and Self-Monitoring Compliance reports on time; failing to submit pretreatment plans to the NBC for approval; and, failing to follow its Spill and Slug Prevention Control and Countermeasure Plan. Due to the fact that Victory is in bankruptcy, prior to issuance of the AO, a Motion for Relief from Stay was filed with the US Bankruptcy Court and was granted. An administrative penalty of $55,000 was assessed. The AO also required Victory to immediately comply with effluent limitations, file all required reports on time, adhere to terms of its spill and slug prevention control plan, submit a summary report evaluating its waste treatment system's functionality, and notify the NBC for approval prior to making changes to process or pretreatment systems in the facility. Victory preserved its right to hearing and a status conference was held in November 2003 addressing the violations. Attempts were unsuccessful in negotiating a settlement and consequently the matter was assigned to hearing. A pre-hearing conference was held on May 24, 2004. Subsequently, the parties recommenced settlement negotiations and scheduling of the hearing was deferred. This matter is still pending as negotiations continue.

- AO #FP-03-03 was issued against New England Industries on or about September 10, 2003 for failing to comply with NBC's effluent limitations for cadmium, zinc, copper, lead and nickel and failing to properly report effluent discharge sampling results/falsification of sampling results. An administrative penalty of $35,000 dollars was assessed. The AO also required New England Industries to cease and desist processing any materials from its sister company, Century Plating International, and to

comply with all terms of its Wastewater Discharge Permit. New England Industries preserved its right to a hearing. A status conference was held in December 2003, at which time New England Industries indicated that it was in the process of closing both the New England Industries and the Century Plating International facilities. Negotiations resulted in the execution of a Consent Order on March 9, 2004 wherein New England Industries agreed to pay an administrative penalty of $1,500 and enforcement costs of $500. Stipulated penalties of $50 for each occurrence of non-compliance with NBC and/or categorical EPA discharge limitations for a one year period were also imposed. The Consent Order further prohibited New England Industries from treating and chemicals, solutions and/or wastes generated from Century Plating International.

- AO#FP-05-02 was issued against the Town of Johnston on or about October 24, 2002. The AO cited the Town of Johnston with the installation of a sewer connection to the NBC facilities in violation of an issued Sewer Alteration Permit, and direct interference and damage to an NBC owned sewer facility. An administrative penalty of $25,000 was assessed and the Town of Johnston was ordered to immediately cease and desist from any further construction activity near the NBC facility, immediately remove the illegal connection to the NBC facility, and repair and replace the damaged manhole as a result of the illegal connection. Negotiations are ongoing to resolve this AO and AO #FP-01-03.

- AO #FP-02-01 was issued against Ultra Metal Finishing Co., Inc. (Ultra Metal) and Edward Medici on December 27, 2001. The AO cited Ultra Metal Finishing Co., Inc. and Edward Medici for failure to submit self-monitoring reports; failure to submit pH-monitoring compliance reports; failure to submit pH monitoring compliance reports on time; failure to maintain records of its pretreatment system and failure to submit re-sampling results and/or reports explaining the reasons for violations and the corrective action(s) taken to prevent future non-compliance. Ultra Metal was ordered to cease and desist from discharging into the NBC's facilities; its wastewater discharge permit was revoked, and an administrative penalty of $5,000 was assessed. Prior to the issuance of the AO, Ultra Metal's permit had been suspended for failure to comply with the terms of a previous Consent Order and AO, which had required Ultra Metals to submit a Facility Shut Down Procedure. At the time of the suspension, its discharge connection to the Commission's facilities was sealed and numerous drums of chemicals were clearly identified by NBC staff as a "Prohibited Discharge". Ultra Metal filed to preserve its right to hearing**.** On or about October 29, 2003, NBC's legal department filed a Superior Court civil action against Ultra Metal to enforce the penalty portion of the Final Decision and Order, and to collect $9,366.21 in unpaid permit fees. The suit is pending at this time.

- AO #FP-01-00 was issued against Crown Plating, Inc. and William D'Agostino on June 20, 2000. An administrative penalty of $6,250 was assessed. Crown Plating failed to preserve its right to hearing. The NBC filed a Superior Court action seeking a mandatory injunction to have Crown Plating's connection to the NBC facilities permanently sealed. This company is now out of business. The Superior Court granted the NBC's injunction, and the facility has been closed and its process drains were sealed. The Court also granted the NBC $19,000 for permit fees, consumption fees, and the penalty amount. The NBC received judgment to collect these amounts through a wage garnishment from William D'Agostino.

- AO #FP-02-98 was issued against Ad-Tech, Inc. and Gary Sugal, on March 17, 1998. An administrative hearing was held on December 17, 1998 and March 9, 1999. Following conclusion of the hearing, the Hearing Officer issued a decision recommending that the NBC issue a Final Decision and Order assessing a $75,000 penalty against Ad Tech, with Sugal being jointly and severally liable for $55,000 of the $75,000 penalty. Thereafter, the NBC issued a Final Decision and Order requiring Ad Tech to pay a $75,000 penalty and holding Sugal jointing and severally liable for $55,000. Ad Tech and Sugal appealed the matter to Superior Court. This appeal is still pending.

Bucklin Point District

- AO#BV-01-03 was issued against CHN Anodizing on or about March 27, 2003 for failing to comply with NBC effluent limitations for pH, nickel and chromium; failure to operate and maintain its pretreatment system; failure to maintain records of its pretreatment system; failing to submit Self-Monitoring Compliance and pH monitoring compliance reports on time; failure to properly report effluent pH discharges; failing to immediately notify the NBC of a spill at the time of the incident; and, improperly storing chemicals according to an NBC approved spill control plan. An administrative penalty of $50,000 dollars was assessed. The AO ordered CHN to comply with all pH and effluent limitations; maintain and operate its pretreatment system at all times; maintain accurate records of the operation and maintenance of its pretreatment system; submit its pH and Self-Monitoring Compliance reports on time; report pH to the required accuracy; notify NBC of any spills; and, adhere to the approved spill control plan. CHN preserved its right to a hearing. Negotiations resulted in the execution of a Consent Order on August 6, 2004 wherein CHN agreed to pay an administrative penalty of $12,000. The Consent Order further required CHN to install a pH neutralization system upgrade by December 31, 2004. CHN is in compliance with the terms of the Consent Order.

- AO#BV-04-02 was issued against Instant Septic Environmental Services and Mr. Douglas Goss on or about August 8, 2002. The AO cited Instant Septic for falsification of septage originator/customer signatures on NBC required septage discharge manifest forms. An administrative penalty in the amount of $20,000 was assessed and further required Instant Septic to immediately cease and desist all septage discharges to the NBC Lincoln Septage Receiving Station. Instant Septic preserved its right to an administrative hearing. Subsequently, Instant Septic closed its operations. The main corporation, Instant Plumber Plumbing and Heating, Inc., remains open, and the AO was amended to include the proper corporate name. Settlement negotiations were unsuccessful, and as such, an administrative hearing was held on April 20, 2004. Following conclusion of the hearing, the Hearing Officer issued a decision recommending that the NBC issue a Final Decision and Order assessing a $20,000 administrative penalty and ordering Instant Plumber to immediately cease and desist all septage discharges to the NBC Lincoln Septage Receiving Facility. Thereafter, the NBC issued a Final Decision and Order adopting the Hearing Officer's recommendations. The NBC is preparing to proceed to Superior Court to enforce the terms of the Final Decision and Order.

- AO#BV-05-02 was issued against Estrela Do Mar and Mr. George Rodrigues on or about September 23, 2002. The AO cited Estrela Do Mar with failure to submit pretreatment and process plans, and failure to install a required grease removal unit. An administrative penalty of $5,000 was assessed. The AO further ordered Estrela Do Mar to submit its kitchen facility plans, and to install a grease removal unit. Estrela Do Mar failed to preserve its right to an administrative hearing. A Final Decision and Order was issued in January 2003 requiring Estrela Do Mar to pay the penalty, submit the required plans and install the required equipment. Estrela Do Mar failed to comply with the Final Order and as a result, its wastewater discharge line was sealed. Subsequently Estrela Do Mar complied with its pretreatment requirements and the NBC unsealed its discharge line. A Consent Order was executed wherein Estrela Do Mar agreed to pay the $5,000 penalty over a 10 month period. Estrela Do Mar has failed to adhere to the payment terms. A complaint was filed in District Court action to collect the amounts outstanding. This matter is still pending.

Supplemental Environmental Projects

Supplemental Environmental Projects (SEPs) 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 demonstrate 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. 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's 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).

"Environmental Enforcement funds were used to support a shellfish transplant in Narragansett Bay"

On September 21, 1990, the Commission developed internal policies and procedures for the use of the Environmental Enforcement Fund. In the spring of each year the NBC solicits ideas for use of the funds from NBC staff, the public and industrial users. NBC's Director of Planning, Policy & Regulation reviews the submittals and makes funding recommendations to the Executive Director and the Board of Commissioners. The Executive Director presents the ideas and recommendations to the Commission's Finance and Long-Range Planning Committees at a joint meeting for their review and approval.

"Environmental Enforcement funds were used to support a river restoration project for the Woonasquatucket River in Providence"

In 2004, the NBC solicited proposals for use of Environmental Funds. As a result, three (3) proposals were submitted to the NBC Board of Commissioners for reviews and were approved. The following projects were funded in 2004. The NBC expects to solicit new proposals in the spring of 2005 as Environmental Enforcement Funds become available.

Narragansett Bay Nutrient Symposium	$3,000
Eureka! (Residential Needle Disposal Program)	$2,500
URI Scholarship	$5,000
East Providence Fire Department HazMat Technician Level Training	$1,000
Total Approved in 2004	**$11,500**

Throughout 2004, the NBC continued to fund projects previously approved with Environmental Enforcement Funds. Below is a list of the these projects and the amount expended during 2004.

EEF #	Project	$ Spent in 2004
#03-03	Tire Disposal Program	$8,550.00
#03-01	River Restoration Initiative	2,085.38
Shellfish	Shellfish Transplant	33,050.00
Total		**$44,585.38**

Enforcement Response Plan

In accordance with 40 CFR§403.8(f)(5), the Narragansett Bay Commission developed and submitted an Environmental Response Plan to the RI DEM on February 1, 1993. The plan was officially approved by the RI 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 its Pretreatment Program. The proposed plan suggests timetables for the initiation of enforcement actions that would be

followed as soon as practicable after the 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 initiating an enforcement action. The NBC has revised the Enforcement Response Plan to comply with DEM requirements imposed during the year 2000 DEM Pretreatment Compliance Inspection and the new RIPDES permits issued by the DEM on December 31, 2001. The revised Enforcement Response Plan 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 40 CFR§403.8(f)(2)(vii) requires the Commission 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 Significant Non-Compliance with pretreatment standards and/or administrative requirements for the period of October 1, 2003 through December 31, 2004 was published in an advertisement in the PROVIDENCE JOURNAL on February 28, 2005. A copy of this advertisement is provided in FIGURE 11, while the Affidavit of Publication is provided in FIGURE 12.

The NBC has adopted the EPA definition of Significant Non-Compliance, citing any industrial user as being in SNC that has:

(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) the daily maximum or the average limit 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 daily maximum limit or the average limit 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 discharges 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 twenty-one firms were listed in the February 28, 2005 public notice in the Providence Journal. Of the twenty-one firms listed in Significant Non-Compliance, twelve users are located in the Field's Point district and nine are Bucklin Point users. There were nine firms in SNC subject to EPA categorical standards, seven are classified as either electroplaters or metal finishers, one is classified as a Centralized Waste Treatment facility, and one is classified as Pharmaceutical facility.

Two violators listed in the SNC public notice were classified as significant non-categorical user and ten firms are classified as non-significant industrial users. These twelve firms perform various types of wastewater generating operations including vibratory tubbing, machine shop, printing, groundwater remediation, textile processing, and other manufacturing operations.

The number of firms listed in SNC in 2004 was 21, an increase from the 2003 number of 20. Of the 21 users listed in the February 28, 2005 SNC Public Notice, 19 users had achieved full compliance with the EPA and NBC Rules and Regulations for which they were published. Additional information regarding the firms listed in SNC is provided in CHAPTERS I and IV. The cost of the public notice was billed to the firms listed as being in Significant Non-Compliance.

FIGURE 11
PUBLIC NOTICE OF USERS IN SNC

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) (vii) 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, 2003 through December 31, 2004. 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) the daily maximum limit or the average limit 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 the daily maximum limit or the average limit 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. •

Bucklin Point Service Area

Pawtucket

Company Name	Violations Cited	Present Status
Angelica Textile Services, Inc.	Failure to submit report on time. (6)	Report has been submitted.
Denison Pharmaceuticals	Acetone (1, 2)	Firm is now in compliance.
Esten Dye & Finishing Company, Inc.	Failure to submit reports on time. (6)	Reports have been submitted. Firm is now out of business.
Maxwell Polishing	Failure to submit report on time. (6)	Report has been submitted.
Rand-Whitney/South East Container, LLC	Copper (1,2) Failure to submit reports on time (6)	Firm is now in compliance. Reports have been submitted.

Cumberland

Company Name	Violations Cited	Present Status
CCL Custom Manufacturing, LLC	Failure to submit reports on time.	Reports have been submitted.

Lincoln

Company Name	Violations Cited	Present Status
Omega Northeast, Inc.	Failure to submit reports on time. (6)	Reports are still past due.

East Providence

Company Name	Violations Cited	Present Status
Tanya Creations	Cadmium (2)	Firm ceased discharges.

Smithfield

Company Name	Violations Cited	Present Status
ACN-Providence, LLC	Failure to submit report on time (6)	Report has been submitted.

Field's Point Service Area

Providence

Company Name	Violations Cited	Present Status
Apex Plating Co.	Failure to submit report on time. (6)	Report has been submitted.
Aurafin-Oroamerica, LLC	Failure to submit report on time. (6)	Report has been submitted.
Esposito Jewelry, Inc.	Failure to submit reports on time. (6)	Reports have been submitted.
Mario's Jewelry	Failure to submit reports on time. (6)	Firm is out of business.
Monarch Metal Finishing Company	Cyanide (2)	Firm is now in compliance.
Quality Spraying Technologies	Failure to submit report on time. (6) Copper (1, 2)	Report has been submitted. Firm is still experiencing compliance problems
R-One Alloys, Inc. d/b/a Refining One, Inc.	Cyanide (2)	Firm is now in complaince and has gone out of business
Universal Plating Co., Inc.	Failure to submit report on time. (6)	Report has been submitted.
Wal-Kar Engraving Company, Inc.	Failure to submit report on time. (6)	Report has been submitted.

North Providence

Company Name	Violations Cited	Present Status
Evans Plating Corporation - North Providence Facility	Failure to submit report on time. (6)	Report has been submitted.

Johnston

Company Name	Violations Cited	Present Status
Dun-Rite Radiator	Failure to submit report on time. (6)	Report has been submitted.
Evans Plating Corporation - Johnston Facility	Failure to submit report on time. (6)	Report has been submitted.

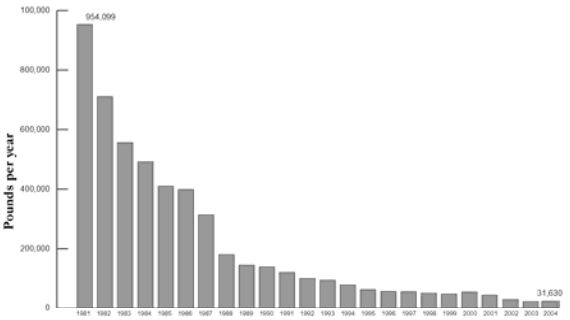
The Narragansett Bay Commission is committed to protecting the state's two largest wastewater treatment facilities and Narragansett Bay from toxic discharges. This is accomplished by the issuance of discharge permits to commercial and industrial sewer users. These discharge permits specify the level 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 Pollution Prevention. For information on how the NBC Pollution Prevention Program can help your firm achieve and maintain compliance, contact the Pollution Prevention 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 this facility have been reduced by 96.7% and 95.1% respectively. .

The Narragansett Bay Commission will continue to be a leader in the field of wastewater treatment, environmental protection and environmental education to ensure a cleaner Narragansett Bay for all to enjoy.

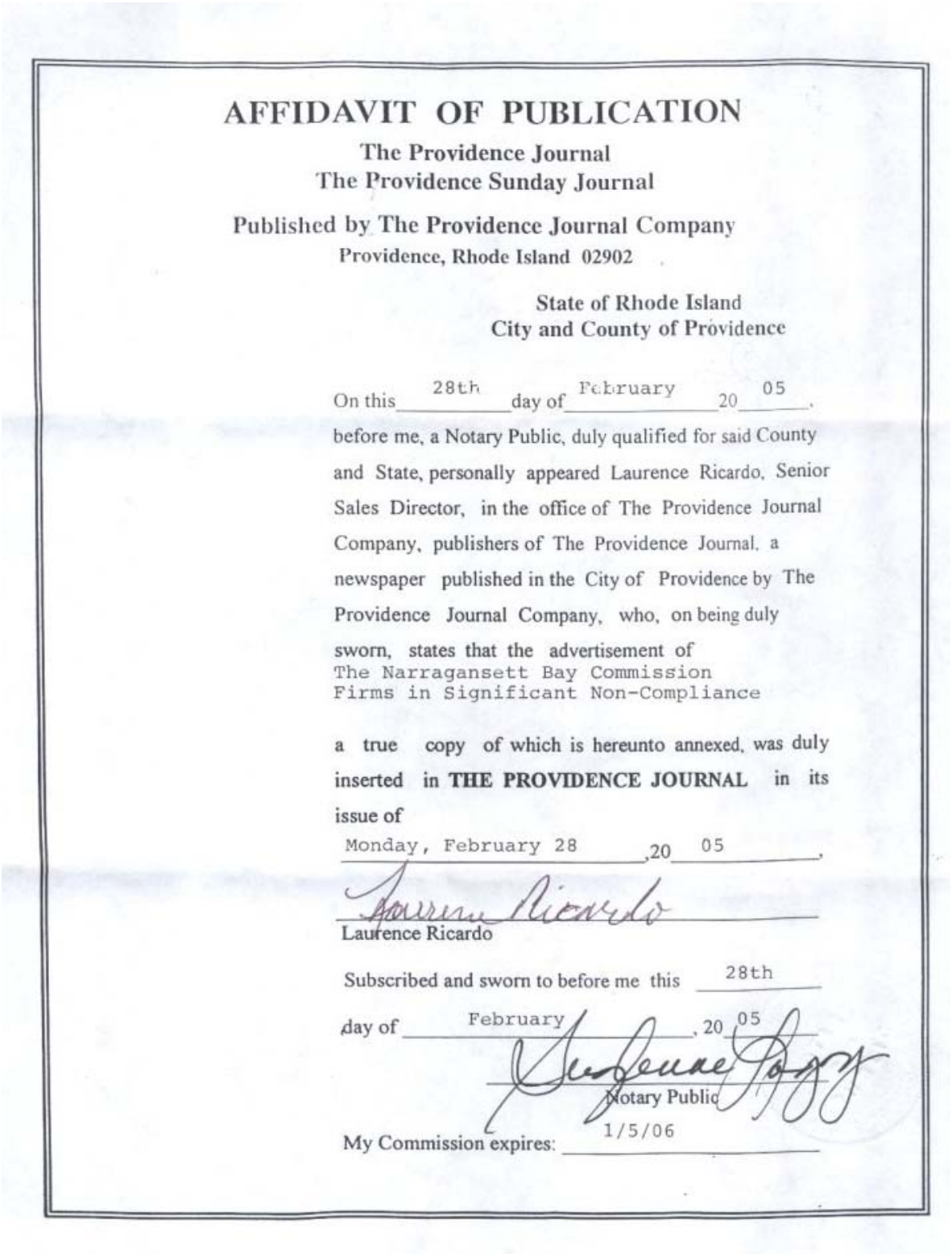
Vincent J. Mesolella, *Chairman* • Paul Pinault, P.E., *Executive Director*

Total Metals Influent to Field's Point WWTF, 1981-2004



Narragansett Bay Commission • One Service Road • Providence, RI 02905
401-461-8848 • TDD 401-461-6549 • FAX 401-461-6540 • http://www.narrabay.com
The cost of this public notice will be billed to the firms listed above that were in significant non-compliance.

FIGURE 12
AFFIDAVIT OF PUBLICATION OF SNC PUBLIC NOTICE



AFFIDAVIT OF PUBLICATION

The Providence Journal
The Providence Sunday Journal

Published by The Providence Journal Company
Providence, Rhode Island 02902

State of Rhode Island
City and County of Providence

On this 28th day of February 20 05,
before me, a Notary Public, duly qualified for said County and State, personally appeared Laurence Ricardo, Senior Sales Director, in the office of The Providence Journal Company, publishers of The Providence Journal, a newspaper published in the City of Providence by The Providence Journal Company, who, on being duly sworn, states that the advertisement of
The Narragansett Bay Commission
Firms in Significant Non-Compliance

a true copy of which is hereunto annexed, was duly inserted in **THE PROVIDENCE JOURNAL** in its issue of
Monday, February 28, 20 05,

Laurence Ricardo

Subscribed and sworn to before me this 28th
day of February, 20 05

Notary Public

My Commission expires: 1/5/06

TABLE 16
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/04
FIELD'S POINT DISTRICT

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
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

TABLE 16
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/04
FIELD'S POINT DISTRICT

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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
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

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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
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

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NOV #32 ALLENS MANUFACTURING 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
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

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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
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

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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
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

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AO # FP-04-92 ALLENS MFG.	06/04/1992	BANKRUPT UNCOLLECTABLE	$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
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

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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
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 UNCOLLECTABL E	$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

TABLE 16
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/04
FIELD'S POINT DISTRICT

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 #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
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

TABLE 16
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FIELD'S POINT DISTRICT

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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
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

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FIELD'S POINT DISTRICT

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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
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	4/9/96 AMENDED 6/13/96	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

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SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/04
FIELD'S POINT DISTRICT

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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
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 AWARDED $6,250 PLUS PERMIT FEES	$6,250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

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FIELD'S POINT DISTRICT

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AO #FP-02-00 ULTRA METAL FINISHING, INC.	12/28/2000	INCOPORATED INTO AO#FP-02-01	$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
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	$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	**PENDING NEGOTIATIONS**	$25,000.00	$25,000.00	$0.00	$25,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-01-03 TOWN OF JOHNSTON	09/10/03	**PENDING NEGOTIATIONS**	$10,000.00	$10,000.00	$0.00	$10,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-02-03 VICTORY FINISHING TECHNOLOGIES	09/10/03	**PENDING NEGOTIATIONS**	$55,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

TABLE 16
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FIELD'S POINT DISTRICT

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AO #FP-03-03 NEW ENGLAND INDUSTRIES	09/10/03	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	3/5/04	CONSE4NT ORDER 10/27/04	$20,000.00	$7,500.00	$1,250.00	$6,250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #FP-02-04 ROGER WILLIAMS MEDICAL CENTER	3/5/04	CONSENT ORDER 10/27/04	$30,000.00	$12,500.00	$2,080.00	$10,420.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

TABLE 16
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/04
BUCKLIN POINT DISTRICT

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

TABLE 16
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/04
BUCKLIN POINT DISTRICT

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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
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

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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
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

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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
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

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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
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

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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
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

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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
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**	$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 SUPERIOR COURT CASE PENDING**	$5,000.00	$5,000.00	$500.00	$4,500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO #BV-01-03 C.H.N. ANODIZING	03/27/03	CONSENT ORDER 8/6/04	$50,000	$12,000.00	$4,000.00	$8,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

VI. NBC Impact on Control of Toxics and Incompatible Waste

NBC Impact on the Control of Toxics and Incompatible Wastes

NBC's continuing goal is to improve receiving water quality by limiting the impact of Wastewater Treatment Facility (WWTF) effluent on Narragansett Bay. To this end, influent and effluent metals and cyanide loading data are used to provide a measure of the amount of industrial waste being discharged to the sewer system, as well as a means of quantifying the NBC's effectiveness at 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.

At the beginning of 2002 both wastewater treatment facilities were issued updated RIPDES discharge permits. Of significant interest was the removal of several pollutants from the permit due to five years of data that had revealed discharge levels well below the detection limits or aquatic life criteria as it is applied to the NBC's receiving waters.

At Field's Point the following parameters were removed from the permit:

- Cadmium
- Hexavalent chromium
- Lead
- Tetrachloroethylene
- 1,1,1-trichloroethane
- Trichloroethylene
- 1,2-dichloroethylene
- Methylene chloride
- Bis(2-ethylhexyl) phthalate

At Bucklin Point, pollutants were also removed from frequent monitoring due to historically low concentrations. Removed from the Bucklin Point permit were:

- Cadmium
- Tetrachloroethylene
- 1,1,1-Trichloroethane
- Trichloroethylene
- Dichloromethane

Monitoring of these pollutants continues as routine sampling and semi-annual priority pollutant scans. Data from these scans indicate that concentrations are either well below saltwater water quality criteria or not detectable in plant effluent.

The removal of a parameter from a RIPDES permit, or a downgrade to monitor only status, is a direct result of effective efforts by Pollution Prevention, Pretreatment, Laboratory, Operations, and EMDA sections. The timely collection of samples, low-level, trace analysis by NBC's Laboratory Section, effective regulation of industry by Pretreatment, Pollution Prevention technical assistance provided to industry, and effective treatment performed by the Operations Section staff are the key components of an efficient wastewater treatment organization.

The studies and results presented in this report deal with monitoring of the NBC treatment facilities, the sewer collection system, SIUs, and the receiving waters of Narragansett Bay, conducted by the EMDA Section of the NBC. EMDA works in conjunction with the Pretreatment, Laboratory, Operations, and Engineering Sections of NBC to conduct sampling of wastewater from its sources, throughout its collection and treatment systems, and ultimately to its final fate as either sludge or as effluent in Narragansett Bay.

Sample Collection at POTWs

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

Toxic pollutant monitoring requirements include 24-hour composite sample collections for the analysis of copper, lead, mercury, nickel, silver, and zinc. A single grab sample for hexavalent chromium is also collected at Bucklin Point. Metals and cyanide measurements are required twice-weekly at both treatment facilities.

In 2003 RIDEM and NBC agreed on the need to improve the collection of cyanide samples at the influent and effluent of the two facilities. The former permit required three samples to be collected over a 24-hour period. The collections were manual grab samples taken by EMDA staff on first shift and Operations staff on the night shifts. The current method, begun in the fall of 2003, mandates nine grab samples to be collected over a 24-hour period, separated by a minimum of two hours. The greater number of grab samples comprising the composite sample reduces the influence that a single grab sample has if it is substantially different from the average concentration range, while capturing some of this variability. Results for 2004 indicate that the multi-grab composite samples are more representative of the influent and effluent than previous samples.

During 2004, EMDA staff collected all permit required 24-hour composite samples of the waste streams at the two facilities. At Bucklin Point, composite samples are collected from both interceptors that bring wastewater to the plant. Collections from the Blackstone Valley Interceptor (BVI) and East Providence Interceptor (EPI) are made on a flow-paced schedule and analyzed independently. Field's Point influent samples are collected on a flow-paced basis at the single interceptor that feeds the facility. Final effluent sample collections are flow-paced at both facilities. These composite effluent samples are analyzed by the NBC Laboratory for conventional pollutants and the metals listed above, as well as nutrients. The nutrients analyzed are total Kjeldahl nitrogen (TKN), nitrite, nitrate, ammonia, and total phosphorus. Permit requirements mandate weekly monitoring of all nutrients except ammonia, which must be analyzed twice weekly. However, the NBC monitors twice weekly for all nutrient parameters. A new nutrient auto-analyzer was acquired by NBC's Laboratory in 2004 in order to improve the efficiency and accuracy of nutrient measurements, and analytical results from the new equipment show better precision and accuracy than previous analyses.

Other required sample collections for monitoring include daily fecal coliform bacteria, the conventional pollutants biochemical oxygen demand (BOD) and total suspended solids (TSS), oil and grease, pH, and total residual chlorine (TRC). Whole effluent bioassay toxicity tests are also conducted quarterly at both treatment facilities.

Consent agreement RIA-330 between the NBC and RIDEM was fully executed and took effect on January 1, 2004. This agreement resolved the NBC's appeal of certain conditions within RIPDES permit Nos. RI 0100072 and RI 0100315, which were issued to the Bucklin Point and Field's Point facilities, respectively, on December 31, 2001. As a result of this consent agreement, consent decree permit limits at Bucklin Point for copper, mercury, nickel, silver, and zinc were developed based on historical effluent concentrations rather than water quality criteria. Similarly, the Field's Point consent decree permit limits for copper were also developed. At both plants, cyanide permit limits were agreed upon that recognize the quantitation limit of this parameter. As a result of these updated consent decree limits, NBC facilities are better able to meet effluent limits.

Additional changes in the new consent agreement included the addition of a second daily fecal coliform bacteria grab sample at the final effluent at both facilities to improve the testing of this important water quality indicator. New seasonal limits were also set for ammonia in the final effluent based on ammonia toxicity, at Bucklin Point.

Clean Sampling Implementation

In 1998, a comparative study was conducted of various sample collection methods at the Field's Point and Bucklin Point effluents. The U.S. EPA determined that one of the greatest difficulties in measuring pollutants, particularly trace metals, is avoiding sample contamination during collection, transport, and analysis. In response, the U.S. EPA developed the 1600-Series Methods Guidance for "Ultra-Clean" sampling and analysis of trace metals. The NBC comparative study was conducted to determine the level of "cleanliness" necessary for routine effluent sampling and the level of background contamination which may be present with existing sampling methods. The study concluded that improved sampling techniques reduce background sampling contamination and certain trace metal levels in the effluent. 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 is continuing its adherence to ultra-clean sampling methodology developed by Hampton Roads Sanitation District of Virginia via participation in a three year AMSA mercury study begun in 2003. 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 will assist EMDA in determining the best ways to improve the performance based clean sampling methods. Results from these samples have helped EMDA, in conjunction with the Laboratory, determine the steps needed to continue to improve detection limits.

Chain of Custody forms are used to document sample collection, storage, and transfer as part of the NBC Quality Assurance/Quality Control program. Equipment and field blanks are also routinely collected, analyzed, and evaluated to monitor the success of the clean sampling techniques. Improvements to laboratory instrumentation and clean procedures are helping to reduce analytical detection limits and contamination from sample handling. Reductions in trace metal loading to the treatment facilities are a result of improved environmental practices by industry, better regulatory oversight, extensive user education programs, and improved collection and analytical methods.

Sampling Improvements Common to Both the Field's Point and Bucklin Point Wastewater Treatment Facilities

Throughout 2004 EMDA has made the following improvements to the sampling process at both facilities.

Automated refrigerated samplers have been positioned at the influent and effluent channels. These samplers take nine cyanide grab samples, with three collections per shift. A time period of at least two hours between samples must pass to comply with RIPDES permit sampling requirements. Sample collections are made in discrete, clean bottles every two hours, for a 24-hour period. This collection method is performed twice per week. Of the twelve samples collected during a 24-hour period, nine of them are composited. The three remaining samples, one from each shift, are discarded unless they are needed as a back-up sample during the shift. Sample bottles are pre-preserved with sodium hydroxide, thus allowing preservation to a pH greater than 12 standard units (s.u.) at the time of collection.

EMDA staff performs daily checks of the influent and effluent waste-stream channels for the presence of total residual chlorine and sulfides which may interfere with cyanide sample analyses. Standard potassium iodide, starch, and lead acetate indicator papers are used for this testing. In 2004, all tests for these constituents were non-detected at both facilities. If either of these constituents is detected the cyanide sampling will be suspended and re-started the following day. This new process helps EMDA collect a more representative and consistent sample and rapidly identify any potential sample quality issues.

In order to improve sample handling, EMDA employs spigotted composite carboys with magnetic stir bars for all 24-hour flow-paced permit sample collections at the influent and final effluent collection sites at the two facilities. In the past, sample carboys were shaken and the sample was poured off manually by the laboratory staff. Now, clean magnetic spin-bars are placed in the spigotted carboys. At the laboratory, staff place the 10 and 15-liter HDPE carboys on a magnetic stirring plate to re-suspend materials that may have settled during sample transport. After three minutes of agitation samples are dispensed via the spigots into vessels used for individual analyses. This procedure minimizes the chance of contamination during sample transfer, provides a more representative sample compared to the previous sample handling protocol, and better protects lab staff from exposure to spilled wastewater and unnecessary lifting that could result in personal injury.

Additional heaters that were installed in most automated samplers, to minimize freezing during cold weather, are working well in controlling line freezing during the winter months. The heaters were installed under the cover of the pump head/control unit of the samplers.

EMDA staff continues to clean and replace suction and pump tubing on a regularly established schedule as part of its clean sampling techniques. Routine equipment blank samples are also used to verify the absence of sample contamination.

EMDA staff also continues to assist Operations by providing the low-level final effluent Total Residual Chlorine (TRC) test standard and de-ionized water used for TRC testing. At Field's Point, EMDA staff conducts regular, weekly acid cleaning of the spectrometer and perform additional checks of instrument accuracy through the analysis of standards in addition to those run by Operations personnel.

During 2004 a new LIMS software system was installed on the NBC computer network to streamline sample labeling, submission, and documentation. The system is designed to organize the paperwork associated with the extensive sampling performed at both facilities, while enabling staff to easily track both sample handling and results. The previous system was based on manual data-logging and sample tracking.

A new sample device was designed and put into service for monthly Fats, Oils, and Grease (FOG) sampling. The sampler took the place of the Nasco swing sampler, and has proven to be a more efficient and easier way to collect grab samples for this parameter.

EMDA staff developed quick-reference guides for Operations on how to use the sampling and monitoring equipment during normal and wet weather operations. These sampling aids should reduce monitoring issues which may occur during off-shift hours.

Improvements and additions to the many EMDA sampling points provide Field's Point and Bucklin Point with clean representative results from sampling and analysis for plant process and operations.

Due to differences in plant operations and processes, sampling activities at the facilities contain some different components. The incinerator at the Field's Point facility requires additional monitoring, and facilities planning for Field's Point resulted in additional EMDA sampling. Likewise, EMDA has improved and altered activities due to upgrades to the Bucklin Point facility. Septage receiving facilities require additional sampling to ensure that no septage is received that poses the potential to upset normal plant operations.

Field's Point Special Sampling Activities

EMDA staff maintains and monitors eleven automated sampling instruments on site at Field's Point, which can collect either flow proportioned composite samples, or time-based samples. EMDA staff also collects process control samples for operational needs. The following items describe special sampling activities specific to Field's Point:

- EMDA staff continues to study the recycled flows at the Field's Point facility, including cyanide concentration in the incinerator scrubber water that is used to reduce stack emissions. EMDA collects a monthly grab sample of this scrubber water, which is returned to the plant just before the primary settling basins. Monitoring the scrubber water is necessary to understand the source and fate of cyanide within the treatment facility, protect the microbial population within the activated sludge that is used for secondary treatment, and ensure that effluent permit limits can be met.

- EMDA staff continues to check the agreement between the continuous influent and effluent pH probes with discrete pH grab samples analyzed by the laboratory. Working with the laboratory on this calibration effort has helped improved data quality and comparability. The results of this comparison are documented in a daily log sheet.

- EMDA continued its efforts to support Engineering investigations of biological nutrient removal. In April of this year, NBC conducted a seven month pilot study of Hydroxyl's F^3 RAS, hybrid fluidized fixed-film and activated sludge treatment process. To supplement facilities planning at Field's Point, the pilot study was undertaken to investigate the ability of the plant to remove nutrients, namely, nitrogen containing compounds, from its effluent. EMDA and Operations staff were crucial to ensuring proper sampling techniques and prompt delivery of time-sensitive samples.

- EMDA has converted one of NBC's SIU sampling vans into a Field's Point plant van by retrofitting it with a fabricated jug handling system. This has provided EMDA staff with a safer, more efficient means of transporting samples to the lab.

- NBC is constructing the largest public works project in Rhode Island history. This project consists of a tunnel that will be 25 feet wide, 250 feet below ground-level, and three miles long upon completion, located in the Providence metropolitan area. This tunnel will collect and store stormwater and untreated combined sewage generated by rain events. After rain events, wastewater contained in the tunnel will be pumped to the influent grit removal chambers where it will then be processed through the plant and receive secondary treatment. Groundwater and construction wastewater generated from this project discharge to the Field's Point influent chambers via a sedimentation pond located at the project site. EMDA collects weekly samples of the water flowing into the channel to monitor this wastewater for potential impacts from solids and other contaminants on plant processes.

Bucklin Point Special Sampling Activities

The following items describe special sampling activities specific to Bucklin Point:

- EMDA staff picked up septage samples weekly at the NBC Lincoln Septage Receiving Station and delivered them to the NBC laboratory for analysis.

- The Bucklin Point staff collected weekly chlorophyll samples at the Phillipsdale landing site in East Providence. These sample collections helped EMDA scientists compare grab results with continuous measurements from an environmental sonde that is stationed in the Seekonk River, downstream of the WWTF. This sonde records and transmits data based on the current water quality conditions at its location in the Seekonk River.

- EMDA staff performed daily laboratory analyses for both permit and process samples. Daily effluent pH, temperature, and chlorine residual measurements at the contact tank effluent prior to dechlorination were performed. Results are communicated to the Laboratory and Operations staff for permit compliance and process control applications. The QA/QC program requires calibration, checks, and documentation that the pH meter and colorimeter used for these tests are operating properly.

During 2004, much preparation was made by NBC for the completion and start-up of the phase one upgrades at Bucklin Point. Process and operational improvements that have been implemented in 2004 include: enhanced dry weather capabilities (including an influent pumping station), a new screening and grit building, new dry weather primary clarifiers, a dry weather sludge pumping station, a dry weather primary effluent splitter box, as well as other modifications to the overall operation of plant processes. EMDA began to coordinate with NBC Construction Services and Bucklin Point Operations to set up new sampling locations and make improvements to existing locations.

In the fall of 2004, flow at the Bucklin Point facility was diverted through the newly constructed phases of the plant process. EMDA took on many new tasks to ensure sampling efforts related to the overall operational upgrade, were implemented. These included:

- A new sampling scheme for primary effluent. The primary effluent channel now runs through three clarifiers. EMDA assumed responsibility for three automated Sigma samplers, one stationed at each of the clarifiers. The automated samplers collect samples for 24 hours, and they collect these samples based on a flow-proportioned program. EMDA participated in training from Sigma to fully use the options available on the samplers.

- Primary influent sampling will also change as a result of Bucklin Point upgrades. A refrigerated portable sampler will be set up to collect samples on a daily basis, collecting flow proportioned samples. This location will also be equipped with a sampler capable of collecting samples during wet weather events. Sampling modifications will continue to be made to get power and flow signals to the samplers. Holes will be drilled through the cement platform to allow sampling suction lines and guide tubes to be passed through to the waste stream to collect sample aliquots.

- In 2005 Bucklin Point operations will add the capability of wet weather storage and treatment. The old primary effluent treatment tanks are being converted to store untreated waste until the plant can effectively treat and disinfect it, thus increasing the overall treatment capacity of the facility. EMDA will station an automated sampler at the new wet weather tank locations, with new sampling based on increased flow to the plant due to wet weather overflow.

- The Bucklin Point facility is scheduled to begin testing the ultra violet (UV) disinfection process for final effluent in early 2005. This will replace the previous disinfection and dechlorination process, which requires sodium hypochlorite and sodium bisulfate addition. In anticipation of the new disinfection process, EMDA will shift sampling from the dechlorination building to the new UV building where it will implement all final effluent sampling needs. EMDA will have three automated refrigerated samplers. Two of the samplers will be used to collect samples for final effluent, one will be used as a back up. The third sampler will be used to collect cyanide samples on a two-day sampling interval. EMDA, with the help of NBC Construction Services, will make modifications to the sampling site for suction line deployment, power and flow signal availability. A hatch will be cut out near the center of the UV channel for permit grab sample collection.

- Veolia Water and EMDA staff worked closely over the past year to improve all plant-sampling locations. Both influent and effluent sampling locations were modified. Electrical outlets were installed at these locations so that sampler power cords could reach the new sampler positions. Heaters were installed at most automated samplers and more have been ordered to accommodate the samplers that were just added to the new locations.

- New dishwashers were installed at the Bucklin Point EMDA lab to help with daily cleaning requirements.

- The daily EMDA transfer log/chain of custody was changed to add new locations and other important process control data.

Analysis of Influent Loading Data

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

Records of data for metals and cyanide in the Field's Point collection system have been collected and analyzed since 1980. Significantly less historical loading data is available for the Bucklin Point facility, which was acquired by the NBC in 1992. The historical Bucklin Point data presented here covers the period from 1994 to present for metals, and 1991 to present for cyanide.

Field's Point District - Influent Loading Analysis

FIGURES 13 and 14 depict the reduction in metals and cyanide loadings to the Field's Point facility between 1981, the year before the NBC assumed the ownership and operation of the Field's Point Wastewater Treatment Facility and portions of the metropolitan Providence sewer system, to the present.

Over these two decades, there has been a significant downward trend in the total loadings of metals as can be seen in FIGURE 13. Total metals loadings is defined as the sum of cadmium, copper, chromium, lead, mercury, nickel, silver and zinc loadings for a given year. These loadings have remained at essentially the same level as 2003 loadings, but significantly lower than loadings throughout the 1980s and 1990s. Cyanide loading data for the same time period indicate a similar overall downward trend as can be seen in FIGURE 14. The success in reducing the metal and cyanide inputs to the POTWs is largely due to the efforts and success of the NBC's Pretreatment and Pollution Prevention programs.

FIGURE 13
Field's Point Total Metals Influent Loading Trend Analysis

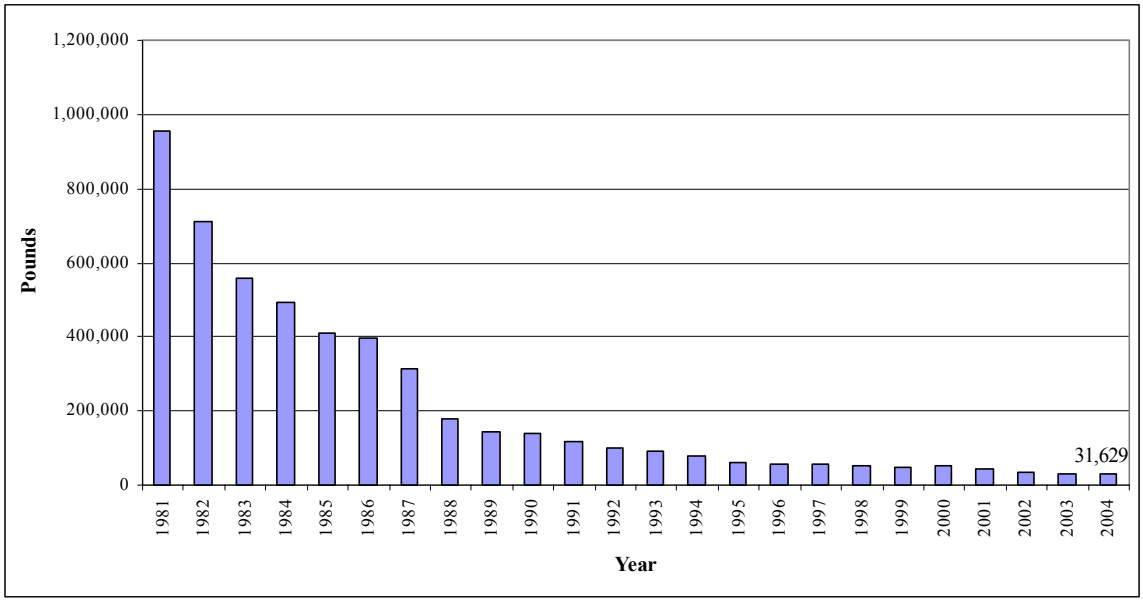


FIGURE 14
Field's Point Cyanide Influent Loading Trend Analysis

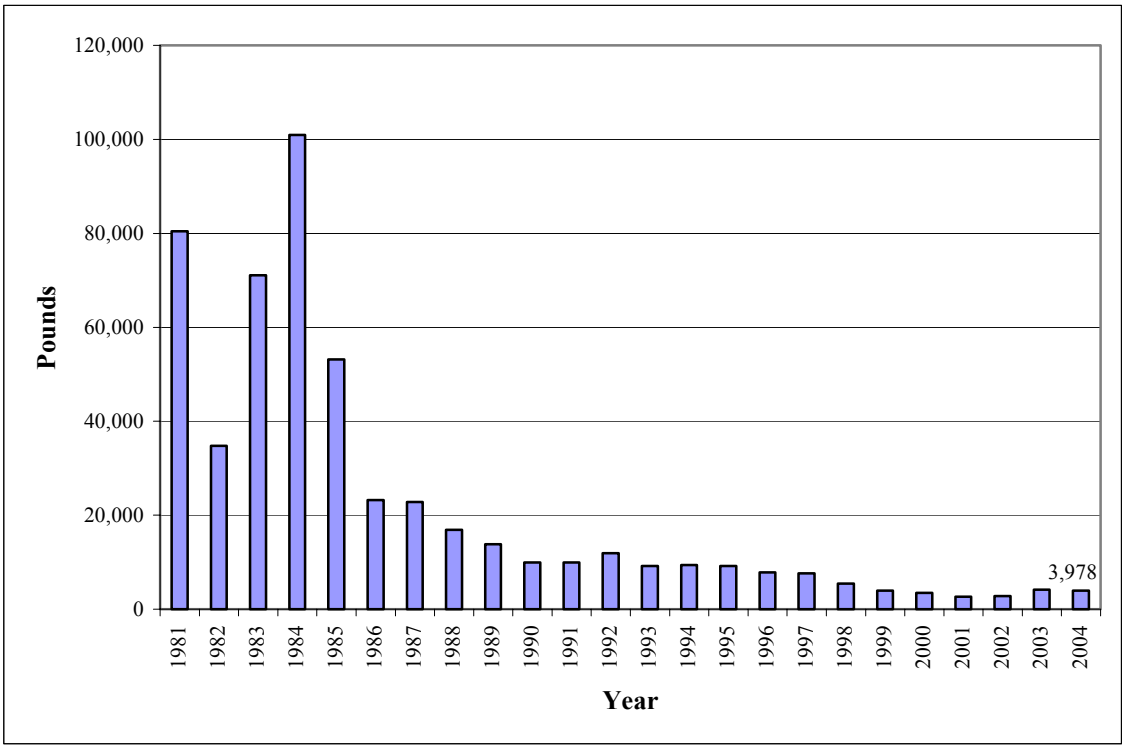


TABLE 17 provides a comparison of the 2003 and 2004 metals loadings to the Field's Point Wastewater Treatment Facility. Loading figures were calculated based on monthly averages of concentration and flow.

TABLE 17
Comparison of 2003-2004
Annual Loadings to Field's Point

Pollutant	2003 (pounds)	2004 (pounds)	Total Pound Change	% Change
Total Cadmium	134	132	-2	-1.5%
Total Chromium	1,307	1,081	-226	-17.3%
Total Copper	7,710	7,429	-281	-3.6%
Total Lead	1,951	1,644	-307	-15.7%
Total Mercury	16	13	-3	-18.8%
Total Nickel	6,058	7,324	1,266	20.9%
Total Silver	655	643	-12	-1.8%
Total Zinc	13,400	13,363	-37	-0.28%
Total Metals	31,231	31,629	398	1.3%
Total Cyanide	4,175	3,978	-197	-4.7%

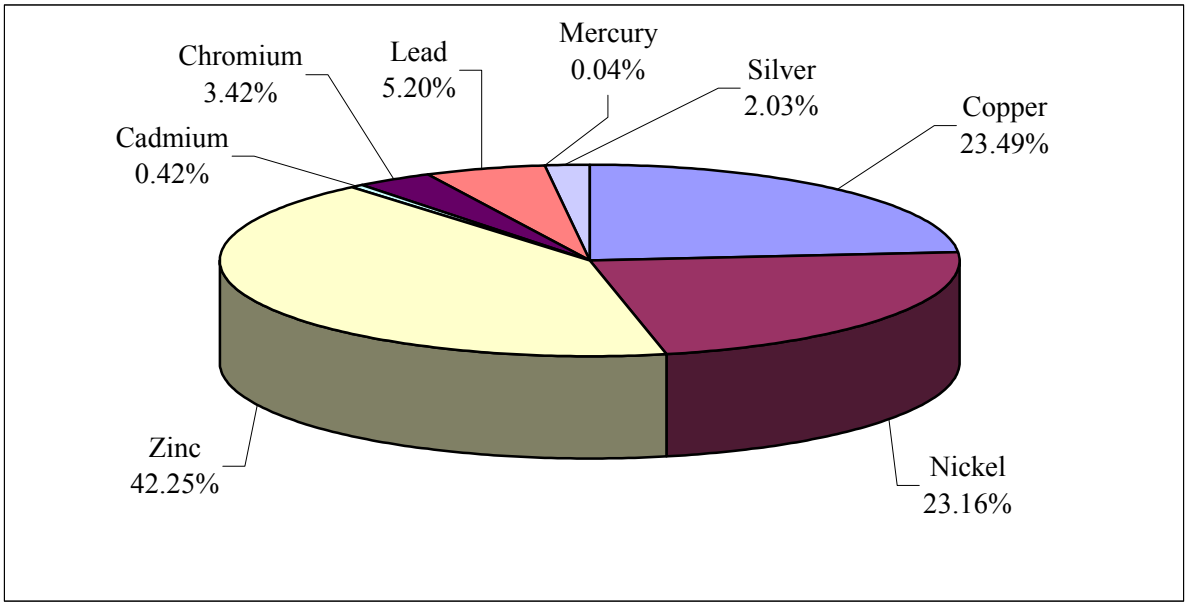
As illustrated in TABLE 17, the annual loading of all cyanide, and all metals except nickel, show a decrease in 2004 compared to 2003. These decreases attest to NBC's proactive approach to pollution prevention and demonstrate NBC continued commitment to vigilant implementation of pollution prevention measures.

The largest percent reduction of annualized loadings to Field's Point was for total mercury, with an 18.8% reduction observed. The reduction in mercury is expected to continue in 2005 as a result of implementation of the NBC's Best Management Practices for the Management of Waste Dental Amalgam control measures. Nickel loadings, as a result of high influent concentrations in April, May, and June of 2004, increased from 2003 loadings. Despite this modest increase in metal loadings, the overall decrease in total metals loading to the Field's Point facility since 1981 is 96.7%.

Downward trends in all remaining metal loadings continue, with lead loading showing the greatest absolute decrease at 307 pounds. The 2004 total metals loadings to the plant are increased slightly by approximately 1.3% from last year, with total metals approximately 398 more pounds in 2004 than in 2003. Nickel loading has been increasing from an observed low of 5,324 pounds in 2002, but total loadings are still down when compared to plant loading between 1981 and present.

A percentage breakdown of the various metals discharged to the Field's Point plant is provided in FIGURE 15. The greatest metal loadings contribution to Field's Point is from zinc, nickel, and copper. These metals account for 88.9% of the total metal loadings to the facility. This is essentially the same relative contribution as last year. The loading of total zinc in 2004 was 13,363 pounds, or 42.25%, the highest of any toxic pollutant discharged into the Field's Point system. As will be shown later in this chapter, a majority of zinc loadings are attributed to residential sources. Copper was the next highest pollutant load to Field's Point at 7,429 pounds, followed by nickel at 7,324 pounds.

FIGURE 15
Breakdown of Total Metals – Field's Point 2004 Influent Loading



~Oil and Grease Inputs to Field's Point

Monthly sampling of oil and grease inputs to Field's Point reveals low and consistent concentrations. Concentrations ranged from 8.6 ppm to 40.3 ppm during 2004. Effluent concentrations are significantly lower, ranging from 3.6 to 6.2 ppm. Low inputs are the direct result of Pretreatment efforts to permit, inspect, and monitor industrial and commercial establishments, including restaurants. NBC's RIPDES permit requires monthly sampling, with three grab samples collected over the course of a 24-hour period, one grab per shift. The grabs are analyzed separately and the maximum is reported. The RIPDES permit does not set a discharge limit. This data is listed in ATTACHMENT VOLUME II SECTION 11.

~pH Variability at Field's Point: Influent and Effluent

The pH of the Field's Point influent is measured twice daily by Laboratory staff on a high-precision Orion pH meter. Grab samples are collected by EMDA staff and immediately transferred to the laboratory for analysis. EMDA staff collected 731 samples for this parameter during 2004. The pH range of these 731 measurements was between 5.29 and 7.76 standard units (s.u.). The influent wastestream is also monitored with a continuous pH probe. This record shows a clear diurnal pattern of approximately 1 s.u. The limited pH range demonstrates that highly concentrated batch discharges of highly acidic or basic industrial discharges are limited in intensity and duration. No wastewater treatment process has knowingly been negatively impacted by influent pH fluctuations during the year. There were also no persistent excursions in influent pH during 2004 and no negative effect on normal plant operations process control was noted. Effluent grabs, also collected twice daily over the year, ranged from 5.9 to 7.2 s.u. The only excursion from the permitted 6.0 to 9.0 s.u. discharge range occurred on September 29, 2004 from a single discrete grab sample. The continuous pH probe did not show the same excursion at the time of sampling.

Pretreatment's demonstrated efforts and results in controlling excursions in influent pH from industrial users resulted in a revision of allowable pH discharge limitations at both facilities. The DEM approved a non-substantial Pretreatment Program modification to standardize the allowable pH discharge limitations in both districts to 5.0 s.u. - 11.0 s.u. Based on historical data, this modification will not adversely impact the treatment facilities.

Bucklin Point District - Influent Loading Analysis

Bucklin Point influent data demonstrated a downward trend in total metals loading between 1993 and 1997, followed by an upward trend between 1997 and 2000. This can be seen in FIGURE 16. Data from 2001 and 2002 showed reductions to 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 ultimate source of these inputs, which were observed in the influent coming from the Blackstone Valley Interceptor could not be positively determined. The 2004 data indicates another decrease in metals loading to Bucklin Point, with 2004 levels comparable to 2002 values, and 13.4% lower than 2003 loading.

Cyanide loadings at Bucklin Point have similarly been variable but also exhibit a decreasing trend overall FIGURE 17. Data from 2004 show a 3.3% decrease in cyanide loadings to Bucklin Point from the previous year, and loadings have been below 1000 pounds per year since 1999.

FIGURE 16
Bucklin Point Total Metals Influent Loading Trend

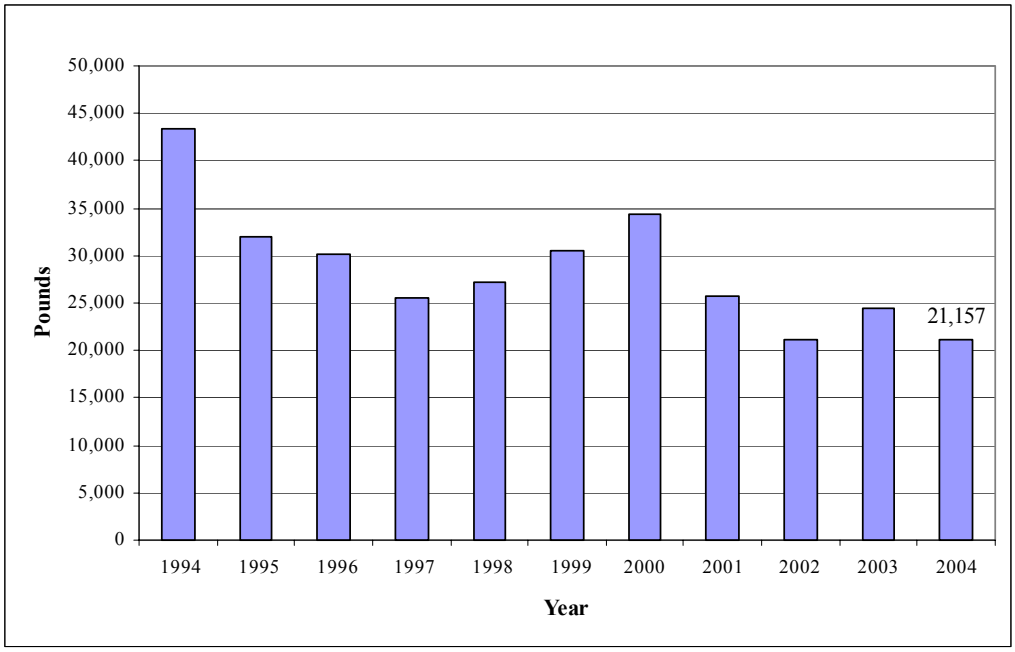


FIGURE 17
Bucklin Point Cyanide Influent Loading Trend

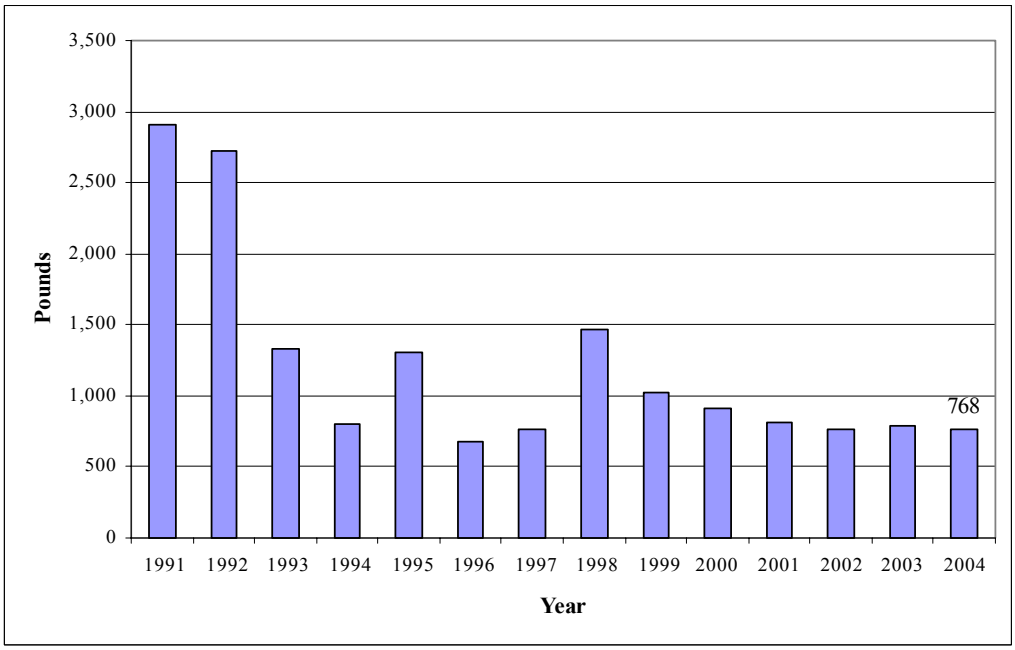


FIGURE 18 provides a breakdown of the various metals discharged to the Bucklin Point WWTF. Zinc and copper continue to be the largest contributors to total metals loading to Bucklin Point.

FIGURE 18
Breakdown of Total Metals – Bucklin Point 2004 Influent Loadings

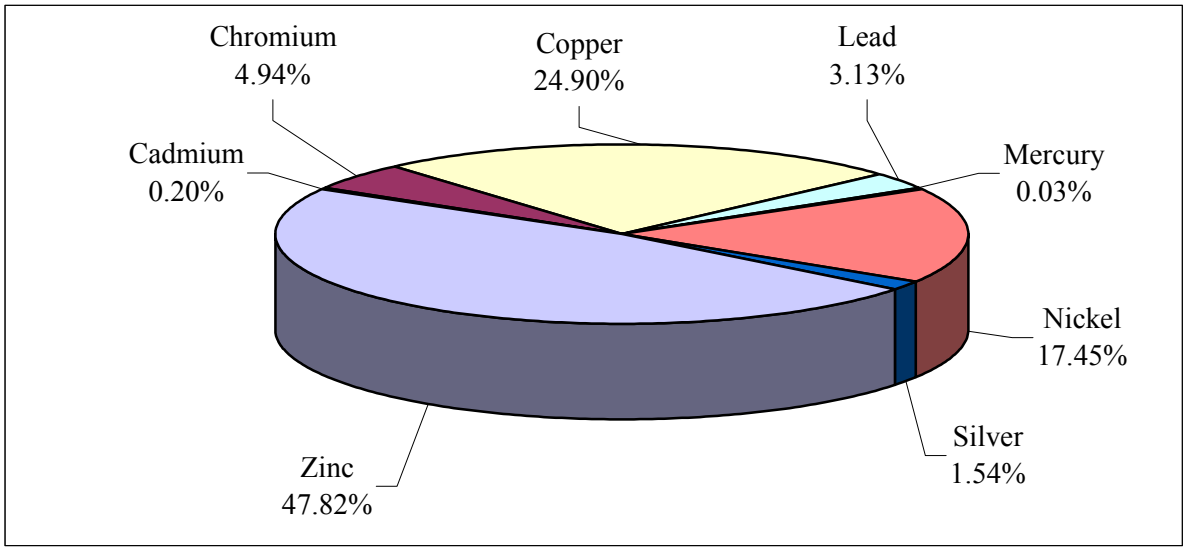


TABLE 18 shows the comparison of Bucklin Point metals and cyanide loadings for 2003 and 2004. Loadings for all metals except cadmium and nickel were reduced in 2004. The single largest reduction on a pound basis was for chromium, reduced by 2,717 pounds, 72%, in 2004. This is attributed to the extensive facility inspections conducted by Pretreatment in 2003 in an attempt to identify the source of the increased chromium loadings to the facility as previously noted. Although the exact facility could not be conclusively identified, all firms that discharge chromium were comprehensively inspected and the facility may have corrected the problem on its own as a result.

Mercury and silver loadings show a small but steady decrease over the 2003 values. The reductions are due to improved Pollution Prevention user education efforts, the Pretreatment Silver Reduction Program, and the implementation of the Dental BMP. The overall decrease in total loading in pounds to the Bucklin Point facility between 1994 and 2004 is 51% for total metals and 74% for cyanide between 1991 and 2004.

TABLE 18
Comparison of 2003-2004 Annual Loadings to the Bucklin Point

Pollutant	2003 (Pounds)	2004 (Pounds)	Difference In Pounds	Percent Change
Total Cadmium	39.2	42	2.8	7.1%
Total Chromium	3,762	1,045	-2,717	-72.2%
Total Copper	5,638	5,269	-369	-6.5%
Total Lead	873	661	-212	-24.3%
Total Mercury	6.5	5	-1.5	-23.1%
Total Nickel	3,396	3,692	296	8.7%
Total Silver	370	326	-44	-11.9%
Total Zinc	10,338	10,117	-221	-2.1%
Total Metals	24,423	21,157	-3,266	-13.4%
Total Cyanide	794	768	-26	-3.3%

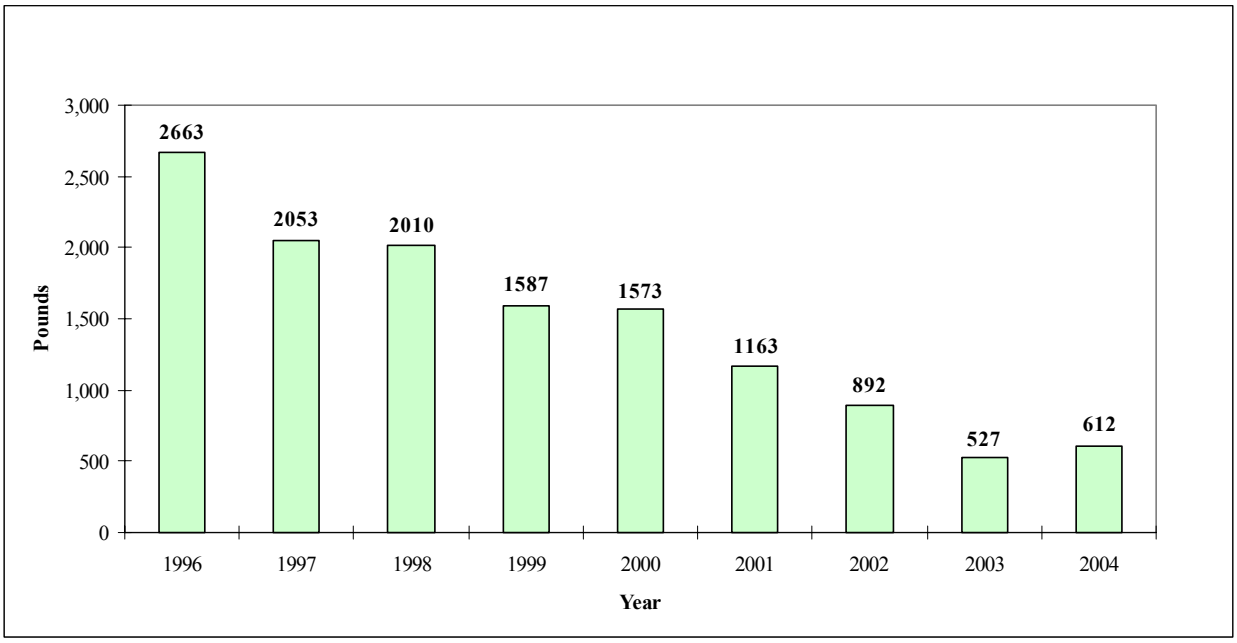
~Oil and Grease Inputs to Bucklin Point

Monthly sampling of oil and grease inputs to Bucklin Point reveals low and consistent concentrations. Influent oil and grease concentrations in 2004 ranged from 16 ppm to 35 ppm with the upper end of the influent range over 50% lower than the comparable range for 2003. Effluent concentrations were commonly below the detection limit of 3.6 ppm, with a range of 3.6 ppm to 9 ppm. This data is listed in ATTACHMENT VOLUME II, SECTION 11.

~Septage Loading to Bucklin Point

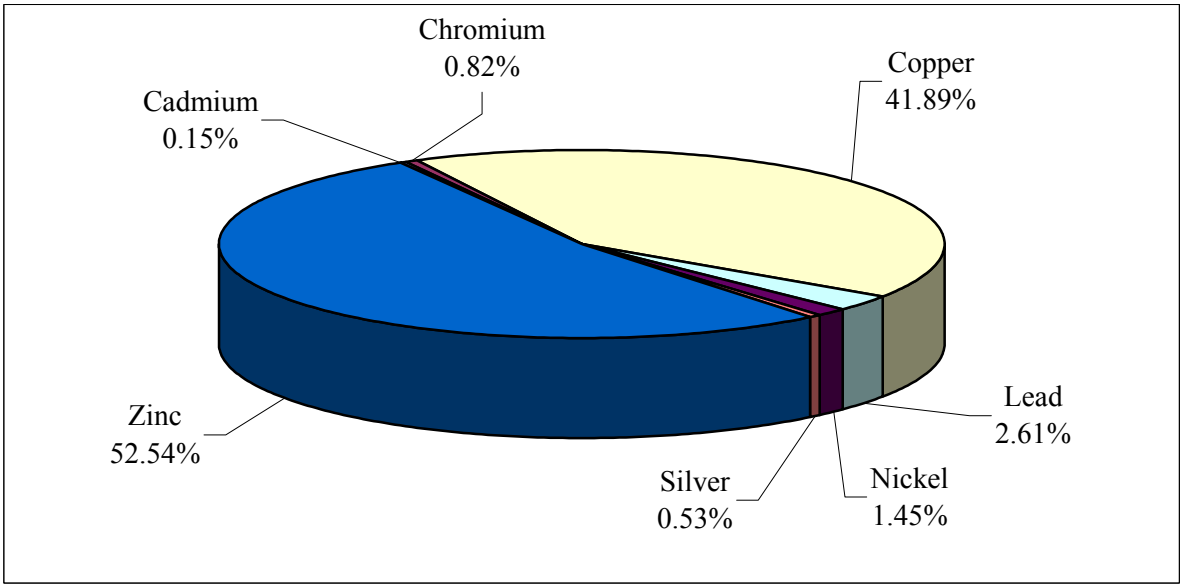
An analysis of recent volume trends indicates a decrease of 30% from the reported 13.03 million gallons received in 2003 to 9.10 million gallons received in 2004, continuing the trend in reduction since 2000. Overall, the volume reported in 2004 is approximately 38% lower than the volume discharged in 1996. There was not, however, an associated decrease in metal loadings from Septage in 2004. From 2003 to 2004 there was a 16% increase in total metals from septage, or 85 pounds. The recent increase is in contrast to the overall trend of decreased metal loadings from septage since 1996. The 77% reduction in total metals from septage since 1996 illustrates the diminishing impact of septage metals on influent loadings. This can be seen in FIGURE 19. Overall, septage is not a substantial source of metals loading to Bucklin Point. Despite the fact that discharges to the septage facility increased from 1997 to 2000, total metals loading consistently decreased over the same time period. The septage contribution to total influent metals at Bucklin Point remained low in 2004, 2.9% of total metals originated with septage in 2004, similar to the 2.2% contribution in 2003.

FIGURE 19
Trend Analysis of Total Metals Loadings in Septage



Zinc and copper continue to be the major metal contributors, 321 pounds and 256 pounds, respectively, in septage. These two metals make up 94% of the total septage metals loading. However, zinc loading from septage represents only 3.2% of the total influent zinc loading to Bucklin Point. Copper from septage amounted to 4.9% of the total copper loading to Bucklin Point for 2004. FIGURE 20 illustrates the average composition of metals in septage wastewater. The septage monitoring data are provided in ATTACHMENT VOLUME II, SECTION 11.

FIGURE 20
2004 Breakdown of Total Metals in Septage



New septage sample collection techniques and equipment were introduced in 2004. The new equipment allows for easier, in-line sampling during septage delivery. New techniques associated with the new sampling apparatus consist of taking three samples during septage transfer to better characterize total loading within an individual truck. Samples are now collected at the beginning, middle, and end of septage discharges to better represent the average concentrations of metals in a given load. The three samples from an individual truck are composited and screened for pH, odor, and other unusual characteristics. If any anomaly is observed, the sample is targeted for individual analysis, otherwise is it combined with the day's delivery and sent to the laboratory for analysis. This new sampling protocol has helped to more quickly locate potential toxic inputs to the collection system. These more representative sampling techniques may partially explain the observed increase in septage metal loadings in 2004. Grit removal at the septage facility removes a portion of the metals loading prior to its introduction to the sewer system and the Bucklin Point treatment facility.

Background Sources of Metals to the Influent Load

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

The NBC has continued to study possible background sources contributing to the total metal influent loadings to the Bucklin Point and Field's Point facilities.

Sample collection from sanitary and combined sewers in residential neighborhoods began in 1993. Sewers in residential neighborhoods have shown significant levels of trace metals and other toxic pollutants. In May 2000, EMDA began sample collections using EPA approved clean sampling techniques to quantify background, non-industrial metals inputs to the Bucklin Point and Field's Point facilities. During 2004, EMDA staff collected 49 samples in residential sanitary and combined sewers. Samples were collected as 24-hour composites in wet and dry weather conditions.

TABLE 19 summarizes the results for the background, non-industrial sewer collections for 2004 and compares them to influent concentrations at the facilities. Industrial and commercial sources account for only about 7.8% of total flow into Bucklin Point and 5.9% of the total flow at Field's Point. Due to the high proportion of flow from residential and non-industrial sources, this direct comparison of concentrations gives some approximation of the loadings from background sources. Nearly all metals parameters measured were above laboratory detection limits, with the exception of silver. Detection limit values were entered for samples with concentrations at or below the laboratory's 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 loading values. All concentrations are expressed as parts per billion (ppb).

TABLE 19
Results from 2004 Background Metals Contribution Study (ppb)

	Cd	Cr	Cu	Pb	Ni	Ag	Zn
Background	0.68	2.99	36.49	10.79	6.21	1.79	102.49
FP influent	0.97	7.95	55.48	12.20	53.03	4.88	98.46
BP influent	0.57	14.16	71.76	8.81	50.50	4.41	136.91

These results can be used to approximate the impact of non-industrial loading to both Bucklin Point and Field's Point. From TABLE 19 it is evident that a large percentage of the influent copper, lead, and zinc concentrations observed at the NBC wastewater treatment facilities are from non-industrial background sources. The value for residential zinc concentrations exceeds the average Field's Point influent concentration for 2004. The range of values for the residential zinc was 26.5 ppb to 625 ppb. Cadmium and lead background loading values exceeded average 2004 Bucklin Point influent concentrations, with values ranging from 0.28 to 2.63 ppb for cadmium and 1.58 to 115 ppb for lead.

The sources of these background-loading contributions are likely discharges from domestic users, street runoff, leaching of piping and contaminated urban soils. Much lower contributions from non-industrial sources are observed for nickel, approximately 12% of total influent loading. All other metals indicate a significant background source component, despite the high variability of the data. Cadmium and silver concentrations are close to current detection limits and therefore the data is less conclusive.

EMDA is continuing to improve and update studies of pollutant loads throughout the collection system. Understanding non-industrial sources is important to permit development and planning to reduce loading to our POTWs and to Narragansett Bay. EMDA is working to use flow measurements and data to choose study sites that will accurately describe mass loading from domestic, storm runoff, and major drainage basins as well as at metering stations on NBC's interceptors. From this analysis, it is obvious that large percentages of the toxic pollutant loads to Field's Point and Bucklin Point are from residential sources that are beyond the control of the NBC regulatory program.

Influent Loading Conclusions

The development of the National Pretreatment Program was a direct result of the Federal Water Pollution Control 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 Environmental Protection Agency to develop standards designed to:

- Prevent the discharge of pollutants which would interfere with the operation of a POTW;

- Prevent the discharge of pollutants which would pass through the treatment works;

- Prevent the discharge of pollutants which would accumulate in the POTW's sludge thereby reducing the potential for beneficial reuse or reduce the opportunities for safe disposal or which would be otherwise incompatible with the POTW's 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 the EPA's 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, the health of the public and prevent environmental problems as a result of discharges from any non-domestic user.

The development of local limits is not a one-time event for POTWs. Local limits need 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 existing local limits for the Bucklin Point facility became effective in the late 1980's. Local limits for Field's Point were first developed in 1982 as part of NBC's original pretreatment program and were subsequently revised by the NBC Pretreatment staff in 1987.

In 2004, NBC reevaluated local limits for both facilities. The reassessment of these limits resulted in revised permit limits for several metals based on new EPA data handling methods and criteria in its 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 Seekonk and Providence Rivers. Multiple transects during seasonal surveys were performed over complete tidal cycles to capture the in-situ metal 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 facility. The metal translator is used to convert dissolved water quality criteria concentrations into total metal concentrations in order to calculate the effective total metals concentration, combined with dilution factors within the receiving waters, that corresponds to a given water quality criteria.

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 maximum allowable headworks loading (MAHL) values were calculated. The MAHL values represent the loadings that the plants 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 submitted to RIDEM in September, 2004, and NBC is awaiting approval of the revised permit limits.

TABLE 20, below, provides a comparison of these newly calculated values and total metal loadings for 2004. In the case of cyanide, loading goals for both plants were calculated using the 20 ppb quantitation-based effluent permit limit. For Bucklin Point, copper and nickel loading goals were calculated using the RIPDES effluent permit limits found in the consent agreement. From this data, it is clear that NBC is meeting the calculated loading goals with a considerable margin of safety. Meeting these goals attests to the overall effectiveness of Pretreatment, Pollution Prevention, and Operations initiatives and measures to control pollutant input and effectively remove them during plant operations.

TABLE 20
Comparison of 2004 Influent Loadings to Recently Calculated Loading Goals

	Field's Point			Bucklin Point		
Parameter	**Preliminarily Calculated Loading Goal**	**2004 Loading**	**Goal Met?**	**Preliminarily Calculated Loading Goal**	**2004 Loading**	**Goal Met?**
Cadmium	2,233	132	Yes	512	43	Yes
Chromium	37,405	1,081	Yes	10,468	1,045	Yes
Copper	16,946	7,429	Yes	9,772	5,269	Yes
Lead	8,564	1,644	Yes	2,745	661	Yes
Mercury	183	13	Yes	11	5	Yes
Nickel	21,191	7,324	Yes	4,721	3,692	Yes
Silver	3,953	643	Yes	403	326	Yes
Zinc	50,142	13,363	Yes	16,543	10,117	Yes
Total Metals	140,617	31,630	Yes	45,175	21,158	Yes
Cyanide	4,465	3,978	Yes	2,446	768	Yes

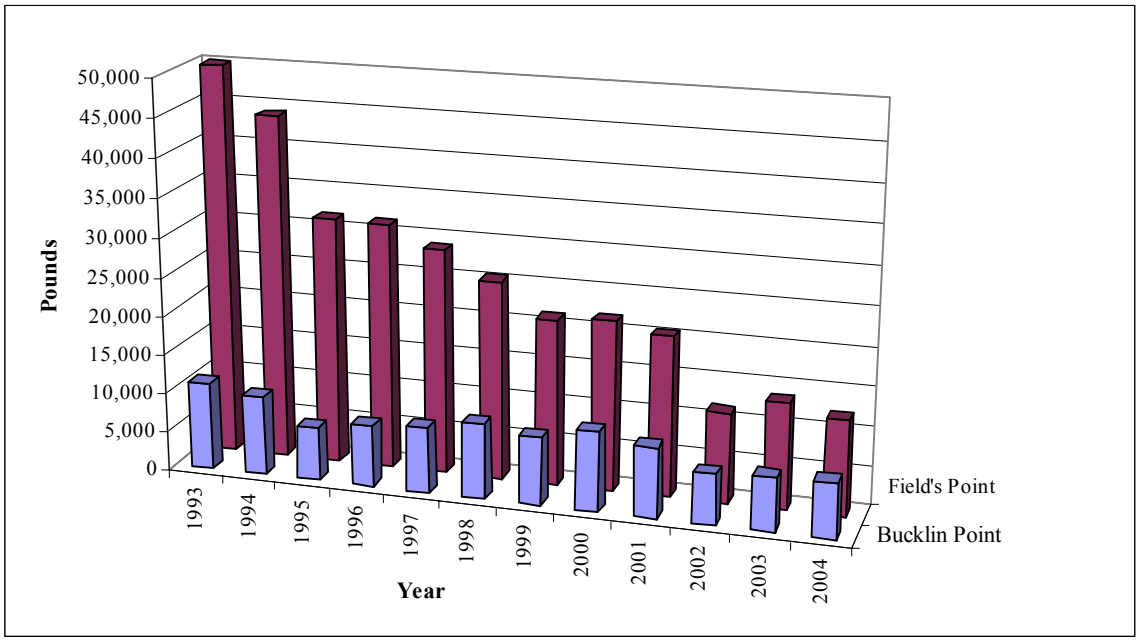
The annual loading goals presented in TABLE 20 should only be used as an initial evaluation of a facility's ability to meet discharge compliance. Discharge permits enforce daily maximum and monthly average limits based on acute and chronic water quality criteria. While the annual means used to calculate the 2004 loadings and goals are instructive when evaluating a facility's function over longer time periods, meeting annual mean goals does not always translate to compliance with daily or monthly limits.

Analysis of Effluent Loading Data

The Annual Report traditionally measures the efforts and results of the work of the Pretreatment and Pollution Prevention Programs by observing the loadings of toxics to the influent of the NBC POTWs. It is also important to consider the discharge loadings after the wastewater treatment process into the receiving waters. 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 the Field's Point and Bucklin Point facilities for the period from 1993 to 2004 were compiled and analyzed. The overall effluent trends are similar to those for the influent data: concentrations and loadings have been decreasing over time at Field's Point and Bucklin Point has shown recent declines.

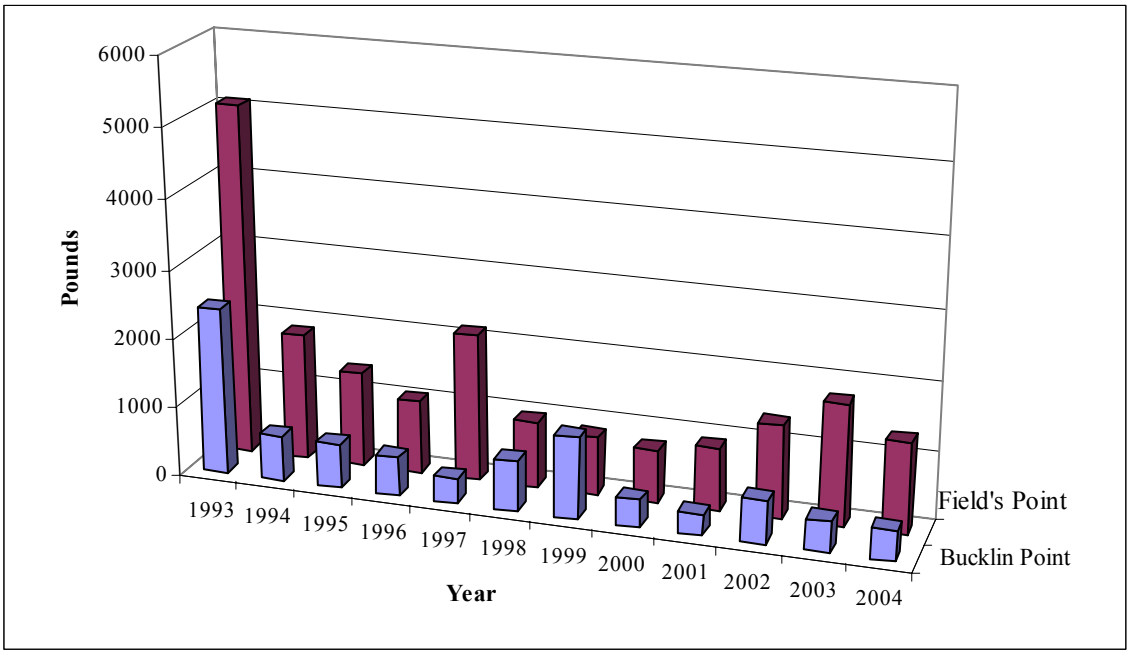
Historical total metals discharges from both NBC facilities are shown in FIGURE 21. The Field's Point facility handles approximately twice the flow volume of Bucklin Point. The percent industrial and commercial flow contribution in the Field's Point service district is 5.9%, and 7.8% for the Bucklin Point service district. Total metals effluent loadings have been steadily decreasing at Field's Point since 1981. In 2004 total metals in Field's Point effluent decreased by 10% compared to 2003 values, while Bucklin Point effluent showed a 2% increase. Rainfall data for 2004 indicate slightly less rain than 2003, but both 2003 and 2004 saw 32% and 20% more rainfall, respectively, than 2002.

FIGURE 21
NBC POTWs Total Metals Effluent Loadings Trend Analysis



As illustrated in FIGURE 22, cyanide effluent loadings exhibit similar reductions over time, but with more fluctuation. Annual effluent cyanide loads in 2004, relative to 2003, showed decreases at both facilities: 24% for Field's Point and 2% for Bucklin Point. The changes in effluent concentrations are the combined result of decreased influent loading, and treatment facility process controls that alter the fraction removed in the facility. Annual loadings of cyanide in the influent for 2004, compared to 2003, showed a decrease of 5% for Field's Point and a 3% decrease for Bucklin Point. However, the decrease in Field's Point effluent cyanide is significantly greater, indicating that process controls have been successful in reducing cyanide in facility effluent. Bucklin Point effluent values are consistent with regulation control, as the magnitude of effluent loading has decreased roughly in proportion to the magnitude of decrease in influent loading. EMDA implemented changes in its cyanide sampling techniques during 2004 which have resulted in more representative samples. EMDA also tests for the presence of sulfides and chlorine residual on a daily basis to ensure the integrity and validity of the cyanide collections.

FIGURE 22
NBC POTWs Cyanide Effluent Loadings Trend Analysis



Breakdown Analysis of POTW Effluents

The individual breakdown of total metals (FIGURES 23 and 24) in the effluent from both plants is very similar. The 2004 proportion of copper in the Field's Point effluent decreased from 14.5% to 12.8% of the total metals loading. The percentage of zinc decreased from 44.8% to 34.3%. Nickel showed an increase from 35.7% to 46.8% in 2004 as a result of the elevated influent loadings mentioned earlier. The relative proportions of Bucklin Point effluent metals (FIGURE 23) showed a decrease in 2004 for chromium, from 6.1% to 3.0%, due to the disappearance of the intermittent, high influent loads in early 2003. The other trace metals showed minor relative changes, and the slight increase in the relative amount of effluent nickel was roughly balanced by a slight decrease in the relative amount of effluent zinc.

FIGURE 23
Breakdown of Total Metals – Field's Point 2004 Effluent Loading

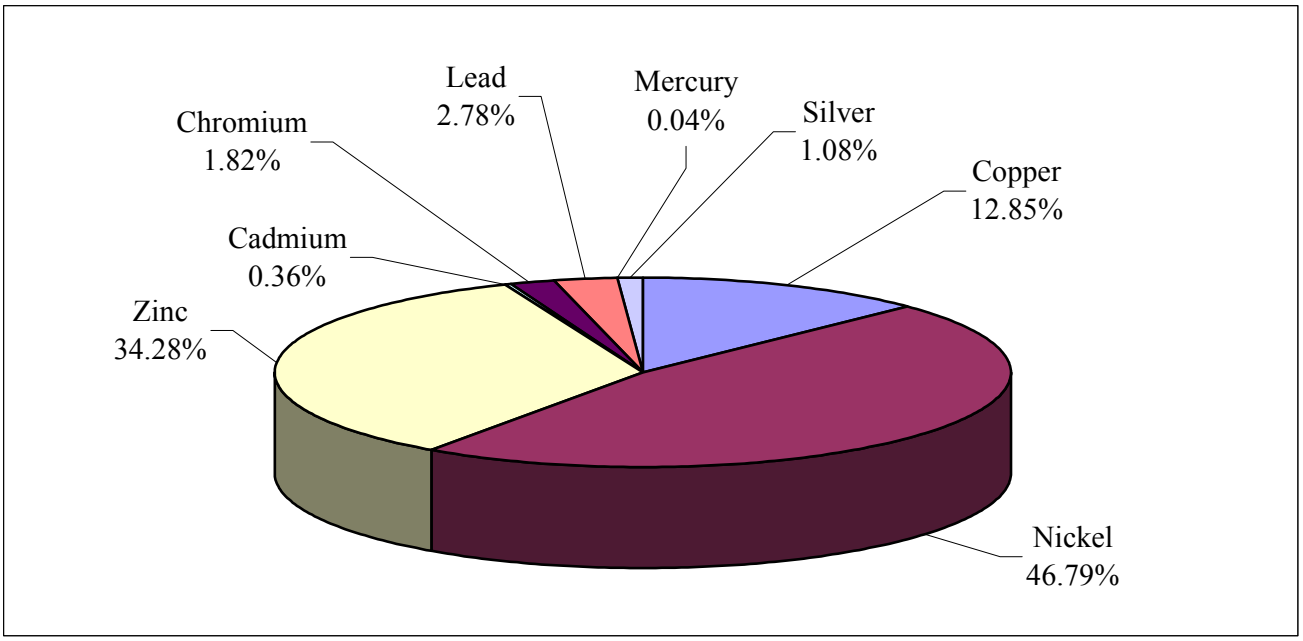
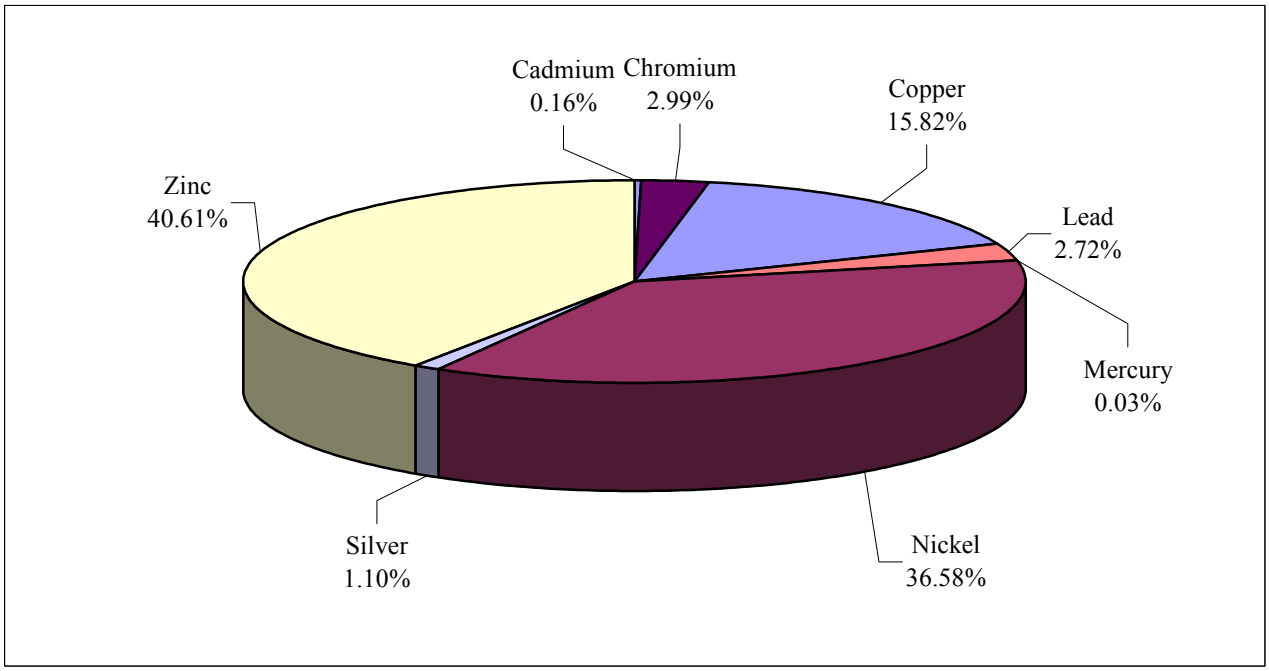


FIGURE 24
Breakdown of Total Metals – Bucklin Point 2004 Effluent Loading



Bioassay Data

The two NBC Wastewater Treatment Facilities are required to conduct quarterly bioassay studies to determine effluent toxicity to test organisms. NBC conducts chemical analysis and aquatic toxicity testing, using the response of organisms to detect and measure the presence or effect of one or more substances, wastes, or environmental factors, alone, or in combination. NBC was complete in the species tested and met the quarterly bioassay sampling frequency requirements during 2004 for both facilities. *Americamysis bahia* and *Arbacia punculata* are tested at both facilities. Samples are collected only in dry weather, defined as 48 hours prior to or during sampling. The NBC satisfied the bioassay sampling requirements for both facilities during 2004.

Analysis of the acute toxicity data provided determination of the LC_{50} and the NOAEL. The LC_{50} result is defined as the concentration of wastewater that causes mortality to 50% of the test organisms. NOAEL or No Observed Acute Effect Level is defined as the highest concentration of the effluent in which 90% or more of the test animals survive. The permit requirement limit of 100% or greater is defined as a sample which is composed of 100% effluent. The results used in conjunction with the bioassay testing of *A. punculata* are the NOEC or No Observed Effect Concentration and the LOEC or Lowest Observed Effect Concentration. These tests are used to estimate chronic toxicity. The permit limit for Bucklin Point is 50% or greater for this parameter while at Field's Point the permit requires only monitoring.

At Field's Point all four tests for *A. bahia* gave LC_{50} and NOAEL results of 100%. No Observable Effect Concentration (NOEC) and Lowest Observed Effect Concentration (LOEC) for testing *A. punculata* was also 100% for all four quarterly tests. This means that undiluted effluent showed no observable effect and there was no significant biological or environmental impact on these species.

At Bucklin Point all four tests for *A. bahia* gave LC_{50} and NOAEL results of 100%. No Observable Effect Concentration (NOEC) and Lowest Observed Effect Concentration (LOEC) for testing *A. punculata* was 100% for all four quarterly tests. This means that undiluted effluent showed no observable effect or significant biological or environmental impact. Results of the quarterly bioassay data for 2004 are included in ATTACHMENT VOLUME II, SECTION 11. This data is the result of third party analysis by NETCO Laboratories. In conclusion, this data could be interpreted to mean that the effluent from the NBC Wastewater Treatment Facilities is relatively non-toxic to aquatic species and there was no significant biological or environmental impact.

RIPDES Permit Compliance – Field's Point Facility

In September 1992, the RIDEM issued a RIPDES Permit for the Field's Point wastewater treatment facility. The 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 RIDEM 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. As mentioned previously, RIDEM 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. TABLE 21 lists the current permit's limits for metals and cyanide and the new Consent Agreement values for the contested parameters. TABLE 22 presents the limits as well as the measured maximum daily values and maximum monthly averages for parameters of interest. TABLE 22 details the compliance status of the Field's Point Facility with the limits established by the RIPDES permit and Consent Agreement in effect during year 2004.

TABLE 21
Comparison of Field's Point RIPDES & Consent Agreement Limits With 2004 Wastewater Treatment Facility Results

	RIPDES Permit Limits		Consent Agreement Limits		2004 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	30.5	21.2
Mercury	8.5	0.4	-	-	0.130	0.512
Nickel	332	127	-	-	289.7	71.6
Silver	10	-	-	-	3.18	1.65
Zinc	380	380	-	-	53.9	41.5
Cyanide	4	4	49.6	20	19.2	14.3
BOD Percent Removal	-	Minimum of 85%	-	-	-	<85% in 1 month
TSS Percent Removal	-	Minimum of 85%	-	-	-	<85% in 2 months

*In order to compare results to the permit limits, the maximum daily value for the year is reported as the maximum daily.

**The highest average monthly value for 2004 is reported for comparison against the RIPDES permit. 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.

TABLE 22
2004 Compliance Status with RIPDES & Consent Agreement Limits For Field's Point Facility

Parameter	2004 Compliance with RIPDES Permit?		2004 Compliance with Consent Agreement?	
	Maximum Daily	Average Monthly	Maximum Daily	Average Monthly
Copper	**No**	Yes	Yes	Yes
Mercury	Yes	Yes	N/A	N/A
Nickel	Yes	Yes	N/A	N/A
Silver	Yes	Yes	N/A	N/A
Zinc	Yes	Yes	N/A	N/A
Cyanide	**No**	**No**	Yes	Yes
BOD Percent Removal	N/A	**No**	N/A	N/A
TSS Percent Removal	N/A	**No**	N/A	N/A

TABLE 22 shows that in 2004, 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 TABLE 21. Additional work will be necessary to ensure NBC compliance with several toxic pollutant discharge limits specified in the RIPDES permit, specifically copper and cyanide. The monthly average and daily maximum RIPDES limits for copper and cyanide would have been exceeded had they been in effect and not superceded by the Consent Agreement. Cyanide permit limits are enforced down to the method detection limit recognized by EPA, to a value of 20 ppb. The NBC is actively working to ensure full compliance with all the toxic pollutants specified in its RIPDES permit. In 2004 NBC, at RIDEM's request, recalculated permit limits based on the metal translator study conducted by NBC in years 2001 and 2002. The new permit limits were submitted to RIDEM, and NBC is awaiting approval. Permit limits for copper based on the new metal translator values for Field's Point would not be exceeded based on 2004 data. The results of the metal translator studies performed by NBC in 2001 and 2002 found the Providence and Seekonk Rivers met water quality criteria for the trace metals analyzed: cadmium, copper, lead, nickel, and silver. These data have resulted in both rivers being removed from the 303(d) list of impaired waterbodies for metals.

Field's Point had one daily violation for TSS, when the effluent value was greater than 50 mg/liter, and one day when a sample was not collected. The violation occurred on a day of high flow due to a three day rain event. There were no daily violations for BOD at Field's Point. Six days of BOD effluent data were not reported due to a failure to meet laboratory quality control standards, and one day was not sampled. The daily fecal coliform bacteria maximum of 400 MPN per ml. was exceeded four times in 2004. The monthly average limit for fecal bacteria was not exceeded.

RIPDES Permit Compliance – Bucklin Point Facility

When the NBC acquired the Bucklin Point facility, the RIPDES permit in effect had been issued to the Blackstone Valley District Commission in December 1990, and was then transferred to the NBC in 1991. This permit listed several discharge limitations for metals, organic compounds and nutrients, but was modified to reflect alternative effluent limitations 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, nutrients and TSS and BOD requirements during rain events when primary effluent must be diverted to the contact tank. NBC contested the above parameters due to their inability to meet limits that are set as low as saltwater quality criteria in certain cases. The new RI-330 consent agreement limits issued in January 2004 are being used as the measure of compliance. As mentioned in the previous section, NBC has presented to RIDEM new information from water quality monitoring on the Seekonk River, the receiving waters for the Bucklin Point facility, and is awaiting approval of the new permit limits. The study data shows that the Seekonk River meets water quality criteria for metals, outside of the mixing zones assigned to the outfall. TABLE 23 outlines the current permit limits and monitoring requirements for Bucklin Point and the 2004 effluent results.

TABLE 23
Comparison of Bucklin Point RIPDES & Interim Effluent Limits with 2004 Wastewater Treatment Facility Results

	RIPDES Permit Limits		Consent Agreement Limits		2004 Results	
Parameter	Maximum Daily (ppb)	Average Monthly (ppb)	Maximum Daily (ppb)	Average Monthly (ppb)	Maximum Daily* (ppb)	Average Monthly** (ppb)
Hexavalent Chromium	997	60	-	-	23.00	14.3
Copper	5.2	5.2	86	29.8	82	23.7
Lead	199	10.3			12.78	5.03
Mercury	1.7	0.04	1.7	0.2	0.47	0.16
Nickel	67	13.7	67	53.3	101.7	53.5
Silver	2	-	4.5	-	6.06	1.96
Zinc	76	76	88	76	175.7	47.8
Cyanide	0.8	0.8	69.3	20	29.90	7.79
BOD Percent Removal	-	Minimum of 85%	-	-	-	>85% all months
TSS Percent Removal	-	Minimum of 85%	-	-	-	>85% all months

*In order to compare results to the permit limits, the maximum daily value for the year is reported as the maximum daily. Note that the limit 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.

**The highest average monthly value for 2004 is reported for comparison against the RIPDES permit; for BOD and TSS the number of months in violation is entered.

TABLE 24 indicates that the facility is unable to meet the limits for certain metals, even though the plant performs well on conventional pollutants. The Bucklin Point facility in periods of high flow must divert a fraction of primary effluent flow to the chlorine contact tank for disinfection, since this is required in the Bucklin Point RIPDES discharge permit. Primary effluent always contains high values of TSS and BOD, leading to the potential to exceed final effluent limits during rain events. Toxic influent events did not cause any known upsets to process control at the Bucklin Point facility in 2004. Protection of the facility is a principal objective of the Pretreatment and EMDA Sections.

Maximum daily violations of the consent decree value of 100 mg/l limit for final effluent TSS concentration levels occurred only on three days in the year; BOD exceeded 100 mg/liter once in 2004. All daily TSS violations occurred on days of high flow due to rain events. Six daily samples for BOD were discarded due to laboratory quality control limits being out of tolerance, as mentioned for the Field's Point samples. Twelve TSS daily samples had concentrations greater than 50 mg/liter and ten BOD analytical results were greater than that value. Despite these excursions, it is interesting to note that TSS and BOD daily maximum pound loading permit limits were never exceeded in 2004. This compliance record is a testament to the careful management the facility receives from the Bucklin Point Operations staff, as the facility operated extremely well for an older plant. The NBC is in the process of a $60 million construction project to rebuild the Bucklin Point facility to ensure compliance with RIPDES limits and to provide better treatment of stormwater. This project is expected to be fully completed in two years. UV disinfection processes are set to be tested in the immediate future, and other elements of the upgrade were already on-line in 2004.

TABLE 24
2004 Compliance Status with RIPDES & Consent Agreement Limits For Bucklin Point Facility

	2004 Compliance with RIPDES Permit Limits?		**2004 Compliance with Consent Agreement Limits?**	
Parameter	Maximum Daily	Average Monthly	Maximum Daily	Average Monthly
Hexavalent Chromium	Yes	Yes	N/A	N/A
Copper	**No**	**No**	Yes	Yes
Lead	Yes	Yes	N/A	N/A
Mercury	Yes	**No**	Yes	Yes
Nickel	**No**	**No**	**No**	Yes
Silver	**No**	**-**	**No**	-
Zinc	**No**	Yes	**No**	Yes
Cyanide	**No**	**No**	Yes	Yes
BOD Percent Removal	N/A	Yes	N/A	N/A
TSS Percent Removal	N/A	Yes	N/A	N/A

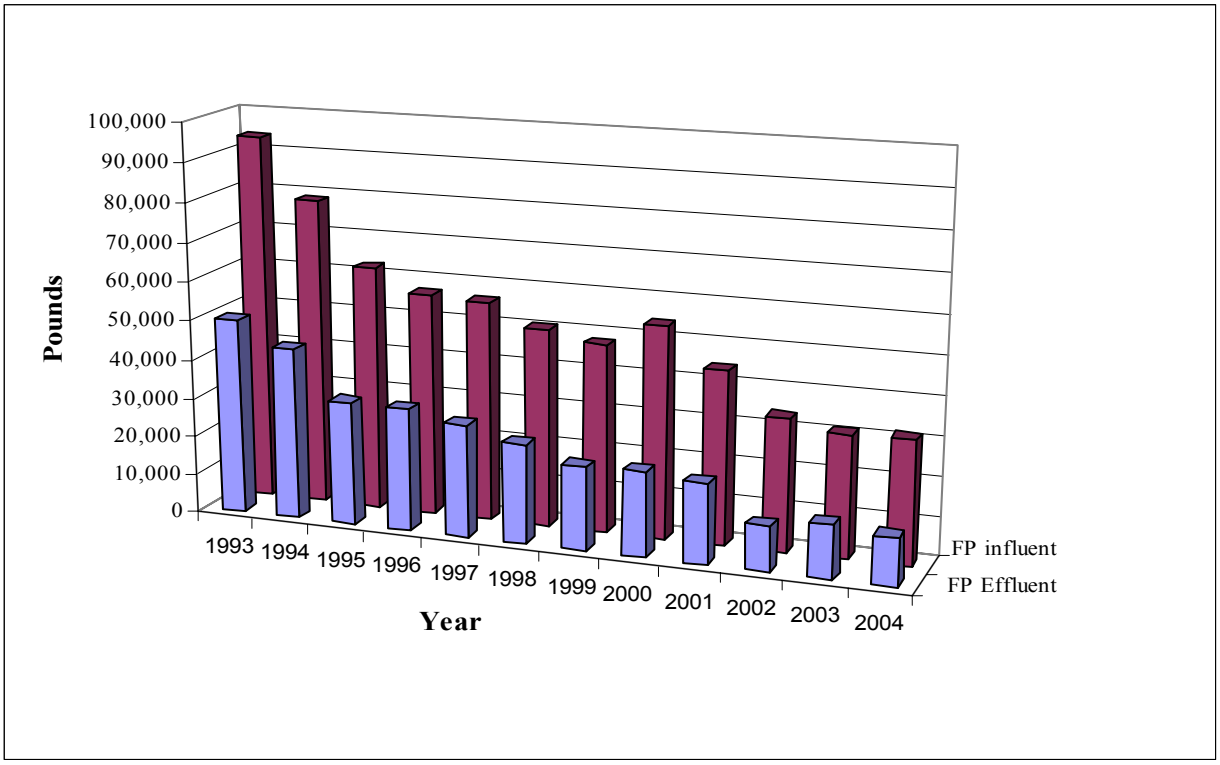
~Bucklin Point Final Effluent pH Variability and Permit Compliance

The pH of the Bucklin Point facility 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 range of values measured for the year 2004 was 6.3 to 7.1 s.u. All 365 measured values were within the permit range of 6 to 9 s.u. No known low or high pH events caused any process upset during the course of the year.

~Comparison of Influent and Effluent Loadings

FIGURE 25 contains a comparison of historic Field's Point influent and effluent loadings for total metals. The removal rate of metals entering the facility varies from 18 to 81 percent depending upon the pollutant in question. As previously mentioned the NBC Laboratory's current detection limit for mercury is being lowered due to instrumental and sample handling improvements in the NBC Laboratory. Given these improvements more mercury samples are now detectable and can be measured with more accuracy to lower values. These improvements will continue to yield more accurate effluent concentrations and removal rates.

FIGURE 25
Field's Point Influent and Effluent Total Metals Loadings Trend Analysis



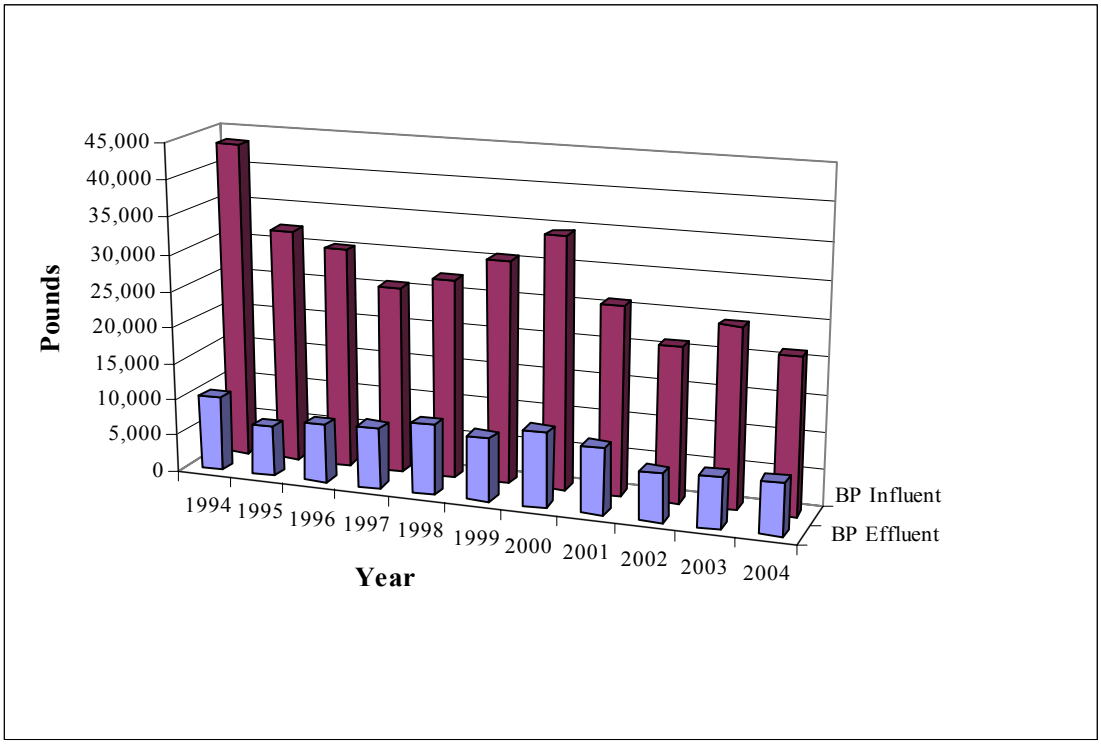
The term "removal" means the reduction of pollutants in the wastewater through their incorporation into settable solids, which are then concentrated into sludge material. Wastewater treatment plants were not designed to treat and remove heavy metals. Those metals that are strongly associated with the dissolved phase (e.g. nickel) will be discharged to the receiving waters with less removal than those with higher particulate phase partitioning (e.g. copper or lead) which are particle reactive and settle, with particles, into the sludge. TABLE 25 provides removal rates for metals and cyanide at both NBC Wastewater Treatment Facilities. From TABLE 25 it is easy to see that a major portion of all toxic pollutants, with the exception of nickel and cyanide, are removed from the waste stream at the NBC plants prior to effluent discharge to the receiving waters of Narragansett Bay. For Field's Point, the percent removal of copper, nickel, silver, zinc, and cyanide increased during 2004 when compared to 2003. The percent removal of lead and mercury were slightly lower in 2004 than in 2003.

TABLE 25
Percent Removal of Metals and Cyanide for NBC Facilities

	Field's Point Concentrations			Bucklin Point Concentrations		
Parameter	**Influent (ppb)**	**Effluent (ppb)**	**% Removal**	**Influent (ppb)**	**Effluent (ppb)**	**% Removal**
Cadmium	0.97	0.33	66	0.57	0.14	76
Chromium	7.95	1.67	79	14.16	2.87	80
Hex.Chromium	46.88	15.89	66	61.83	11.69	81
Copper	55.48	12.09	78	71.76	14.97	79
Lead	12.20	2.50	80	8.81	2.52	71
Mercury	0.10	0.04	60	0.07	0.02	66
Nickel	53.03	43.26	18	50.50	35.45	30
Silver	4.88	0.99	80	4.41	1.03	77
Zinc	98.46	31.85	68	136.91	38.19	72
Cyanide	29.97	9.94	67	10.49	5.74	45

FIGURE 26 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. It is also clear that as influent concentrations increase, the effluent concentrations increase. Because the collection system of both facilities is dominated by combined sewers, metal loading is affected by rain events due to street and land runoff. Rain events also affect plant operations by causing a decrease in detention time in the facilities, thereby disrupting process treatment. Wet weather events must be taken into consideration in evaluating changes to effluent loadings.

FIGURE 26
Bucklin Point Influent and Effluent Total Metals Loadings
Trend Analysis



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 are typically analyzed once per week at each facility. Total metals are measured twice weekly. In 2004, 35 Field's Point and 35 Bucklin Point effluent samples were analyzed for dissolved metals. The NBC and RIDEM use this data to better understand the fate, effect, and physical partitioning of metals discharged from the POTWs. Understanding the dissolved and total fractions for each metal, a measure of its phase partitioning, between dissolved and particulate, is important for the calculations of permit discharge limitations. POTWs are permitted in total metals. Therefore, the RI DEM must use a "metal translator conversion factor" to estimate the POTW's total metal fraction in the receiving waters that will be in the dissolved phase when writing a permit for a wastewater treatment plant.

Metals in the dissolved form are more readily absorbed by marine life than metals associated with particles. Resultantly, the U.S. EPA and RI DEM have established fresh and saltwater water quality criteria in dissolved metals concentrations. By sampling for total and dissolved metals, the NBC will be able to better assess the ratio of dissolved to total metals in treatment facility effluent and in the receiving waters.

TABLE 26 summarizes the data from 2004. The values are calculated by dividing the dissolved concentration by the total concentration. Dissolved phase is operationally defined as that portion which passes through a 0.45 micron filter. Cadmium, chromium, lead, and silver are predominantly non-detectable in the dissolved phase given the current NBC Laboratory procedures, thus, these predominantly non-detected metals are not listed in the summary table below. The calculated dissolved to total ratio listed below are based on the annual average of the dissolved concentrations and the annual average of the total metals concentrations.

TABLE 26
Final Effluent Phase Partitioning Study Results, 2004

Bucklin Point dissolved/total as a fraction							
	Cu	**Pb**	**Ni**	**Ag**	**Zn**	**Al**	**Fe**
Mean	0.58	0.27	0.95	0.34	0.87	0.19	0.45

Field's Point dissolved/total as a fraction							
	Cu	**Pb**	**Ni**	**Ag**	**Zn**	**Al**	**Fe**
Mean	0.63	0.25	0.96	0.38	0.88	0.09	0.44

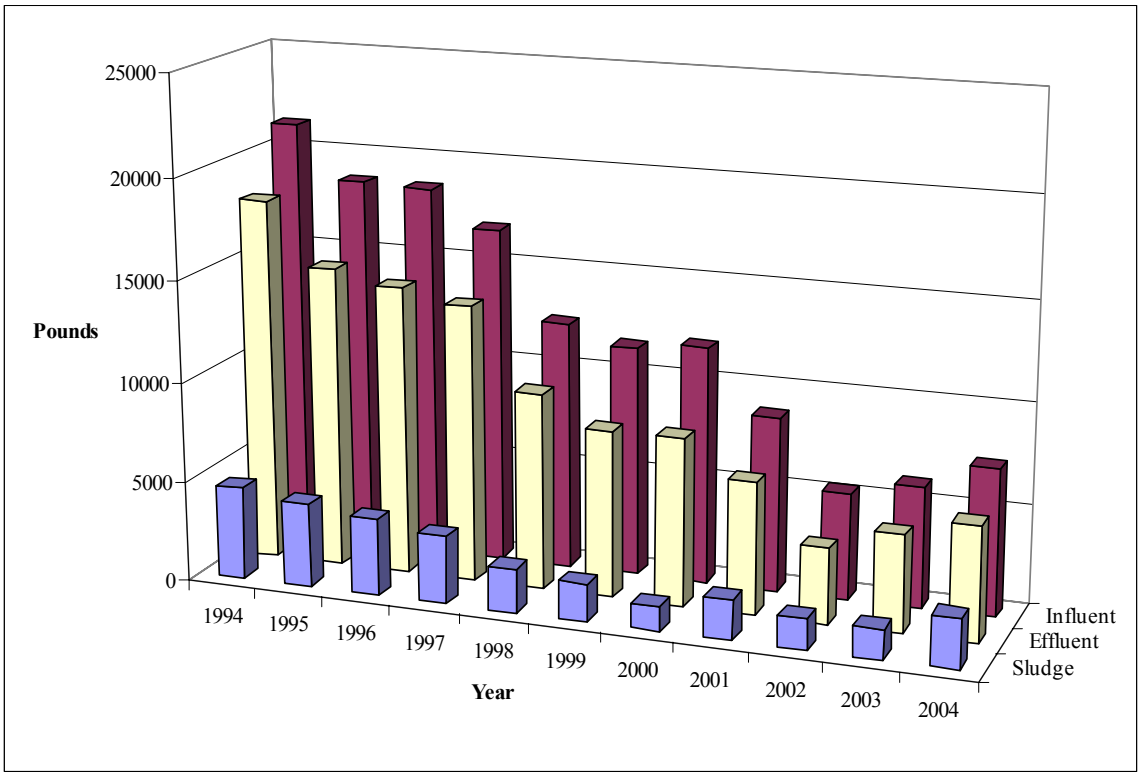
The results of this study show nickel and zinc to be the elements with the highest fraction in the dissolved phase, followed by copper in the final effluent. Lead, silver, aluminum, and iron are more strongly associated with particles, and thus the fraction of the metal in the dissolved phase is lower. The NBC Laboratory developed methods and brought new instrumentation on-line in 2004 which provided more precise low-level measurements, with lower detection methods. Data for 2004 total and dissolved metals analysis results are included in ATTACHMENT VOLUME II, SECTION 11.

Sludge Analysis

To provide further insight into influent trends and removal efficiency for metals, sludge-loading trends have been compared to influent and effluent loads since 1994 for three metals at both facilities. Nickel was included in this comparison due to its high incidence in the dissolved phase; approximately 95% of nickel in the final effluent is in the dissolved form. Nickel is also a metal commonly associated with industrial sources. Zinc was selected because of its relative abundance and significant influent loadings. Copper was chosen due to its relatively high abundance and lower dissolved partitioning, approximately 50-60%. In the following figures, please note that only the final sludge loading is approximated, without consideration of removal of the three metals in the grit removal step of the treatment process. Historical and 2004 sludge data are included in ATTACHMENT VOLUME II, SECTION 11.

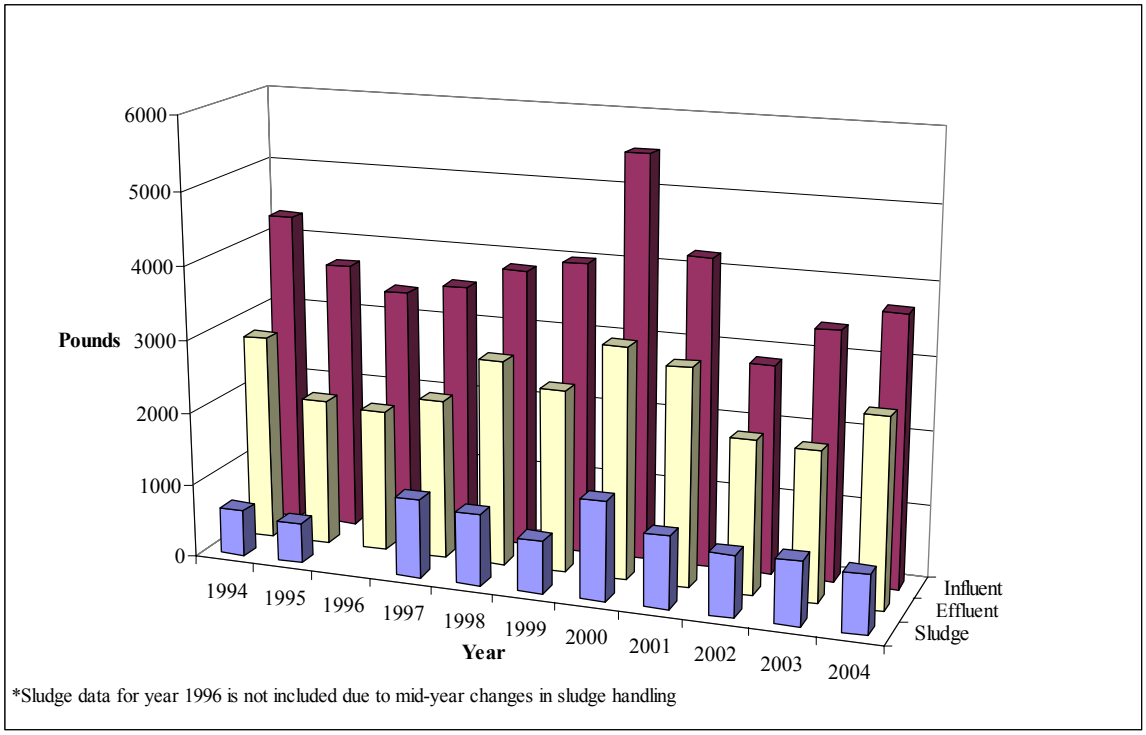
The Field's Point sludge loading results for nickel (FIGURE 27) show general agreement with declining nickel inputs to the Field's Point influent. Note that the center row of columns on the figure represent final effluent loading. The relatively low removal rate (18%) is confirmed in the low sludge loads. The relatively good agreement between influent loading compared to sludge and effluent loadings (10%) attests to the fact that sample frequency is appropriate for nickel.

FIGURE 27
Nickel Loading Trend Analysis in Field's Point Sludge, Influent and Effluent



Bucklin Point sludge nickel loading (FIGURE 28) follows the same general trends as influent loading. The relatively low 2004 Bucklin Point nickel removal rate (30%) is confirmed in the low nickel sludge loading. The agreement between 2004 nickel effluent loading in pounds and the value calculated from the influent loading minus the sludge loading is remarkably close: 9%. This is an improvement over the mass balance for nickel in 2003, which showed a 17% discrepancy.

FIGURE 28
Nickel Loading Trend Analysis in Bucklin Point Sludge, Influent and Effluent



Nickel is highly partitioned in the dissolved phase and shows the least removal in the treatment facilities. This agreement seems to indicate the following:

- Comparatively little nickel is being removed in the grit removal stage of treatment;
- Measurements of influent and effluent nickel concentrations are accurate;
- Sludge moisture measurements are valid;
- Little nickel contamination is present in sludge sampling.

FIGURES 29 and 30 show the loading trends for zinc, and FIGURES 31 and 32 present the copper loading trend analyses. Copper is more often found in the particulate phase than both nickel and zinc. NBC data show that slightly more than one-half of the copper in the final effluent is in the dissolved phase.

The other metals studied do not follow the same mass loading balance at Field's Point. At Field's Point there is poor agreement for copper and zinc when using the same mass balance calculation. For copper the sludge and effluent total is 67% greater than the influent total, while for zinc the difference is 29%. However, Bucklin Point shows good agreement for these two metals, with both within 10%, for this mass balance comparison.

EMDA investigated the influent sampling location in 2004 to determine if the lack of mass balance for zinc and copper at Field's Point was due to sampling issues. No conclusive evidence was found to suggest that this was the case. Bucklin Point's influent sampling sites are placed in interceptor pipes feeding the plant. The Field's Point influent sampling location is in a channel that feeds the grit tanks. EMDA will investigate sources of zinc and copper at Field's Point in 2005. Field's Point sludge is dewatered using a belt press, a difference between the two facilities in sludge handling methods. The sampling of dewatered sludge is performed at Field's Point while the sludge is sampled before it is removal from the facility for handling at Bucklin Point. This process difference may introduce metal contamination to the samples, and could explain the lack of mass balance at Field's Point for certain metals.

FIGURE 29
Zinc Loading Trend Analysis in Field's Point Sludge, Influent and Effluent

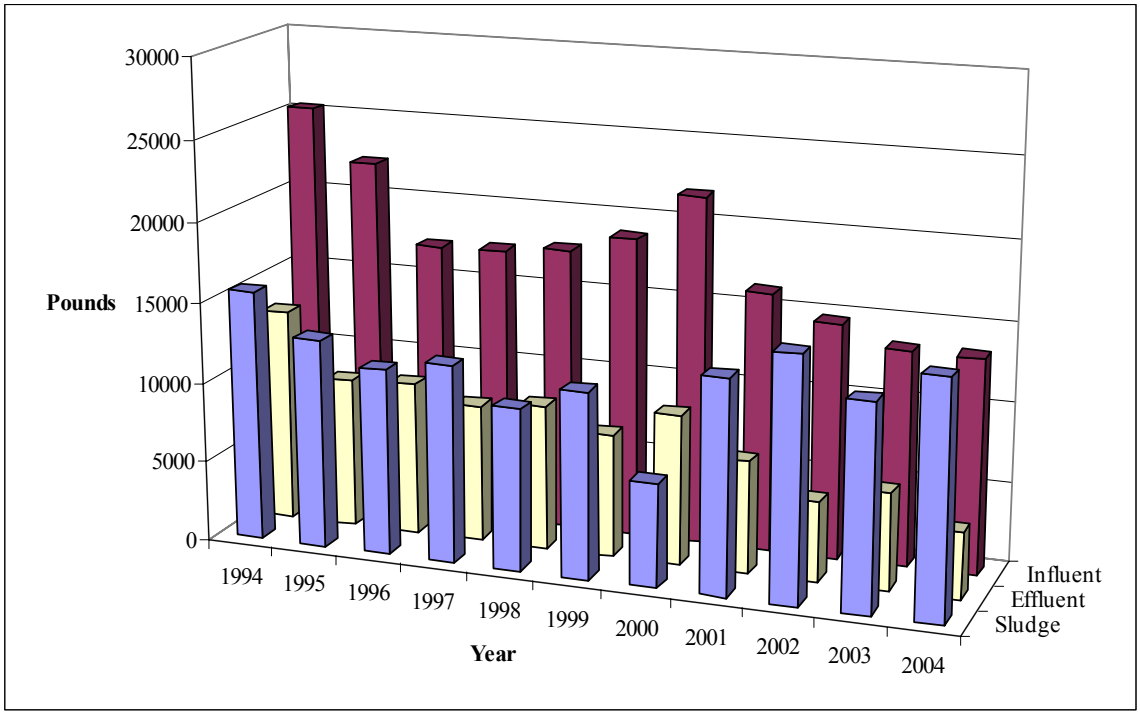


FIGURE 30
Zinc Loading Trend Analysis in Bucklin Point Sludge, Influent and Effluent

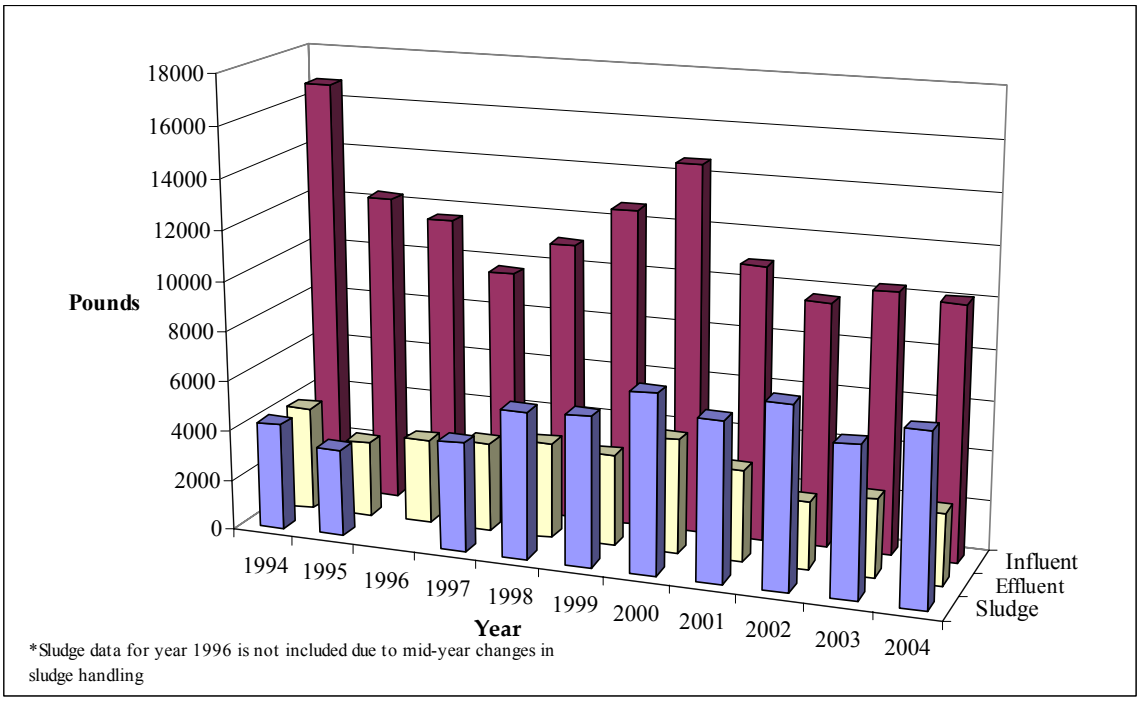


FIGURE 31
Copper Loading Trend Analysis in Field's Point Sludge, Influent and Effluent

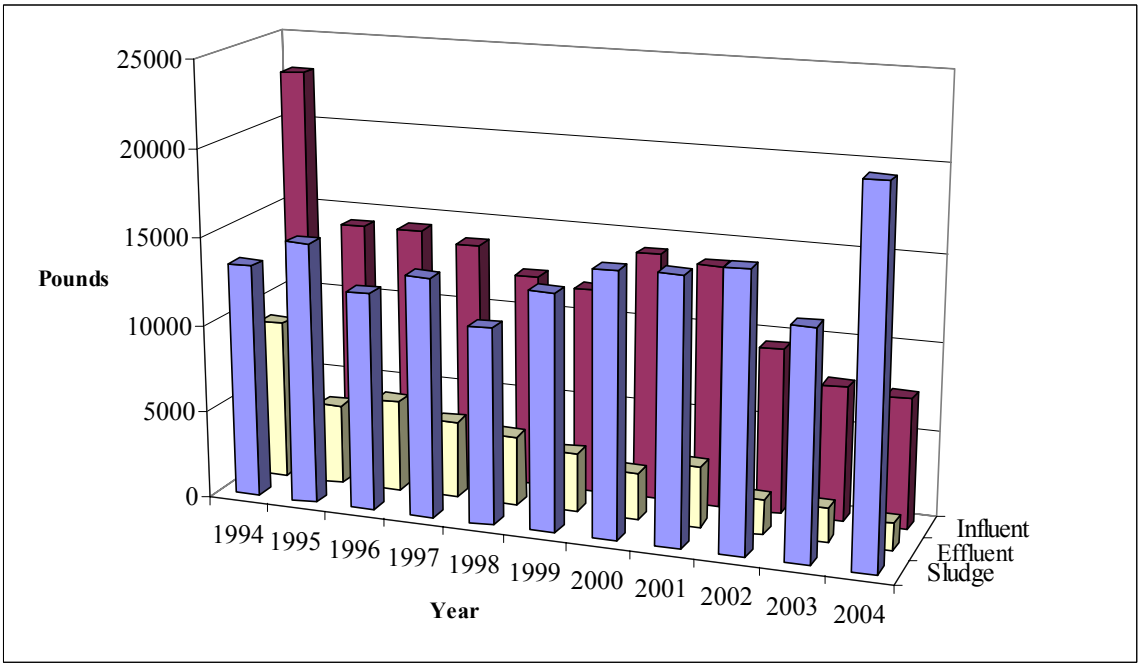
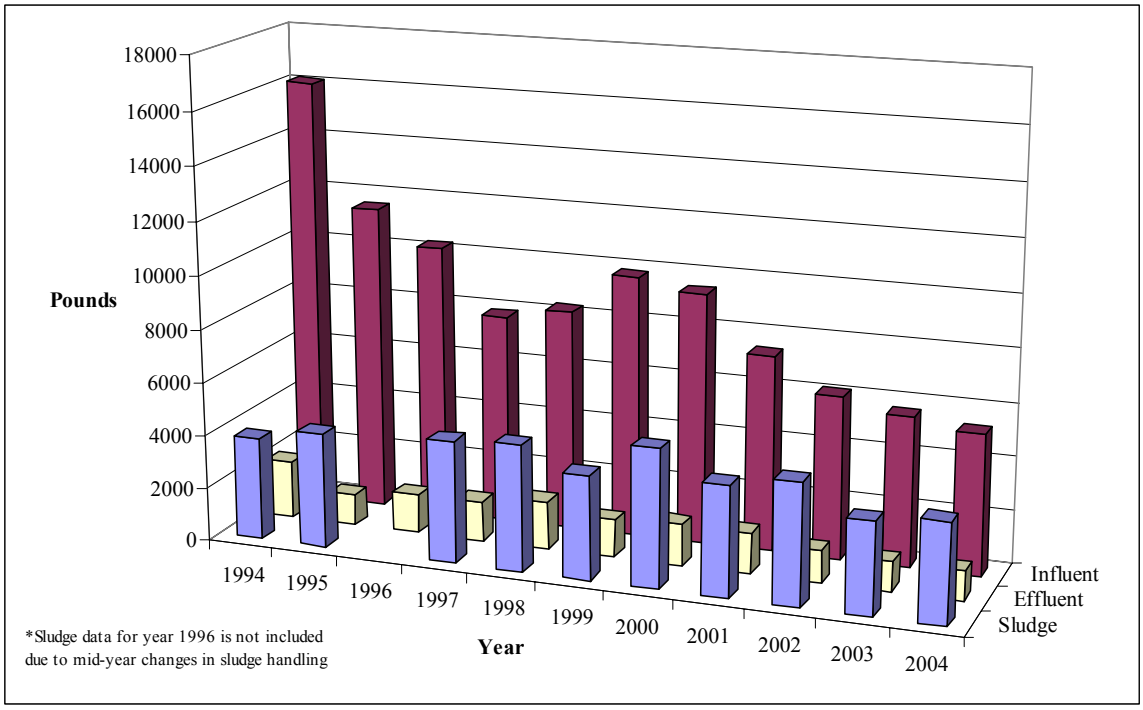


FIGURE 32
Copper Loading Trend Analysis in Bucklin Point Sludge, Influent and Effluent



BOD and TSS Loadings

BOD and TSS loading historical trend analysis provide an interesting means of determining the ability of the individual facility to handle variability in influent loadings without disruption of plant operations. For Bucklin Point, FIGURES 33 and 34 show the 30-day averaged trend for BOD and TSS influent and effluent. FIGURES 35 and 36 show this averaged data for Field's Point. Periods of high loading are possibly attributable to maintenance within the collection system, or wet weather events. It is interesting to note that, despite slight overall increases in the influent loading rates, effluent loadings shows very little variability. This demonstrates the buffering capacity of both facilities, the ability of Operations to effectively adjust conditions to treat incoming pollutants, and an overall improvement in the removal of these conventional pollutants

FIGURE 33
TSS Loading Trend Analysis in Bucklin Point Influent and Effluent

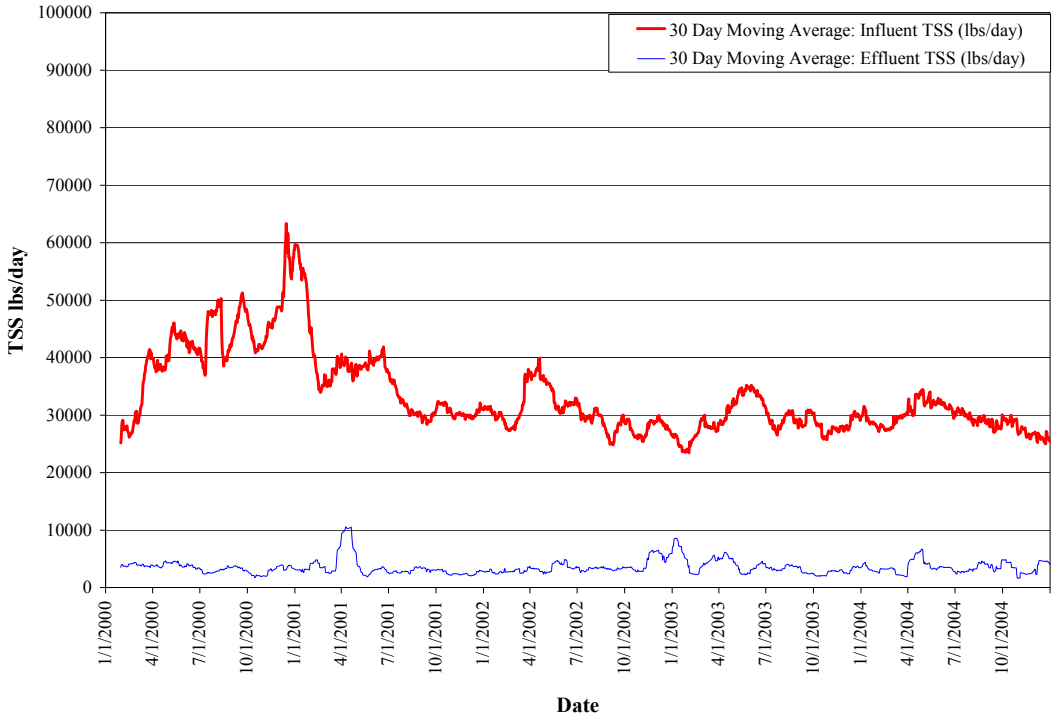


FIGURE 34
BOD Loading Trend Analysis in Bucklin Point Influent and Effluent

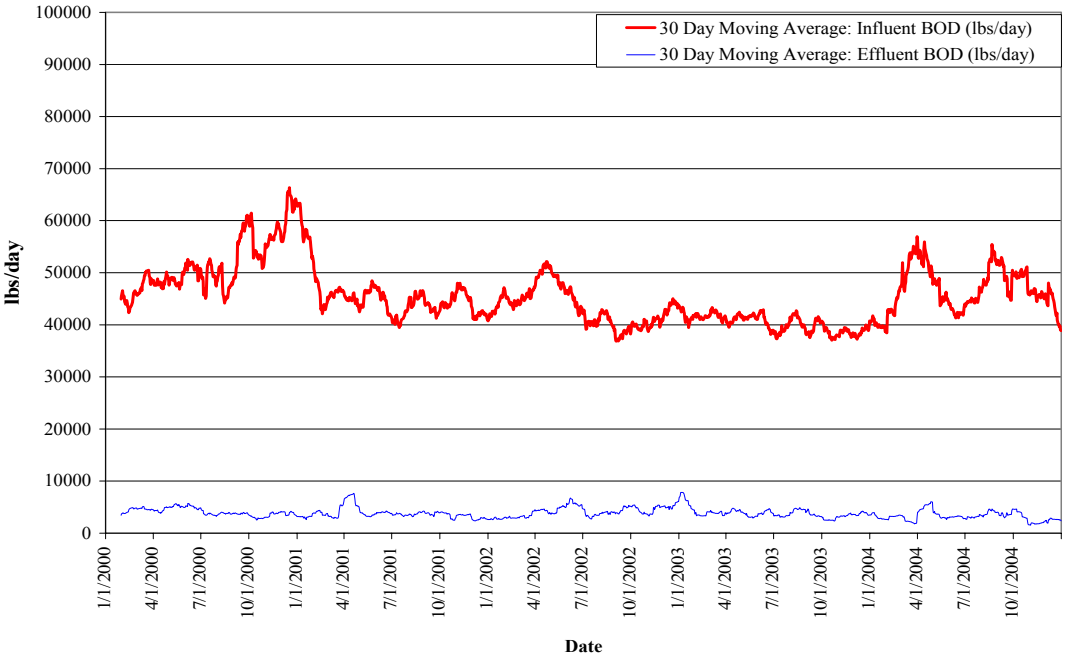


FIGURE 35
TSS Loading Trend Analysis in Field's Point Influent and Effluent

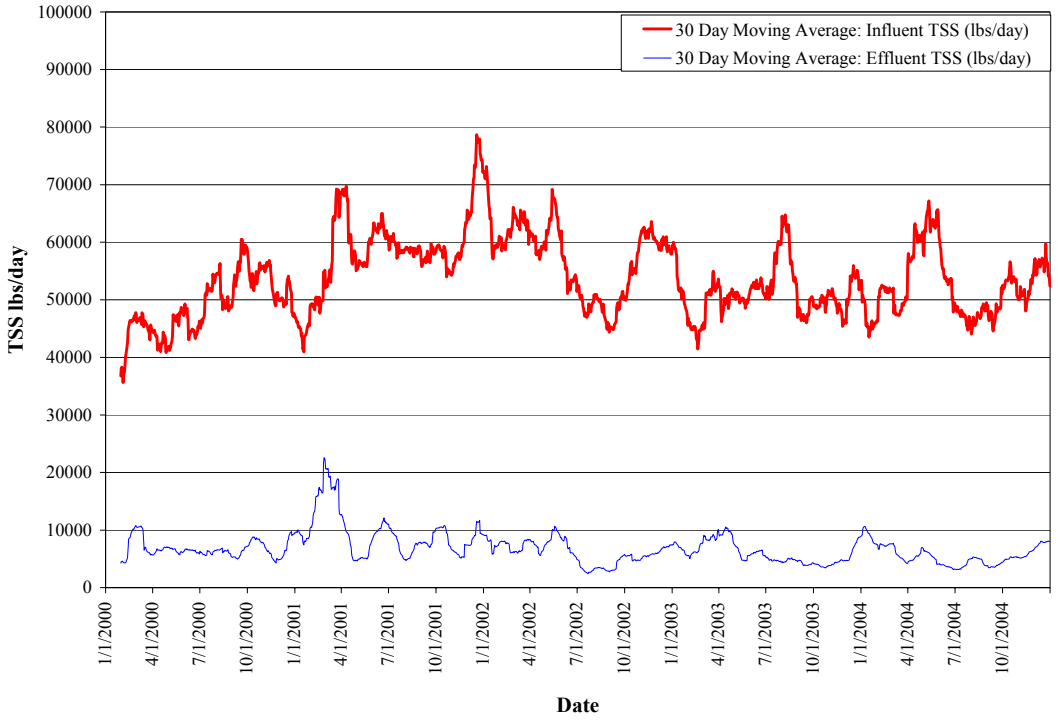
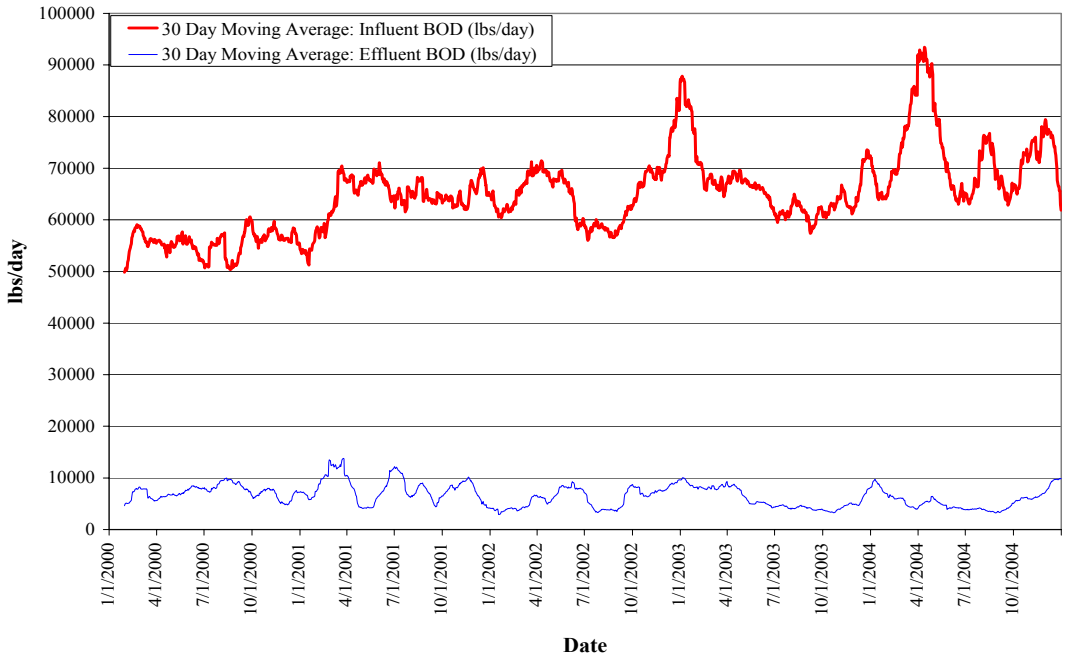


FIGURE 36
BOD Loading Trend Analysis in Field's Point Influent and Effluent



Comparison of Final Effluent Concentrations in 2004 and Saltwater Quality Criteria of 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 28 below, labeled Comparison of Final Effluent Concentrations and Water Quality Criteria of Receiving Waters, lists measured dissolved and total metal concentrations in the effluent, as well as cyanide, pH, and fecal coliform bacteria compared to saltwater quality criteria determined by RIDEM. Comparisons are made between annual averages to chronic criteria that protect long-term exposure and annual maximums to acute criteria that are established to protect marine life and waters from short-term exposures to pollutants. The results listed are the result of analyses by the NBC laboratory. The laboratory has implemented many improved clean sampling procedures.

The trace metal study conducted by NBC and URI in 2001 and 2002 found both the Seekonk and Providence River reaches of Narragansett Bay meeting saltwater quality for metals. These findings were presented to DEM, and as a result of this work, the Seekonk and Providence Rivers have been removed from the state's 303(d) list of impaired waterbodies for metals.

Dissolved metals are measured weekly at the two plants and total metals are measured twice weekly. TABLE 27 details the annual averages and annual maximums for dissolved and total metals. Saltwater quality criteria are written as dissolved values, based on a metal translator conversion factor, converting from total to dissolved phase. Default EPA conversion factors range from 0.83 to 1.0; this is a ratio without units. Dissolved concentrations in the effluent can be compared to the saltwater 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.

A summary by pollutant parameter follows:

- Lead shows annual average and maximum dissolved concentrations significantly lower than the chronic and acute water quality criteria at both facilities. The annual total maximum at both facilities is at least an order of magnitude lower than the chronic criteria.
- Silver shows annual maximum dissolved concentrations lower than the acute water quality criteria; there is no chronic saltwater quality criterion established for silver.
- Mercury analyses of the total sample, particulate and dissolved combined, at both facilities, have annual averages less than the chronic saltwater quality criteria and acute saltwater quality criteria. The mercury saltwater water quality criterion was increased from 0.025 ppb to 0.94 ppb as a result of changes in EPA mercury toxicity methodology.

- Maximum values for dissolved zinc at both facilities are less than the corresponding chronic and acute criteria
- Nickel's dissolved annual maximum concentration at Bucklin Point is less than the acute saltwater quality criteria. Other comparisons show nickel concentrations greater than criteria at both plants.
- Copper concentrations in the effluent of both plants exceed saltwater quality criteria.
- Cyanide shows effluent concentrations greater than the saltwater quality criteria at both plants.
- Hydronium ion concentration, or pH, shows the annual effluent minimums and maximums falling within saltwater quality criteria at both Field's Point and Bucklin Point.
- Fecal coliform bacteria weekly geometric mean values were used to determine whether the facilities met chronic water quality criteria for fecal coliform, and a count of the number of samples that exceeded 500 was used to establish whether acute water quality criteria were met. Both facilities meet saltwater quality criteria for chronic and acute comparisons based on these calculations.

TABLE 27

Comparison of Final Effluent Concentrations and Water Quality Criteria of Receiving Waters

Pollutant	Phase and statistical category	Bucklin Point results in ppb	Field's Point results in ppb	Chronic WQC in ppb	Acute WQC in ppb
Copper	Dissolved phase effluent annual average	7.43	7.62	3.1	
	Dissolved phase effluent annual maximum	17.65	16.94		4.8
	Total effluent annual average	14.97	12.09		
	Total effluent annual maximum	82.00	30.05		
Lead	Dissolved phase effluent annual average	0.41	0.47	8.1	
	Dissolved phase effluent annual maximum	1.29	1.44		210
	Total effluent annual average	2.52	2.50		
	Total effluent annual maximum	12.78	20.40		
Nickel	Dissolved phase effluent annual average	30.80	43.91	8.2	
	Dissolved phase effluent annual maximum	72.10	185.57		74
	Total effluent annual average	35.45	43.26		
	Total effluent annual maximum	102.00	289.70		
Silver	Dissolved phase effluent annual average	0.26	0.34	NA	
	Dissolved phase effluent annual maximum	0.78	1.07		1.9
	Total effluent annual average	1.03	0.99		
	Total effluent annual maximum	6.06	3.18		
Zinc	Dissolved phase effluent annual average	32.78	29.29	81	
	Dissolved phase effluent annual maximum	57.06	47.52		90
	Total effluent annual average	38.19	31.85		
	Total effluent annual maximum	176.00	53.90		
Mercury	Dissolved effluent annual average			0.94	
	Dissolved effluent annual maximum				1.8
	Total effluent annual average	0.024	0.035		
	Total effluent annual maximum	0.178	0.512		
Cyanide	Total effluent annual average	5.74	9.94	1.0	
	Total effluent annual maximum	29.92	19.20		1.0
pH		s.u.	s.u.		.
	Total effluent annual minimum	6.3	6.0	> 6 < 8.5	
	Total effluent annual maximum	7.5	8.5		> 6 < 8.5
Fecal Coliform Bacteria		MPN/100 ml.	MPN/100 ml.	MPN/ 100 ml. geomean	MPN/ 100 ml.
	Total effluent annual geomean	39	38	50	
	% > 500 MPN/100 ml.	4%	1%		< 10%

Summary

In general, the two treatment plants continue to show significant improvements in operations and effluent quality since NBC took over operations and with the implementation of NBC's Pretreatment and Pollution Prevention Programs. 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 the public interest.

Overall, the toxic pollutant loadings to the two NBC Wastewater Treatment plants continue to decrease over time, a clear reflection of the fine work done by the NBC toxics reduction and control programs. The level of toxics in the effluent discharged from the NBC plants also continues a downward trend.

Recent NBC studies have shown that significant portions of toxic metal pollutants originate from residential sources and the NBC Rivers Study performed in 2002 has shown excellent results. Four seasonal surveys were conducted during 2001 and 2002 that monitored the receiving waters of the Bucklin Point and Field's Point treatment plants. Based upon the results of these seasonal surveys, DEM has removed these receiving waters from the list of 303(d) impaired waters. This is a clear testament to the effectiveness of the NBC toxic reduction and control programs.

Based upon the results of these seasonal surveys, DEM has removed these receiving waters from the list of 303(d) impaired waters. This is a clear testament to the effectiveness of the NBC toxic reduction and control programs.

VII. SPECIAL PROJECTS AND PROGRAMS

Introduction

The Narragansett Bay Commission (NBC) implements many special 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 team effort consisting of many sections of the NBC, including the Pretreatment, Pollution Prevention, Planning, Laboratory and Environmental Monitoring and Data Analysis (EMDA) Sections.

The Pretreatment Section implements many special 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 NBC Pollution Prevention Program further reduces toxic loadings to the two NBC wastewater treatment facilities by providing free technical assistance and educational programs to local industries. Through this program, the NBC educates firms about pollution prevention measures, such as product substitutions, so that hazardous materials can be eliminated from process operations and toxic byproducts are not generated or discharged.

The NBC's EMDA section routinely conducts water quality studies in the receiving waters of the NBC treatment facilities. EMDA contributes to the statewide effort of many agencies, institutions and organizations to understand the problems and determine the solutions needed to make all of Narragansett Bay open for all recreation and economic activities.

In 2004, EMDA's activities continued to evolve beyond its historical role within the NBC. EMDA routinely analyzed data, conducted and completed studies, examined the impact of wastewater treatment facility effluent on receiving waters, improved and expanded existing projects, further developed education and public outreach projects, and volunteered staff time to Bay-wide multi – agency research projects. This Chapter details the special projects, studies, and programs that Pretreatment, Pollution Prevention, Sewer Connection EMDA and Laboratory Sections have worked on in 2004.

Status of Projects, Programs and Studies

Pollution Prevention Program

The NBC initiated a Pollution Prevention technical assistance program in September of 1991 with the assistance of a $300,000 grant from the U.S. Environmental Protection Agency's (EPA) Pollution Prevention Incentives for States (PPIS) Program. The NBC Pollution Prevention Program assists 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. The NBC Pollution Prevention Program services are free of charge, non-regulatory and confidential.

The goals and objectives of the NBC's Pollution Prevention Program 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.

The Pollution Prevention Staff performs technical assistance site visits of NBC industrial users, or organizes and conducts workshops and seminars, and produces educational fact-sheets. The NBC Pollution Prevention Program conducted 65 individual site visits of more than 47 companies during 2004 on a variety of pollution prevention and environmental regulatory compliance improvement projects.

NBC Pollution Prevention Activities and Programs

Since the creation of the Pollution Prevention Program in 1991 NBC has been awarded several additional PPIS grants to initiate a variety of industrial user environmental educational and technical assistance programs. TABLE 28 summarizes the project periods and funding amounts for each of these grant awards.

TABLE 28

Summary of EPA PPIS Grant Awards To NBC

Program	Grant ID#	Project Period	Original Grant Award
Initial Pollution Prevention	NP818873-01-0	10/01/91 - 09/30/97	$300,000.00
Training Grant – CCRI Pollution Prevention course	NP991705-01-1	10/01/95 - 09/30/98	$60,000.00
Clean P2 – Regulatory Relief Program	NP991756-01-0	10/01/96 - 09/30/00	$85,000.00
NBC Metal Finishing 2000 Program	NP991195-01-0	10/01/97 - 09/30/00	$35,000.00
NBC Metal Finishing Seminars	NP991402-01-0	07/01/98 - 09/30/00	$25,000.00
Environmental Management Systems	NP991679-01-0	10/01/99 - 09/30/01	$32,000.00
Environmental Best Management Practices	NP98121801-0	10/01/00 - 03/31/03	$35,000.00
MP&M Pollution Prevention Audits	NP98142601	10/01/01 - 09/30/03	$50,000.00
Pollution Prevention in RI Hospitals	NP98154501-0	10/01/02 - 09/30/04	$25,000.00
Auto Salve Yard Pollution Prevention	NP98182201-0	10/01/03 – 09/30/05	$25,000.00
Stormwater Pollution Prevention		10/01/04 – 09/30/06	$35,000.00
Total PPIS Grants Awards To NBC			**$707,000.00**

In addition to grant funded projects, NBC's Pollution Prevention Program has become involved with numerous 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. Detailed descriptions of both grant funded and NBC funded programs and projects are as follows:

- ***Metal Finishing 2000 Program -*** In December of 1994, then EPA Administrator Carol Browner established the Common Sense Initiative (CSI), challenging industry and government environmental agencies to work together to develop "Cleaner, Cheaper, and Smarter" ways of achieving a clean environment while enhancing economic growth.

  In answer to this challenge, NBC began working with EPA New England and RIDEM to develop the NBC Metal Finishing 2000 Program. Through this program, the NBC rewards top environmental performing metal finishing companies, the best of the best, with regulatory flexibility. Participating companies are allowed to operate and expand their production process with limited NBC regulatory oversight. Wastewater discharge permits are made flexible with respect to growth and expansion of company operations and regulatory inspections and reporting requirements are minimized.

  EPA grant funds for this program were fully expended in September 2000, however, pollution prevention and environmental performance measurement activities with these companies will continue through NBC's Project XL Program.

  By recognizing and rewarding companies for their environmental achievements, the NBC hopes to observe an increased use of innovative environmental practices by industry, a strengthening of Rhode Island's economy through a more competitive metal finishing industry, and more metal finishing companies striving for this level of environmental performance.

- ***NBC CLEAN-P2 - Regulatory Relief Program -*** In September of 1998, the NBC, EPA and RIDEM signed an agreement establishing the NBC CLEAN-P2 Regulatory Relief Program. This initiative allows NBC to expand upon and fully utilize its enforcement discretion in order to help encourage companies to look closely at their environmental management practices, to improve upon existing environmental compliance activities and to initiate new pollution prevention projects.

  NBC's CLEAN-P2 Regulatory Relief Program is designed to assist participating companies identify and correct environmental problems using cost effective common sense approaches without the fear of regulatory repercussions. Expected results include: more companies utilizing common sense pollution prevention solutions to solve waste management problems, improved industrial operations, and a cleaner environment.

  As with NBC's Metal Finishing 2000 Program, the grant funded portion of NBC's CLEAN-P2 program was completed in September 2000. However, NBC will continue to monitor and study the effect these efforts have had on the environmental performance of each participating company throughout the next several years.

- ***National Metal Finishing Strategic Goals Program -*** The National Strategic Goals Program (SGP) was developed by a group of stakeholders brought together by EPA through the CSI. Stakeholders include representatives from the metal finishing industry, state and local governments, environmental interest groups, labor organizations, and public interest groups, as well as the EPA headquarters and regional offices.

This voluntary program encouraged participants to reach "beyond compliance" by achieving established environmental goals by the year 2002. These goals included conservation of water, energy, and metals, reduction in hazardous waste generation and air emissions, and improved economic paybacks associated with environmental compliance costs. Participants were provided with incentives such as technical assistance and regulatory flexibility as rewards for committing to and achieving established goals.

In May of 2000, the NBC awarded a $15,000 grant to the Rhode Island Council of Electroplaters (RICE) to help NBC's Pollution Prevention Program assist companies to gather and report required data elements. NBC has continued working with RICE on SGP related activities throughout 2001 and as of December 2001 a total of twenty metal finishing companies have been formally signed onto the SGP.

The NBC has been involved with SGP and the CSI since the inception of the CSI in 1993. The NBC's Director of Planning, Policy and Regulation, was appointed to the National CSI's Metal Finishing Sector Subcommittee. Through this involvement with these committees, the NBC has been, and remains, a vocal and active force behind many SGP initiatives. The NBC is currently working with the local metal finishing industry through two trade associations, the American Electroplaters and Surface Finishers Society (AESF) and the Rhode Island Council of Electroplaters (RICE) to encourage involvement with the SGP.

- ***Project XL -*** In the June 23, 1998 Federal Register the U.S. EPA requested proposals from Publicly Owned Treatment Works (POTWs) interested in developing and exploring alternative environmental performance based upon pretreatment programs on a pilot basis under EPA's Project XL Program. In response to this request NBC developed and submitted a Project XL for Pretreatment Programs proposal to EPA New England in February 1999. After several meetings and correspondences, the NBC submitted a revised proposal in October of 1999. On September 25, 2000, the NBC, EPA New England and the RIDEM signed a Project XL Final Project Agreement (FPA). Prior to initiating any of these regulatory modifications RIDEM must first modify the State of Rhode Island's RIPDES regulations relative to Project XL.

  On December 31, 2001 RIDEM issued new RIPDES permits to the two NBC wastewater treatment facilities. Once all and any NBC comments and appeals with respect to these permits have been addressed, NBC will be prepared to initiate Project XL activities relative to necessary RIDEM regulatory changes.

  NBC's Project XL consists of a planned six-year study that utilizes regulatory flexibility to encourage superior environmental performance by the metal finishing industry located within the NBC service district. As part of this study, 10 metal finishing companies that have a demonstrated history of superior environmental performance, such as the Metal Finishing 2000 Program participants, will be given varying levels of regulatory flexibility based upon their relative degree of environmental performance averaged over a seven-year period (1992 through 1998). Ten companies with poorer performance levels will be identified and will be given increased regulatory oversight and pollution prevention technical assistance. The main goals and tasks of this project are as follows:

- Define quantitative environmental performance criteria for NBC's approximately 100 permitted metal finishing companies;

- Identify regulatory flexibility incentives that reward exceptional environmental performers and encourage improvement by lower level performers;

- Direct regulatory oversight and pollution prevention technical assistance efforts toward poor environmental performing companies;

- Measure the effect this approach has on several environmental performance indicators;

- Demonstrate that a focused regulatory approach that better utilizes regulatory staff time and effort can result in measurably improved environmental results.

This approach differs vastly from the strict "command and control" approach currently required by both state and federal environmental regulations. Through the existing regulatory framework, companies with no history of environmental violations and very proactive pollution prevention programs are subject to the same regulatory oversight and reporting requirements as companies with long histories of poor environmental performance. By refocusing regulatory efforts, the NBC plans to demonstrate that superior environmental performance can be achieved through incentives and cooperation at less cost to both the industrial community and environmental regulatory authorities.

This is the first Project XL to take place in the State of Rhode Island, the 41st to be approved nationally, and one of only six in the nation approved to implement changes to EPA Federal Pretreatment Program Regulations. The NBC anticipates that this modified approach of regulating and working with the metal finishing industry will result in significant environmental improvements and will be readily adaptable to other industrial sectors.

- ***Environmental Best Management Practices*** **-** In October of 2000, the NBC was awarded a $35,000 PPIS grant to develop a series of Environmental Best Management Practices (EBMP) for key industrial sectors located within the NBC service district. The NBC has identified the following three industry sectors/operations as being the most likely to benefit from the use of EBMPs:

  - Art Studios, Art Schools and Art Classes within Colleges, Universities and High Schools – *Disposal of Paints and Solvents*
  - Auto-Body Repair Facilities – *Vehicle Cleaning*
  - High Temperature Boiler Operations – *Boiler Blow-Down*

  Each individual EBMP will include industry and process specific information regarding:

  - Environmental Policy Statements
  - Pollution Prevention
  - Hazardous Waste Management
  - Good House-Keeping Practices

- Worker Health and Safety
- Resource Conservation
- Ideas for Improved Environmentally Designed Products
- Communicating with the General Public
- Pollution Prevention and Pollution Control Vendors and Consultants
- Regulatory Compliance
- Cost Comparison of Pollution Prevention versus Traditional Waste Management

The goal of this program will be to produce easy to read and informative EBMPs for each of the three industry sectors/processes mentioned above, in order to produce final plans that will be of greatest use to all parties involved. Throughout 2003 NBC Pollution Prevention staff have met with various representatives of various art schools, art studios and art and environmental agencies to identify the needs and issues to be addressed as part of an EBMP. During 2004, the NBC finalized and distributed a BMP for Art Studios. It is anticipated the BMP for Industrial Boilers will be developed for issuance during 2005.

- ***MP&M Pollution Prevention Assessments*** – In October of 2001, NBC was awarded an EPA Pollution Prevention Incentives for States (PPIS) Grant in the amount of $50,000 to develop a program to assess the local metal finishing industrial community's pollution prevention efforts. As part of this project NBC's Pollution Prevention staff in conjunction with URI, RIDEM and Rhode Island Contract Electroplating conducted Pollution Prevention Audits of metal finishing companies located within NBC's service district in order to determine their compliance status with the proposed MP&M Pollution Prevention Criteria. Follow-up audits were conducted to assist companies with the implementation of suggested pollution prevention activities. When the final MP&M Rule was adopted by the EPA, the regulations applied to direct discharges and Pretreatment Standard were not promulgated.

- ***Environmental Management System Program -*** In October of 1999 the NBC was awarded $32,000 in matching grant funds from EPA's PPIS Grant program to develop a program that will train and assist the industrial community to develop site specific Environmental Management Systems (EMS).

  An EMS is a structured, systematic approach for identifying, addressing, and managing all environmental activities within a facility or organization. EMSs developed as part of this program will be company specific and will take into account all operations that affect the environment, including: pollution prevention, waste management, wastewater treatment, employee education, air pollution control, and emergency response and accidental releases. A well-established EMS program that has management support will result in a company wide environmental awareness among employees, contributing to the company's overall environmental performance. The success achieved by each participating company will be measured in part through the following:

- Improved environmental wastewater quality. The NBC tracks all industrial self-monitoring and NBC compliance monitoring information on a computer database. The success of this EMS program should result in marked improvements in wastewater quality by participating companies;
- Improved housekeeping. The NBC and RIDEM regulatory inspectors should detect noticed improvements in participating companies' environmental program organization and general facility housekeeping practices. This should be evidenced by fewer violations being noted during inspections and positive comments being made on inspection reports;
- More Significant Industrial Users (SIU) achieving 100% full compliance with NBC requirements. The NBC annually recognizes all SIUs that have achieved full compliance with all NBC regulatory requirements during the previous calendar year. Each year NBC awards these companies with a plaque and publishes their names and accomplishments in the Providence Journal and Providence Business News. The success of this program should result in more companies being recognized for achieving this level of compliance.

In early 2001, the NBC contracted with the consulting firm of Camp Dresser and McKee to conduct a series of half-day Environmental Management System (EMS) development workshops which consisted of an introductory session and eight modules. These modules covered all aspects of creating an EMS program from developing an environmental policy, planning, implementation, audits, to managements review and implemention.

These workshops were attended by more than 35 representatives from fifteen local businesses, RIDEM and NBC. NBC continues to work with each attendee to assist with the actual development of each EMS. It is expected that each participating company/organization will see marked improvements in their environmental programs and performance through their EMS.

The result these EMS programs have on the overall environmental performance of each company participating in this program, as well as the costs associated with achieving these results, will be studied and documented. Prior to initiating a particular EMS project, the NBC will measure and document the existing environmental performance of the participating company and will continue to monitor their performance throughout the project period. Parameters to be monitored will include but may not be limited to: compliance status with all environmental media (air, water and waste), the company's overall productivity, employee involvement with environmental issues, and management's view point on their company's environmental performance.

Other more specific environmental indicators will be identified with respect to each particular company involved. A review of each company's specific environmental practices and industrial operations will allow for the identification of the most appropriate site-specific indicators. At the conclusion of the project period a final report will be produced that outlines all project findings.

Through NBC's Metal Finishing 2000 and CLEAN-P2 Regulatory Relief programs, both non-regulatory Pollution Prevention and regulatory Pretreatment staff will become involved with each participating company's EMS activities.

Successful environmental protection using this approach will clearly demonstrate that both the industrial community and state and local environmental agencies can achieve a clean healthy environment through a cooperative effort. Overall program results can be used as a model for other regulatory agencies to follow. Information and knowledge gained through these efforts will be made available through a World Wide Web site on the Internet, at www.narrabay.com through NBC newsletters and fact-sheets, and through the various workshops and conferences regularly conducted by NBC staff.

- ***Metal Finishing Guidance Manual Seminars -*** In December of 1996 the Surface Finishing Industry Council (SFIC) published the "Metal Finishing Guidance Manual" as part of the National Common Sense Initiative (CSI). Written by the Eastern Research Group with assistance by GZA Geo-Environmental, Inc., this extensive document contains detailed information on pollution prevention, environmental compliance, and safety procedures specifically for the metal finishing industry.

  The manual contains the following sections and topics:

  - Air Emissions
  - Wastewater Discharges
  - Stormwater Discharges and Oil Spill Prevention
  - Hazardous Waste
  - Underground Storage Tanks
  - Toxic Chemical Reporting
  - Emergency Planning and Notification
  - Toxic Substance Control
  - Pollution Prevention
  - Environmental Management Systems
  - Environmental Accounting
  - Super-Fund and Contaminated Property Management

  While a very useful compliance tool for industry, this document has been extremely underutilized in the State of Rhode Island and throughout the country. Recognizing the value and importance of this environmental compliance guide, the NBC applied for and was awarded a $25,000 EPA PPIS grant in July of 1998 to develop and present a series of seminars based on this environmental compliance manual.

  During calendar year 1999 the NBC conducted five individual seminars and during calendar year 2000 the NBC conducted two additional seminars based on this manual. Utilizing EPA grant funds the NBC has distributed 35 manuals to industrial users at a 75% reduction in the publisher's price.

- ***Pollution Prevention for Hospitals and Health Care Facilities*** – In September of 2002, NBC was awarded $25,000 from EPA to initiate a Pollution Prevention Technical Assistance Program for Hospitals and Health Care Facilities. Through this program NBC's Pollution Prevention and Pretreatment staff with assistance from URI, RIDEM and the Rhode Island Dental Association conducted Environmental Compliance/Pollution Prevention Audits of a select grouping of hospitals, health care and/or dental facilities located within NBC service district. These audits focused on identifying the source of pollutants and quantifying the amounts of individual pollutants being released to the environment. Information gained through these audits helps NBC to direct additional technical assistance and education efforts and identify environmental metrics by which to measure the overall environmental performance of healthcare facilities. Pollutants and operations reviewed as part of these audits included:

    - Replacement of mercury containing equipment such as thermometers and blood pressure instruments;
    - Management, disposal and minimization of laboratory waste including solvent waste, acid and caustic wastewater and toxic and/or infectious waste;
    - Proper identification and management of medical waste;
    - Proper management and disposal of pharmaceutical wastes;
    - Management and disposal of fixer, developer and rinse water from X-ray processing;
    - Proper management and disposal of amalgam waste associated with dental procedures.

    Using the findings of these audits the NBC did the following:

    - Organized and sponsored a pollution prevention/environmental compliance educational workshop for all of Rhode Island's health care industry and to help identify and quantify what should be considered "superior environmental performance" by the health care industry. The workshop was held on March 31, 2004;
    - Identify environmental performance metrics to measure the success these education efforts have on the local health care industry and to help identify and quantify what should be considered "superior environmental performance" by the health care industry;
    - Identify ways of recognizing healthcare facilities that achieve a superior level of environmental performance;
    - Develop a set of Best Management Practices for smaller dental/healthcare facilities to be incorporated in wastewater discharge permits.

- **Pollution Prevention for Auto Salvage Yards** - In October of 2003 NBC received a $25,000 matching funds grant to initiate a pollution prevention and environmental compliance assistance project for Auto-Salvage Yards. As part of this project, NBC's Pollution Prevention and Pretreatment staff with assistance from URI and RIDEM conducted Environmental Compliance/Pollution Prevention Assessment of a select grouping of auto salvage yards/facilities located within NBC's servicing district. These assessments focused on identifying the source of pollutants and quantifying the amounts of individual pollutants released to the environment. Information gained through these audits assisted the NBC to direct additional technical assistance and education efforts and will identified environmental metrics to measure the overall environmental performance of auto salvage facilities on a statewide basis. Pollutant and operations assesed as part of these audits included:

  - Recovery and management of mercury containing devices such as mercury switches in automobiles,
  - Management, disposal/recycling of automobile tires,
  - Tracking and minimizing the generation of hazardous waste, and
  - Management and disposal of waste automotive oil and other vehicle fluids.

  Using the findings/results of these audits NBC will:

  - Organize and sponsor a pollution prevention/environmental compliance educational workshop for all of Rhode Island auto salvage facilities,
  - Identify environmental performance metrics to measure the success these education efforts have on the environmental performance of auto salvage operations,
  - Develop a set of localized Environmental Best Management Practices for auto salvage operations.

- **Stormwater Pollution Prevention –** In October of 2004 NBC was awarded a $35,000 EPA Pollution Prevention Grant to address stormwater management issues. This project will focus on two stormwater issues – management of stormwater runoff from industrial and commercial sources, and MS4s in urbanized areas and identification, quantification and minimization of industrial and commercial operations on CSO discharges.

  i. Stormwater Management

  NBC's Rules and Regulations for the Use of Wastewater Facilities Within the Narragansett Bay Commission prohibits the discharge of stormwater to a public sewer unless the NBC determines that a combined sewer is the only reasonable means available for disposal. In order to help address this issue NBC will develop a set of Best Management Practices for minimizing stormwater discharges. Information in these Best Management Practices will be based on NBC's experiences[1] working with industrial/commercial users that have developed successful stormwater management programs and a review and summary of existing stormwater management best management practices.

[1]NBC is currently working with a local college and a local hospital to capture and use storm water for grounds watering and boiler make-up water.

ii. CSO Discharges

NBC's Pollution Prevention and Pretreatment staff with assistance from and in cooperation with URI and RIDEM will identify industrial/commercial facilities within the NBC servicing district that have the potential to impact CSO discharges. NBC Pollution Prevention staff will conduct Environmental Compliance/ Pollution Prevention Assessment of a select grouping of these facilities in order to identify the various sources of pollutants and ways of preventing/minimizing pollutant discharges. Information gained through these assessments will help NBC to direct additional technical assistance and educational efforts to the wider universe of industrial/ commercial users and will help to identify environmental performance metrics by which to measure the overall success of project efforts.

Also, NBC is currently in the process of developing and Environmental Management System (EMS) for its Interceptor Maintenance (IM) Department. This department is responsible for maintaining more than 96 miles of interceptor sewers, 7 pumps stations, 84 regulators, 32 tide gates, 500 catch basins and 66 CSOs. Information collected through this pollution prevention project will help with identifying environmental objectives and targets within the IM EMS.

- ***Industrial Wastewater Treatment and Pollution Prevention Training -*** Based on the experiences of NBC and RIDEM regulatory divisions, manufacturing operator error is often found to be the major cause of many wastewater discharge violations and hazardous material releases. In many instances, small manufacturing companies have invested significant amounts of money for wastewater pretreatment and pollution control equipment and instrumentation, while giving little attention to proper operator training.

  In September of 1996, the NBC received a $60,000 PPIS grant award from EPA to establish an Industrial Wastewater and Pollution Prevention Training course to address these training needs. The course curriculum developed as part of this project has been designed to offer training in up-to-date wastewater treatment procedures, environmental regulations, and pollution prevention/source reduction techniques and methodologies. The following topics are covered in detail in the course curriculum:

Wastewater Mathematics	Cyanide Destruction
General Chemistry	Metals Removal
Fluid Flow Measurement	Pollution Prevention Overview
Environmental Regulations	Ion Exchange
Overview of Industrial Operations	Water Use Reduction
Wastewater Treatment Operations	Membrane Separation
pH Control	

  The NBC Industrial Wastewater and Pollution Prevention Training Program is offered through the Community College of Rhode Island as a three credit, 45 hour college course offered every Spring Semester at the Community College of Rhode Island.

NBC Environmental Merit Award Program

In June of 2004, the NBC held its tenth annual Environmental Merit Awards ceremony to recognize companies that have demonstrated environmental efforts and commitments that go beyond that of compliance requirements. As part of this awards program, the NBC also recognizes all Significant Industrial Users (SIU) that have achieved full compliance with all NBC requirements during the previous calendar year.

At the 2004 event, the NBC recognized two companies for their extraordinary pollution prevention efforts with Environmental Merit Awards, and 12 companies with Perfect Compliance Awards for achieving 100% compliance with all NBC regulatory requirements. The award winning firms are as follows:

Environmental Merit Award Recipients

- US Gen New England
- Herff Jones, Inc.

Perfect Compliance Award Recipients

- A.T. Cross Company
- Arch Specialty Chemical
- Charisma Manufacturing
- Liquid Blue
- Providence Metallizing Co., Inc.
- Technodic, Inc.
- Allied Metal Finishing Company, Inc.
- Calco Plating Company
- Induplate Inc.
- Oster Alloys
- Spencer Plating Company, Inc.
- Truex, Inc.

Each award recipient received an award plaque and had their company name and environmental accomplishments published in the Providence Journal and Providence Business News. Additionally, each company receives an NBC Pollution Prevention/Perfect Compliance Seal that can be used on each firm's letterhead as a testimonial of their accomplishments. Applications for 2004 NBC Environmental Merit Awards will be sent out in March of 2005 and the presentation of these awards will take place in June of 2005.

Water Audit and Technical Assistance Program

The NBC Water Audit & Technical Assistance Program was established with the goals of reducing water use and wastewater production of its major water users and to minimize where possible, the NBC's capital expenditures towards sewer facility improvements and/or expansion due to increased wastewater flow. Given these goals, the NBC Water Audit & Technical Assistance Program assists our commercial, industrial, and institutional customers to utilize water more efficiently and ultimately reduce wastewater flow into the sewer system.

The NBC Water Audit & Technical Assistance Program is non-regulatory, free of charge and voluntary. It typically consists of the following:

- reviewing the customer's water sources and water-using systems;
- developing and recommending methods and procedures to reduce the customer's water usage;
- evaluating the cost-effectiveness of these recommendations;
- assisting the customer in implementing these recommendations;
- tracking the customer's future water use to determine the effectiveness of these new methods and procedures.

As part of a water audit, the NBC supplies our participants with reports containing recommendations and cost/benefit analyses of saving water. Further, the report provides a breakdown of current water use, recommends water reduction methods and summarizes the cost savings for their water, sewer, and heating bills. By compiling these reports, the NBC can obtain valuable information about future flows into its sewer system. In 2004, staff solicited firms for water audits. In addition to the NBC Water Audit staff conducting this water audit, NBC Pollution Prevention staff conducted audits that included a review of water use and potential area of water reduction at seven metal finishing companies.

Sewer Connection Permit Program

Since 1982, the NBC has been reviewing all applicant's 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 regulate all sewer connection activity to ensure that the structural integrity of the sewer line is preserved, to control and monitor wastewater flow capacity, to control toxic pollutant discharges, to maintain quality customer service and to ensure accurate billing of new users.

Open communication is an integral part of the sewer connection permit process. Once a permit application is received, the Permit Section reviews it for accuracy and adequacy, then forwards it for further review and comment to various NBC sections. The sections that may be required to review the permit application include the Pretreatment Section, Interceptor Maintenance Section and Engineering Section. Application fees are assessed and forwarded to the Accounting Section.

As the Permit Section receives comments from various departments, the comments are compiled and addressed. After all comments have been satisfactorily addressed, a permit is prepared for approval by the Executive Director or his designee. In 1994, the Permit Section recognized its need for a database management computer program to efficiently and effectively analyze data (i.e. ever changing wastewater flow per district or by City/Town), generate reports (i.e. new customer listing for the Customer Service Section), and most importantly, to expedite the sewer connection permitting process. The Permit Section depended upon the Pretreatment Section to review 94 of 163 sewer connection permit requests in 2004. A majority of these 94 sewer connection permits, resulted in users required to obtain a Wastewater Discharge Permit.

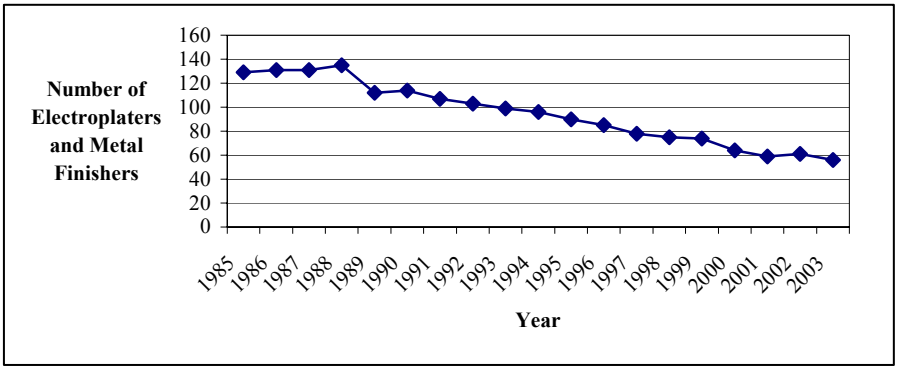
In 2004 the Permitting Section worked with the NBC's Legal Section to revise Article 4 of the NBC's Rules and Regulations. The revisions incorporate requirements for all parties including residential, connecting to the Sewer System either directly or indirectly, to apply for and obtain a Sewer Connection Permit. The revisions became effective on December 13, 2004. The number of Sewer Connection Permit Applications is expected to increase in 2005 due to the revisions.

Save the Metal Finishing Industry Project

During the last 10 years, the NBC has observed a steady decline in the number of electroplating and metal finishing facilities to which we provide wastewater services. Once dubbed "The Jewelry Capital of the World," Rhode Island manufacturing has watched more and more business slip away. Many of the owners of these once-flourishing shops have lamented that twelve items can be manufactured in China for the same amount that it would cost to clean, plate, finish and package one piece here, in the United States of America. With the closing of these metal finishing and electroplating facilities, the state of Rhode Island has lost thousands of jobs and stands to lose many more, if the closures continue. In addition to unskilled labor, employees of these facilities include executives, salespeople, artisans, designers, skilled craftsmen, electroplaters, and waste treatment system operators. As the plating and metal finishing facilities become more and more scarce, the future of these employees remains uncertain.

In 2002, the NBC began work to organize brainstorming sessions and subsequent workshops with various agencies, institutions and members of industry in an attempt to save the faltering metal finishing industry in Rhode Island. Several meetings were held in 2002 and 2003 in an attempt to determine causes for the decline.

FIGURE 32
Number of Field's Point
Electroplaters/Metal Finishers vs. Year



The NBC continues to work with the metal finishing industry through pollution prevention efforts and assisting companies to participate in the National Strategic Goals Program (NSGP) as a mechanism to become more efficient and cost competitive. As of December 2004 the State of Rhode Island leads the nation in the number of metal finishing companies (20) participating in the NSGP.

Silver & Mercury Loading Reduction Programs

On September 30, 1992 the Rhode Island Department of Environmental Management - Division of Water Resources issued RIPDES Permit Number RI0100315 to the Narragansett Bay Commission for the Field's Point Treatment Facility. This RIPDES permit established for the first time effluent discharge limitations for heavy metals and various other toxics. The monthly average RIPDES discharge limitation established for Total Silver was very stringent, 1.6 micrograms per liter. In order for the NBC to regularly meet this effluent discharge limitation, the agency immediately took aggressive action in the form of regulation and education of users.

The majority of users discharging silver bearing wastestreams into the NBC sewer system are small non-significant commercial and industrial users, while a small portion of the silver loading is generated from residential users conducting home photo darkroom operations. The Pretreatment Section implemented an aggressive regulatory approach to reduce the silver loading from non-significant commercial and industrial users. This regulatory approach included the permitting of many users, including colleges and technical schools which have photo darkrooms, doctor and dentist offices, and other medical facilities which develop x-rays, previously unpermitted printing firms which perform photo, film, or plate processing operations, and any remaining photo or film processing facilities that were unpermitted.

The discharge permits issued to these facilities require regular compliance monitoring of the process discharges and prohibit the discharge of untreated developer or fixative solutions. The installation of pretreatment equipment is usually necessary for a facility to achieve compliance with the existing NBC total silver discharge limitations. Over the years, the NBC Pollution Prevention Program sponsored several educational workshops and seminars regarding silver waste recovery and management. In addition, the NBC has worked closely with the RI Dental Association, the Hospital Association of Rhode Island, and the Rhode Island Silver Coalition to educate their members about common silver concerns.

In 2001, Pretreatment staff began the process of reevaluating the Silver Loading Reduction Program to ensure that all silver dischargers are properly permitted. Telephone books and directories were reviewed and compared to the existing list of NBC permitted users. A listing of users requiring facility inspection and possible permitting was generated.

The NBC is a participant in the Rhode Island Attorney General's Mercury Task Force. The objective of this Task Force is 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 indicate that the majority of mercury loadings observed in the sewer system are the result of mercury/silver dental amalgams. As a result, the dental facility inspections were delayed so that the mercury amalgam issue could be addressed and incorporated into all new wastewater discharge permits issued to dentists.

In January 2004, the NBC completed a Best Management Practice (BMP) document for dentists to ensure that mercury amalgam 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


NARRAGANSETT BAY COMMISSION

ENVIRONMENTAL BEST MANAGEMENT PRACTICES for the Management of Waste Dental Amalgam

As part of the NBC 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 amalgam. All dental facilities are required to implement other programs regarding training of staff and storage and disposal of amalgam waste. During 2004, the NBC Pretreatment Staff initiated the Dental BMP Program and began issuing permits to dental offices that implemented the BMP standards.

A half-day workshop to introduce Dental BMP was held on March 31, 2004 Another half-day workshop focusing on the installation, operation and maintenance of amalgam separators was held on May 12, 2004. This workshop also addressed concerns regarding the BMP and further explained BMP requirements. Both workshops were well attended by representatives of the dental community.


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

In November 2004, the NBC was awarded a Citation by the Governor of Rhode Island for the development and implementation of the BMP. The citation acknowledged the cooperative efforts of the Pollution Prevention, Pretreatment and Public Relations Sections of the NBC along with the Rhode Island Dental Association. The NBC Dental Amalgam BMP Program has been recognized on a national level by the Association of Metropolitan Sewerage Agencies (AMSA), as AMSA has requested that the NBC participate in a three year international mercury loading study of treatment plants that have implemented mercury amalgam discharge control programs.

EMDA has been collecting the influent, effluent, sludge and grit samples monthly at Field's Point by "Clean Sampling" techniques and submitted the samples both to Hampton Roads Sanitation District in Virginia and our laboratory. The comparison of these results will help our laboratory achieve low level mercury "clean analysis" of <1.0 ppt. To date our laboratory's detection limit for mercury is 2.4 ppt.

Septage Permitting Program

During year 2000, it was brought to the NBC Pretreatment Section's attention that the NBC Septage Receiving Facility located in Lincoln, Rhode Island was experiencing operational difficulties. One problem involved the capacity of the facility being exceeded on several occasions causing early shut down of the facility's daily operations.

Another problem was occasional sewer blockages occurring downstream from the station. In addition, the Pretreatment Section received reports of instances of septage hauler non-compliance with NBC Rules and Regulations and NBC septage disposal permit requirements. Several examples of such reports described manifests being falsified, truck capacities differing from that specified by permit, trucks hauling grease and/or solids laden wastewater to the facility, and septage being brought to the facility from outside the boundaries of the state of Rhode Island, contributing to facility capacity exceedances. In order to ensure the continued smooth operation of the facility, which was undergoing construction upgrades, a task force was created. The task force consisted of staff members from various NBC sections. The task force worked on issues involving the automation of the check-in/discharge procedure at the facility, septage sampling, user billing protocol, verification of manifest information, accurate hauler truck capacity determination, and development of methods to ensure that residential quality septage only was discharged to the facility.

In response to the reports of haulers violating permit requirements, the Pretreatment Section initiated enhanced regulation of the septage haulers. Inspectors were routinely stationed at the facility to verify that trucks were permitted and complying with NBC regulations and permit requirements.

Measurements of tank dimensions were taken in order to calculate truck volumes as a means to verify permit application information. Septage samples, which are routinely collected for pH and metals analysis, were taken for oil and grease analysis to ensure that only septage of residential quality was being brought to the station. In addition, manifests are reviewed in detail by office staff, and hauler clients are routinely contacted to verify authenticity of the manifests.

Pretreatment personnel began inspecting and permitting commercial facilities discharging to septic systems whose septage was being brought to the receiving facility. The purpose of this protocol is to ensure that sanitary waste only is being discharged to the septic system and that commercial waste, such as grease from kitchen operations is not discharged.

The Septage facility modifications went on-line in the Spring of 2001 and included new grit removal and odor control equipment. Pretreatment staff worked diligently in 2001 with other NBC departments as indicated above to ensure all procedures, protocols and equipment were in place by the date the new septage equipment became operational.

During 2001, Pretreatment Staff installed computer chips on every septage truck. These computer chips identify the vehicle, all pertinent hauler information, and automatically debit the haulers customer service billing account when touched to a chip reading wand. Throughout 2004, each Pretreatment Technician spent one day each month at the septage facility inspecting vehicles and checking hauler's paperwork and manifests. In addition, while at the septage facility the Pretreatment Technicians conducted educational training sessions regarding discharge procedures and paperwork completion.

New permits were issued in early 2002 to all septage haulers to incorporate exact truck capacity volumes and more concise wording prohibiting the discharge of grease and other prohibited materials. In addition, staff stepped up the manifest verification process beginning in August 2002. During 2004, 369 items listed on manifest forms were checked from August to the end of the year. This is a 7.3% decrease from the 398 items that were reviewed in 2003. However, it is important to note that the number of septage loads discharged in 2004 also decreased. Pretreatment Staff shall continue to inspect and permit commercial establishments that dispose of their septage at NBC facilities to ensure the septage is of residential quality and will not adversely affect NBC facilities. Inspectors shall continue to maintain a presence at the facility to discourage attempts of illegal prohibited discharges.

Grease Discharge Control Program

In 1990, the NBC instituted a Grease Discharge 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 Discharge Control Program has essentially resolved these problems.

The NBC Grease Discharge Control Program is a permitting program which requires commercial users to install one of two acceptable types of grease removal units (GRU), the automatic electrical type GRU or the large in-ground passive type GRU. The permit requires the user to implement a series of Best Management Practices (BMP) which are incorporated into the permit, to ensure the proper operation of the GRU. 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 NBC is currently in the process of developing a Residential Grease Control Program to control the discharge of grease from residential sources to the sewer. A brochure outlining the impacts of grease on the sewer system and ways to eliminate grease from the wastestream is being prepared to be mailed to all users of the NBC sewer system.

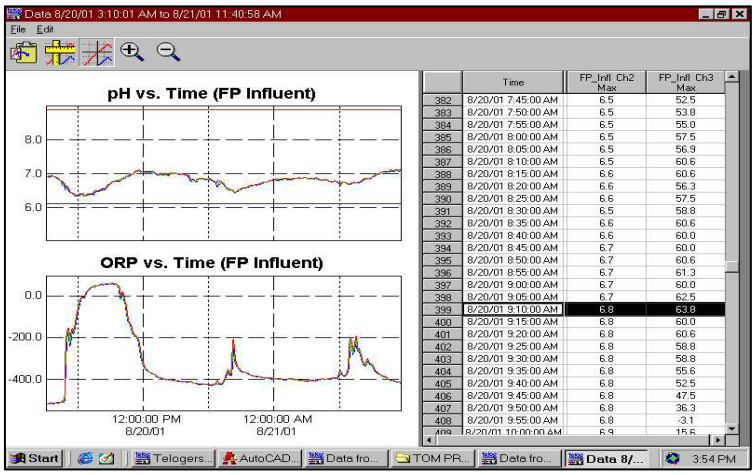
Automotive Service Industry Permitting Program

In 1993, the NBC initiated the Automotive Service Industry Permitting Program to control and reduce the de minimis, but often highly contaminated discharges from facilities which perform motor vehicle maintenance and/or washing and repair operations, including radiator, engine, and transmission rebuilding. Firms are educated about alternatives to sewer discharge in order to avoid the need for a discharge permit. Many of these firms opt to seal sewer connections and implement Best Management Practices (BMP) regarding their process or cleaning operations. Other users obtain permits which require routine wastewater monitoring and full compliance with effluent limitations, while some users installed a zero discharge recycle pretreatment system as an alternative to meeting stringent discharge limits.

Treatment Plant Influent Computer Monitoring Program

The Providence area was once known as the "jewelry capital of the world." Although the number of metal finishers has decreased in recent years, numerous metal finishing companies still operate in the NBC service area and the potential for wastewater pollution from toxic chemicals is great if on-site pretreatment is not performed properly. Metal finishing companies have the potential to discharge high and low pH wastewater in conjunction with heavy metals; likewise, wastewater with a high or low oxidation / reduction potential (ORP) can be associated with a discharge of cyanide, hexavalent chromium or excessive chlorine.

Several years ago, using Environmental Enforcement Funds obtained from fines levied on polluters, the Pretreatment Section group purchased environmental probes and data recording equipment manufactured by Telog Instruments, Inc. to monitor the wastewater influent at the treatment plants. The monitoring stations continuously record and transmit pH and oxidation / reduction potential (ORP) data to the Pretreatment office each night via modem and telephone line. Since pH and ORP data may indicate the presence of a more serious pollutant, influent data is reviewed on a daily basis. A monthly analysis of the data is performed to help determine trends associated with plant operations. Data from the monitoring stations can also be viewed in real time from Pretreatment office computers. Viewing data in real time is useful in the event that an unusual influent impacts the treatment plant. Staff located in the office can immediately observe the influent status and determine the course of action to take. Computerized monitoring of the POTW influents will continue in 2005.



Screenshot of WWTF influent monitoring software

The Pretreatment Section is in the process of testing two portable monitoring stations similar to that used at the wastewater treatment plants. The devices will interface with automatic sampling equipment, will be temporarily installed in sewers upstream and downstream of industrial companies in order to continuously monitor and record the pH of a firm's wastewater discharge. If a company discharges wastewater which exceeds pH set points programmed into the recorder. The downstream automatic sampler would draw samples of the wastewater when a particular pH alarm set point is reached. The upstream automatic sampler will be contacted and will begin to collect samples. NBC personnel would be notified via cellular phone to collect, preserve, and analyze the sample, and to perform an inspection of the company under investigation. The analysis could be used to determine if heavy metals, cyanide, or other pollutants were discharged and could be used as evidence if the NBC were to take legal action against the company. During 2004, bench testing the remote manhole monitoring equipment was completed. Field testing will begin in early 2005. The equipment should be put in use by the middle of 2005.

The remote monitoring program will be expanded in 2005 to include additional parameters at pump stations throughout the two NBC districts. Pretreatment and Engineering staff will research LEL probes to be installed at the pump stations and configure existing telemetry equipment to notify the Pretreatment Office if programmed set points are exceeded. This equipment will assist Pretreatment with tracking releases of flammable materials such as solvents and fuels and allow the proper response to prevent such materials from impacting the treatment facilities.

Nine Minimum Controls Compliance Program

Throughout 2004 the NBC Pretreatment, Pollution Prevention and EMDA Sections continued to ensure compliance with the Pretreatment, Pollution Prevention and Monitoring elements of the Nine Minimum Controls detailed in the RIPDES permits. The Pretreatment and Pollution Prevention Sections continued to work with industry. 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 the Pollution Prevention Section for help to come back into compliance. These programs ensure that industrial wastewater is getting to the POTWs properly. This is supported by the sampling conducted by EMDA. EMDA staff collect numerous samples to ensure compliance with the Nine Minimal Controls. In addition to the industrial and manhole sampling discussed in CHAPTER IV, EMDA collects weekly samples for fecals from the Woonasquatucket, Providence, West, Blackstone, 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 if dry weather discharges. EMDA 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 Pollution Prevention Programs. This data has been used to remove the Providence and Blackstone Rivers from the RIDEM 303(d) list of impaired water bodies for dissolved metals impairment.

In December 2004, EMDA staff collected samples at CSOs located in the Field's Point and Bucklin Point districts to measure contaminant levels during wet weather overflow events at the first flush, the height of the storm and near the termination of the event, CSO sites downstream of industrial areas were selected for this sampling. Grab samples were collected for toxics, including total metals, TSS, BOD, VOCs, Oil and Grease, TPH and cyanide. The results were compared to the NBC local discharge limitations for the district. All parameters met the local limits.

Fuel Oil Discharge Control Program

Since acquiring the Field's Point Treatment Facility in 1981, the NBC has on numerous occasions experienced discharges of fuel oil into the sewer system and treatment facilities. Very often the sources of these discharges have been tracked back to boiler room or power plant operations. Often, the operators of these facilities were unaware that fuel oil was being discharged to the sewer system until such time that NBC Pretreatment investigators notified them that a problem existed. In an attempt to reduce the potential for fuel spills from these facilities, the NBC instituted a fuel oil discharge control program during 1991.

This program consisted of educating users about Best Management Practices (BMP) that could be implemented to control fuel releases, and inspecting and permitting the sixty plus boiler plants. The permits required firms to develop Spill Control Plans and install spill control facilities. In addition to implementing spill control measures within the power plant or boiler room, the NBC may have also imposed site specific requirements on sewer users. These requirements may have included the sealing of open drains located in underground oil tank storage vaults to eliminate the potential for a spill, or rerouting of oil tank vent stacks to the general area of the tank fill so that a tank overfill situation can be quickly detected and controlled.

One BMP written into the permit requires the boiler operator on each shift to check the condensate discharge from the oil pre-heater for oil contamination. This allows the boiler operator to quickly become aware of a failure of the oil pre-heater heat exchanger, greatly minimizing oil spills. The Fuel Oil Discharge Control Program has been quite effective at controlling the release of fuel oils into the sewer system. This is evidenced by the fact that since 1992, there were no major fuel spills into the Field's Point sewer system or treatment facility. This program was expanded to the Bucklin Point drainage district during the fall of 1994 and similar results have been noted in this district.

Medical Waste Control Program

The NBC Pretreatment Program was in the forefront in the State of Rhode Island with regard to the permitting of hospitals, funeral homes, and bio-medical facilities to ensure the control of discharges of medical waste, infectious agents, and toxics.

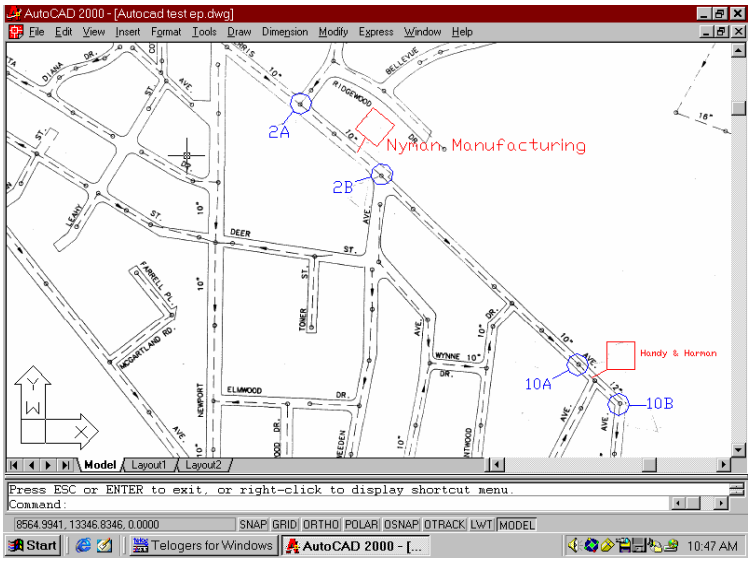
In 1991, the NBC sent letters to all funeral homes located within the NBC Field's Point District notifying these facilities of the need to obtain a wastewater discharge permit for their embalming process discharges. In addition, the hospitals located in the Field's Point district were inspected and required to apply for a wastewater discharge permit. Permits were issued to these facilities during 1992. The wastewater discharge permits issued to funeral homes require disinfection of all blood and body fluid discharges generated from the embalming process.

Most funeral homes have implemented Best Management Practices (BMP) to meet permit requirements and are able to comply with the treatment regulations quite easily and inexpensively by slowly discharging a 1% solution of sodium hypochlorite from an intravenous bottle during the embalming process. The permits issued to hospitals require disinfection of all blood and body fluid discharges and require routine wastewater monitoring of all process discharges including those from x-ray processors, scrubbers, chillers, kitchens, laundries, and boiler facilities.

Computerization of Sewerage System Maps Project

The NBC maintains a set of 33 different maps that identify the location of each significant industrial user and the manholes that are used for surveillance monitoring of each SIU. Paper copies of these maps are stored in each Pretreatment and EMDA vehicle for reference during special investigations and for manhole monitoring activities. The status of the Significant Industrial Users is always changing, since new facilities open and existing facilities close or relocate. This creates a challenge with the paper map system because each time a new SIU begins operating, the master map must be updated, copied, and distributed to each of the 15 locations where copies of the maps are stored. This is not only time consuming but also expensive. In order to simplify the process and make the maps more useful and accessible, the NBC has initiated an ambitious goal of converting all existing maps to a digital format in an AutoCAD platform.

During 2003, the NBC began to identify the locations of each permitted user and the location of the keymanholes associated with SUI's and Zero Discharge companies. This process was completed in early 2004 for existing permitted users. As new companies are permitted the information is entered on the maps.



Portion of East Providence map showing the location of two SIUs and their surveillance monitoring manholes

Information regarding each user's location is placed on a layer of the AutoCAD drawing associated with the user's category. By storing information in different layers the NBC will be able to filter out information that does not pertain to the current needs of the investigator. Investigating a color impact will be more effective with the new computerized maps since the user will be able to show only those users who have the potential to discharge colored wastewater. During 2005, EMDA and Pretreatment staff will work together to locate sanitary manholes on these maps.

These maps are stored on the NBC computer network and are widely available to NBC staff at their workstations. In addition, the NBC has purchased two laptop computers that have access to the maps and can be used during special investigations. This tool will be more powerful than the paper maps and can be updated easily so they contain the most current information.

Evaluation of PDAs as an Inspection Tool

Currently the Pretreatment Section is investigating the use of hand held PDA's to improve inspection efficiency and reduce paperwork processing time. The PDA is a small, handheld computer to which information is recorded and queried by writing on the screen with a pen-like stylus. The PDA used by Pretreatment staff is the Compaq iPAQ Pocket PC. Software on the Pocket PC is compatible with Microsoft Office, which is already in use by the Pretreatment staff.

During the ongoing trial period, staff customized inspection forms for the iPAQ pocket PC to determine if it can be used to increase productivity while taking notes during inspections and investigations. The trial demonstrated that a PDA may be used to reduce paperwork time since information is recorded only once. This was accomplished by using the iPAQ in conjunction with the desktop PC macro, template, and autotext word processing functions. The iPAQ was also found to be useful for storing large documents. Previously, if an engineer wanted to access informational web pages, permits, Code of Federal Regulations, or the NBC Rules and Regulations they would need to return to the office. Now it is possible to download and maintain copies of web pages, Wastewater Discharge Permits, Rules and Regulations, and Federal Regulations on a memory storage card. Additionally, a spreadsheet of NBC sewer users allows inspectors to easily differentiate permitted users from new or unregulated companies while out on the road. Other useful applications such as a conversion calculator, voice recorder, and image viewer were found to be useful for recording information, educating users, and executing calculations quickly and accurately while on an inspection.

PDAs have the potential to save time and help engineers and technicians work more efficiently and effectively. Pretreatment staff will continue to evaluate the usefulness of PDAs for conducting inspections and for other purposes throughout 2005.

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 Commission 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, the Chairman appointed the Director of NBC Policy, Planning & Regulation Division to spearhead volunteer clean-up efforts.

In late 2002 the NBC requested to the Governor and General Assembly that Year 2003 be recognized as the "Year of the Woonasquatucket River" and that June, 2003 be declared as "Rivers Month". Both requests have been granted and the NBC took an aggressive role in 2003 to ensure many activities take place aimed to bring about public awareness of the areas polluted rivers.

During 2004, two clean up events were held. The first river clean up was held on April 22, 2004 in honor of Earth Day. The clean up area spanned from Water Place Park to Olneyville. The second clean up event was held on September 3, 2004 NBC Staff supervised 150 Providence College students. The area of this event also spanned from Water Place Park to Olneyville. Both clean up events involved NBC volunteer staff as well as volunteers from public and private agencies.

Each of the above clean-up events was a huge success. In all, tons of debris was removed from the river, including such items as tires, shopping carts, auto parts, metal bars and rods, scrap metal parts, bottles, cans, trash, a stove, a refrigerator, televisions, and toys. As a result of the hundreds of tires removed from the river, the NBC plans to pursue legislation to discourage tire dumping in Rhode Island's rivers. In addition, the NBC plans to work closely with DEM and City officials to ensure enforcement of existing river dumping and solid waste disposal regulations.

The NBC shall also host and/or sponsor clean up events during 2005 to further enhance the beauty and public safety of the Woonasquatucket River. During 2005 the NBC plans to work with private businesses to encourage them to adopt a location along the river to maintain and increase the awareness of this great asset the river is. In addition, the NBC partnered with the City of Providence and the Woonasquatucket Watershed Council to apply for a Department of Transportation Enhancement Grant. The grant application details a scope of work to hire a landscape architect and biologist to develop a plan to enhance the banks of the Woonasquatucket River from Park Street to Eagle Square by removing invasive species, pruning remaining trees and planting low growing plants and ground cover. The purpose of the project is to open up the banks of the river so that the public can enjoy this beautiful natural resource. Another component of the plan is to implement the corporate sponsorship program to "adopt-a-spot" along the river, providing continuous maintenance of the adopted area.

Data Analysis and Special Studies

Beginning in January of 2001, EMDA has brought together key staff from multiple departments and sections, on a monthly basis, to discuss the status and trends of wastewater treatment at NBC's two treatment facilities. Representatives from the Pretreatment Section, Operations, Engineering, EMDA and Laboratory Sections meet to discuss ways to improve the performance at the NBC's treatment facilities.

The meetings begin with a presentation of figures developed by EMDA's scientists and managers, summarizing recent plant performance. The agenda is focused on current process data and the process control strategies in use. Problem areas are identified and corrective action or additional research is promptly initiated. Permit violations, if any, and plant performance are discussed in detail and solutions to problems are conceptualized. Pretreatment staff routinely contributes information that pertains to industrial discharges as it pertains to the treatment facilities and the collection system. Inter-facility exchange of information between managers of the two wastewater treatment plants has proven particularly valuable in assessing common problems and providing new ideas for investigation or solution.

As new regulations are set, the demands on process control become greater. Better communication between operators, engineers, laboratory analysts and scientists will be needed to design and improve sampling studies, improve the quality of analytical measurements, install and maintain continuous monitoring instruments, and discuss the meaning of the data generated in order to make the correct process control decisions. Understanding the need for production of high quality analytical data, the laboratory has implemented stricter guidelines in its quality assurance program, by self auditing of all parameters and the performance of each staff member. These audits assure that the laboratory meets the Department of Health, DEM, and EPA licensing requirements by properly documenting approved methods and techniques used for waste water analyses.

Providence and Seekonk Rivers Background Study

In 2002, EMDA completed the sampling portion of the project titled *Quantification of Trace Metals and Nutrients in Conjunction with Water Circulation Patterns Within the Providence and Seekonk Rivers in Relation to Discharges from the Narragansett Bay Commission's Wastewater Treatment Facilities,* herein after referred to as the Providence and Seekonk River Background Study. Since the NBC took over operations of the Field's Point and Bucklin Point facilities, the level of metals discharged to upper Narragansett Bay has been reduced by approximately 98%. This study represents the NBC's continued commitment to developing innovative ways to quantify the effects of its discharge on Narragansett Bay.

In September 2004, the NBC submitted a report in compliance with part 14(a) of Consent Decree Number RIA-330 issued by RIDEM. The Consent Decree required the NBC to report the following information:

- A summary of metals translator sampling;
- Additional data collected since the submission of the Interim Metals Compliance Report, including potable water supply sampling, river monitoring and domestic wastewater characterization sampling;
- A calculation of revised RIPDES permit limits using the recommended metals translator and background receiving water concentrations;
- A new local limits evaluation for each wastewater treatment facility using the domestic wastewater characterization and the revised RIPDES limits;

- An evaluation of the NBC's ability to comply with the revised RIPDES limits and a determination on the need to calculate site specific criteria. If site specific criteria development is deemed necessary, the NBC is required to submit a Scope of Work with the Final Metals Compliance Evaluation Report.

As discussed in CHAPTER I, revised local limits were presented to RIDEM based on new background data as well as current plant efficiency calculations. The background data was acquired by EMDA during the sampling portion of the project. The metals data from this background study was used to develop site specific metal translator values for both the Field's Point and Bucklin Point facilities as well as evaluate the current state of both rivers.

This background study was one of the most comprehensive studies of the Providence and Seekonk Rivers to date, quantifying potential pollutants and simultaneously characterizing movement patterns of river water and effluent discharged from NBC facilities. The Providence and Seekonk River Background Study was designed in conjunction with researchers from the University of Rhode Island, Graduate School of Oceanography (URI) and Microinorganics, Inc. The study was intended to investigate and improve the understanding of the seasonally dynamic relationship between water circulation patterns and concentration of nutrients and trace metals. To this end, major project objectives centered on:

- How the effluent plume moves in the Rivers;
- How much dilution occurs;
- Where dilution occurs;
- The fate of effluent components.

EMDA Staff Deploy a Sonde

To investigate study questions, approximately 25 stations on four major transects lines were sampled in the Providence River; likewise, and 22 stations were sampled on five transects in the Seekonk River. Samples were collected at these stations over full tidal cycles during the summer, fall, and spring and over an outgoing tide in the winter. A total of 229 samples were collected over the four surveys: 118 from the Providence River and 111 from the Seekonk River. Metals samples were collected following protocol set forth by the EPA clean sampling guidelines (EPA Method 1669) and analyzed by an EPA certified laboratory for both dissolved and total metals concentrations. This method limits the amount of environmental contamination of a sample, providing a more representative sample. Nutrient samples were also collected at each sampling location and were processed according to the standard operating procedures of the Marine Environmental Research Lab at URI. During the field surveys, EMDA staff collected physical data using an YSI 6600 sonde and YSI 650 data logger. Over the course of the

study, more than 10,000 physical data points, including dissolved oxygen, temperature, salinity, depth, and chlorophyll concentrations, were collected. These data have been used to augment the analysis of metals and nutrient results, as well as to assist in determining the dilution of effluent in the receiving waters.

Samples for metals from the Providence and Seekonk River Background Study were analyzed and compared to water quality criteria. These criteria are concentrations established by the EPA, and adopted by the state of Rhode Island, as the benchmark minimum concentrations of pollutants in salt water that will not adversely affect aquatic life. Water quality criteria are expressed in dissolved concentrations, as the dissolved fraction of most metals is considered the most bioavailable, and thus poses potential harm to an ecosystem. Concentrations consistently above water quality criteria will classify a waterbody as impaired for a particular category of pollutants; classification as such is indicated by a state's 303(d) list.

Metals analyses were performed on samples for copper, nickel, lead, silver, and cadmium. Overall results from the Providence and Seekonk River Background Study show that 118 out of 118 samples taken from the Providence River meet established water quality criteria for trace metals. Likewise, data show that 103 out of 113 samples taken from the Seekonk River meet water quality limits for trace metals concentrations. Samples exceeding the limits for metals concentrations were for copper and/or nickel and were collected at or immediately near the Bucklin Point outfall and within the established mixing zones. Copper limits were generally exceeded by approximately 0.08 µg/L and nickel limits were generally exceeded by approximately 4.5 µg/L. Prior to this study, no surveys of this type had been conducted in over fifteen years, with previous studies containing more limited spatial range. Data from previous studies had been used to list the Providence and Seekonk Rivers on the RIDEM 303(d) list of impaired waterbodies. Results of the current study, support the de-lisiting of these two waterbodies from the 303(d) list for metals, have been forwarded to RIDEM for review, and NBC has been recently informed that these rivers have been removed from the 303(d) list for impairment from metals. The removal of these water bodies front the 303(d) list is a testament to NBC's continued commitment to improving the health of Narragansett Bay and to the success of its Pretreatment and Pollution Prevention programs at controlling toxic discharges.

Nutrient analysis was also performed on samples for silica, phosphorous, ammonia, nitrite, nitrate, nitrite+nitrate, total suspended solids (TSS), particulate carbon (PC), particulate nitrogen (PN), dissolved organic carbon (DOC), total nitrogen (TN) and total phosphorous (TP). The monthly averages of the nutrients showed at least a 50% reduction in silica, phosphorous, ammonia, nitrite, nitrite+nitrate, TSS, PC, PN, TN and TP from the wastewater treatment facility to the outfall station in the Providence River. In the Seekonk River, there was at least a 50% reduction in silica, ammonia, nitrite, PC, DOC, TN and TP from the facility to the outfall station. These reductions indicate a significant amount of mixing in the rivers. It is important to note that there was not a significant difference in the concentrations between the outfall station and the average value for the transect closest to the treatment facility in the Providence River. This indicates that the river is well mixed and that the concentrations are being highly diluted. Analysis also shows that there is not substantial difference between monthly concentrations at each transect in both the Providence and Seekonk Rivers, supporting the concept of significant mixing. It was also shown that high TN corresponds with low

salinity, meaning that closest to the treatment plant where salinity is quite low, TN is highest but quickly decreases within a short distance from the outfall.

The findings of this study have been used to support proposed revisions to the RIPDES discharge permits for both NBC treatment facilities. Revisions include utilizing site-specific, rather than EPA default values, for devising metals translators for the Providence and Seekonk Rivers. A metal translator is used to convert the total loading values presented in a NPDES permit into a dissolved concentration in order to assess compliance with state and federal water quality criteria. The high quality measurements obtained during this project allowed the NBC to accurately assess the metals loadings to the rivers as well as analyze the overall partitioning of the metals within the rivers.

Findings of this study illustrate that these default values are significantly different from site-specific numbers. Reevaluation of the default values used to calculate and establish discharge limits for the wastewater treatment facilities have the potential to lead to consistently attainable compliance for historically problematic pollutants. In particular, the loading of copper to both facilities is mostly from non-industrial sources, and thus not controllable by enforcement of local limits. By utilizing site-specific values obtained using clean sampling methods rather than outdated default values, permit discharge limits can be changed while still maintaining the ecological integrity of upper Narragansett Bay by meeting water quality standards.

Data currently used for determination of background levels of pollutants in the Providence and Seekonk Rivers were generated over fifteen years ago. As recently as six years ago, changes and improvements were made to trace metal sampling and analysis. The newer techniques used in this study have considerably reduced background contamination, allowing for a more robust and descriptive set of results. The EPA has stated that background contamination has resulted in erroneously high trace metals concentrations in samples collected prior to 1996. Permit limits for the NBC treatment facilities use values derived from samples taken well before the advent of clean sampling techniques, and likely include these inaccurate figures. Data currently used to calculate permit limits also predates the existence of NBC's Pretreatment and Pollution Prevention programs, all of which have significantly reduced the levels of metals in the Field's Point and Bucklin Point wastewater treatment facility effluent. These facts, in combination with the extensive study carried out by the NBC and its partners solidly support the newly revised discharge limits.

In investigating metal and nutrient loadings on local estuaries, the laboratory has continued to optimize procedures and techniques that will allow for the lower detection parameters of interest. Achieving lower detection limits allows researchers to understand the true levels of metals and nutrient that are present. Traditionally, fresh water and waste water have been the major area of focus in environmental chemistry. Today, salt water analysis is an area of focus. The NBC laboratory has been developing techniques and methods that will detect for low levels of metals and nutrients in salt water matrixes. NBC will have a better understanding of the impact of metals and nutrients in salt water with data generated from the new techniques. This information will help in the development of polices for companies that discharge metal and nutrient wastes to NBC.

Results from the Providence and Seekonk River background study have been applied in a number of ways, all of which have served to increase the NBC's understanding of these dynamic river systems and the impact of the effluent discharged from the two NBC facilities. Identifying the depth, speed, and direction of currents and quantifying trace metals concentrations is providing a better understanding of the transport, distribution, and extent of effluent impact within the sample regions. Results of this study have served as the basis for present and future regulation, as well as providing a baseline from which to recognize future changes and improvements to water quality. Findings will be used as a starting point from which to design NBC's future long-term monitoring programs on the Providence and Seekonk Rivers.

EMPACT Program - Water Quality for Narragansett Bay at Buoy and Dock Sites

In 2004, the EMDA continued work begun in 2000 on the formerly EPA-funded Environmental Monitoring for Public Access and Community Tracking (EMPACT) Project. The monitoring stations established under the EMPACT project extend water quality monitoring of Narragansett Bay into the upper, urbanized reaches of the estuary. These stations have been established in proximity to the Field's Point and Bucklin Point wastewater treatment plant outfalls. The Bullock's Reach buoy station is located between Gaspee Point and Conimicut Point in the Providence River and the Phillipsdale Landing station is a dock site located on the Seekonk River in East Providence. These monitoring stations directly benefit Narragansett Bay research by allowing for continuous, real-time water quality monitoring in the Providence and Seekonk Rivers. Through radio telemetry and phone connections, Bay researchers can consistently track changes in the Rivers from a remote location, thus saving valuable resources and decreasing the response time to anomalous conditions. This data also provides a baseline of water quality across seasons, as well as prior to major waterway changes such as dredging.

State-of-the-art technology at these sites collects measurements for depth, temperature, salinity, pH, dissolved oxygen, turbidity (at the bottom), and fluorescence, a proxy for chlorophyll and phytoplankton activity (at the surface). Data is collected by the sondes at the Bullock's Reach buoy every fifteen minutes and is transmitted via radio signal to a base station at Field's Point every hour; likewise, data from the Phillipsdale Landing station are collected every ten minutes and transmitted every hour by phone connection. During 2001 and 2002, EMDA and URI worked together to service and maintain the Bullock's Reach buoy. In 2003, the buoy maintenance was taken over by EMDA, which has continued to maintain the buoy as well as the Phillipsdale Landing dock site in 2004 with many QA/QC improvements. The EMDA staff is also continually making improvements to equipment and infrastructure to ensure the reliability of data collected.

During 2004 EMDA staff attended meetings with the RIDEM, URI and Narragansett Bay National Estuarine Research Reserve (NBNERR) to coordinate maintenance and data handling efforts with each of these groups who are also maintaining buoy stations and dock sites with the same water quality instruments (YSI 6-series sondes) in other parts of the Bay. Through these meetings, a standard operating procedure for calibration and maintenance of the sondes as well as data handling will be developed so that each organization will be following the same protocols and data can be compared and used together to create a better picture of water quality throughout the Bay.

Towards the end of the 2004 season the Bullock's Reach buoy was lost. Pieces found along the shoreline south of the site 24 feet below the surface and in the mud at the site seemed to indicate that lines and chains were sheared by a ship's propeller. Funding for a new buoy system has been requested as part of the 2005 EMDA budget.

The data from the Bullock's Reach buoy site has become an important component of the RIDEM's monitoring of water quality in the upper reaches of the Bay. As of the end of 2003, uncorrected raw data from the water quality stations also became available for use by the general public via a link on the NBC website, **www.narrabay.com/empact.**

Woonasquatucket River Education Program

In June, 2002 EMDA was awarded a grant by the Partnership for Narragansett Bay to design and implement an education project. The approved pilot program, entitled '*What's In Your River: A Woonasquatucket River Education Pilot Project*' educated students in grades 3-5 on the importance of their local watershed.

The pilot project was designed in conjunction with the Woonasquatucket River Watershed Council (WRWC), and gave students within communities along the Woonasquatucket River an interactive learning experience built around a local river system, extending to the diverse ecosystems of the entire watershed. The project involved six schools from five communities along the Woonasquatucket River: Providence, North Providence, Johnston, Glocester, and Smithfield. Participating classes ranged from grades 3-5, with approximately 200 students involved. The project lasted for one full school year (2002-2003).

Additionally, the pilot program provided an internship to one area student enrolled in a college teaching program. An education project intern was hired in 2002, and worked with EMDA staff to design and implement the final stages of the project. In addition to the internship offered through the grant, the NBC funded a summer intern in 2002 to

assist in compiling materials for the teacher handbook. EMDA staff began work upon notification of the grant award. Preparation continued throughout the summer months to have the project in place by the opening of the school year. EMDA staff created a Project Handbook containing information on the NBC and the WRWC, the Woonasquatucket River watershed, history and culture of the area, information on collecting and interpreting data, and supplemental activities for students. Concurrently, monitoring kits and supply trunks were created for distribution to participating classrooms, and individual monitoring sites were selected for each school to utilize over the course of the project. Monitoring kits include tests for dissolved oxygen, nitrates, phosphates, turbidity, pH, BOD, temperature, and macroinvertebrate observation and identification. Supply trunks include all equipment necessary for field visits, including nitrile gloves, anti-microbial hand wipes, and waste containers.

EMDA's Jan Szelag leads students in water quality testing on the shore of Georgiaville Beach

The project kicked off on October 18, 2002 – National Water Quality Monitoring Day. Students visited Waterplace Park in downtown Providence for an introduction to the project and heard presentations from representatives of the USEPA, Northern Rhode Island Conservation District (NRICD), and the Providence Office of Cultural Affairs. Additionally, Margherita Pryor of EPA-New England presented each school with a certificate of participation in National Water Quality Monitoring Day by way of the Education Project.

Following the activities at Waterplace Park, students and teachers visited various sites around the Woonasquatucket watershed for an introduction to the monitoring methods and equipment to be used for the duration of the project. Students came together again at Georgiaville Beach in Smithfield, and finished out the day with additional sampling activities on the shores of Georgiaville Pond. Data collected over the course of the day has been posted on the Year of Clean Water website for viewing and use by participating schools.

At the end of 2002, EMDA continued to work on the Education Project by conducting in-class visits for each participating school to give more in-depth instruction on the monitoring kit to be used, as well as interpreting the results of testing. The project culminated in May with a Children's Environmental Conference hosted by the NBC. All schools were provided an opportunity to come together to share their results and discoveries about the health of the Woonasquatucket River and its ecosystems.

In the fall of 2003, the program expanded to include over 800 students. The 2003 - 2004 school year program began in October with students meeting at various locations along the banks of the Woonasquatucket and Seekonk Rivers. The students conducted experiments for pH, nutrient, and temperature on sample collected from the rivers.

In 2004, the *What's In Your River* environmental education program continued to flourish. Four schools signed up to participate and in early fall each visited their local watershed with staff from the NBC for a water quality monitoring event. The program will continue through the end of the 2005 school year, consisting of two additional water quality monitoring events as well as an environmental symposium where students and teachers from each participating school will gather to present data findings and participate in fun educational activities. A new component was added to the program in 2004, a contest which asks each school to come up with public service announcements supporting clean water in the state of Rhode Island. Three winning announcements will be chosen and will be aired on the local Radio Disney station. The entire program including buses, supplies, staff and all educational materials is being funded by the NBC.

Groundwater Monitoring at the Bucklin Point WWTF

In early 1996, the Narragansett Bay Commission ceased operations at the North Landfill at the Bucklin Point Wastewater Treatment Plant. A landfill closure plan was developed which included an on-going groundwater monitoring program. Subsequently, a requirement to monitor methane gas was added to the monitoring program. Currently there are seventeen wells, and each well is sampled quarterly for the following parameters:

- Arsenic
- Barium
- Cadmium
- Chromium
- Lead
- Mercury
- Selenium
- Ammonia-N
- Nitrate-N
- Tetrachloroethylene
- Toluene
- Trichloroethylene
- Methane
- Silver

All samples are submitted to the NBC laboratory for analysis. The sampling date is coordinated with the lab due to the relatively short holding times of some of the samples. During 2004, monitoring was conducted during the first two quarters. In July, a formal request to discontinue further monitoring was submitted to the DEM. The request was based upon the fact that analytical data, from each well over a period of eight years, indicated pollutant concentrations were insignificant. In December 2004, DEM suspended further monitoring of the well indefinitely.

Corporate Office Building Groundwater Monitoring

EMDA staff has been conducting sampling of groundwater at the NBC Corporate Office Building mandated in a Closure Plan associated with the site prior to NBC's occupancy. The plan was developed upon soil contamination being discovered prior to construction activities associated with the new NBC Corporate Offices. EMDA's review of the testing results has led to NBC's request to discontinue further monitoring at the site. The request is under final review by RIDEM. The request is based upon the fact that action has been taken to prevent migration of soil contaminants to groundwater, and several

years of semi-annual monitoring have successfully demonstrated that migration has not occurred.

Pilot Study for Biological Nutrient Reduction at Field's Point WWTF

EMDA and NBC Laboratory staff supported an NBC Engineering initiative to pilot test a new method of Biological Nutrient Reduction (BNR) at Field's Point. The general objectives of the pilot study were to determine, under seasonal conditions, the optimal biological treatment process design configuration to achieve maximum total nitrogen removal. Secondly, to determine the optimal ammonia removal rates to define design parameters for the full-scale design. The pilot test also attempted to maximize denitrification rates in each anoxic zone and to determine optimal dosing of external carbon source, if required. Lastly the pilot test investigated the required operational conditions such as mixed liquor suspended solids concentrations, sludge and hydraulic retention times of the oxic and anoxic zones to achieve a high degree of nitrification/denitrification.

At Field's Point, a Hydroxyl four-stage Barenpho process configuration was selected to work toward low concentrations of total nitrogen in the effluent. This process includes two anoxic zones, one upstream and one downstream of the aerobic basins. Nitrified effluent from the aerobic basin is returned to the upstream anoxic basin where influent organics provide the carbon source for biological denitrification. The effluent nitrate is further reduced in the second anoxic reactor downstream of the aerobic basin and can be implemented with or without external carbon addition. Finally a re-aeration stage is included to drive off nitrogen gas and polish residual BOD before entering the final clarifier.

EMDA staff made multiple grab and composite sample collections on daily and weekly schedules at all points of treatment and for all needed parameters to assess and evaluate the process. NBC engineers and EMDA scientists are reviewing the data in order to determine if this process meets the needs of our facility.

Floatable Control on the Woonasquatucket and Providence Rivers

Throughout the summer of 2004 the EMDA Section designed and implemented a floatable pollution control study. The study was designed so the NBC can better understand and distinguish the level of floatable pollution input from the NBC's combined sewer overflows (CSOs) and other non-CSO inputs of floatable pollution into its receiving waters. The study resulted in the collection, sorting, and removal of floatable debris from shore and boat-based surveys in the Woonasquatucket and Providence Rivers. The study determined that most CSO-loaded debris is non-floatable material. Floatable pollution entered the rivers from a variety of sources including wind-blown litter. Floatable pollution is usually concentrated in areas outside the main river channel and flow, as found in the area between the hurricane barrier and the Point Street Bridge. EMDA will continue floatables work in 2005 on these river reaches and work to determine the most cost effective solution to eliminate floatable debris from its facilities.

VIII. NBC Program Goals

Status of 2004 Goals

The 2003 Pretreatment Program Annual Report was submitted to the Rhode Island Department of Environment Management (RIDEM) on March 15, 2004 and defined the goals established for 2004 for the NBC toxic reduction and control programs. These goals are often above and beyond those Pretreatment Program requirements mandated by the RIDEM and the Environmental Protection Agency (EPA). This chapter outlines the progress made during 2004 toward meeting these goals and defines the goals established for 2005.

- **2004 Goal:** Satisfy all EPA and RIDEM 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 Pretreatment and Environmental Monitoring Sections satisfied the EPA and RIDEM mandates for conducting sampling and non-sampling inspections of each Significant Industrial User (SIU) facility 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 try to inspect each SIU twice, as all SIUs were inspected two or more times. The Environmental Monitoring Section performed well toward satisfying its self-imposed goal to sample each SIU at least twice in 2004 by sampling each SIU multiple times, with the exception of three firms. Two SIU firms, Century Plating International, and Microfin, Incorporated did not discharge in 2004. A sample of wastewater contained in the pretreatment system was collected at each of these firms to ensure hazardous materials were not disposed into the pretreatment systems. The third firm, American Insulated Wire's Grand Avenue facility suspended process operations in June, 2003 and only had one batch discharge of non-sanitary wastewater during 2004. This batch was sampled by the NBC. Many significant users were sampled more than twice due to the implementation of a monitoring procedure to immediately 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.

- **2004 Goal:** The Pretreatment staff will attempt to conduct an annual inspection of each non-significant industrial user, annual inspections of each restaurant and food processing facility to ensure compliance with grease removal regulations, and biannual inspections of all other permitted commercial users.

  Accomplishment: During 2004, the Pretreatment staff continued its routine inspection program of commercial and non-significant industrial users. In 2004, the Pretreatment staff conducted 1859 inspections and inspected approximately 93.7% of permitted non-significant industrial users. During 2004, Pretreatment Technicians inspected 42.0% of the permitted restaurants and commercial buildings with cafeterias, and 36.7% of all other commercial users, somewhat short of our self imposed goal. Additional information regarding the NBC inspection program is provided in CHAPTER III.

- **2004 Goal:** Perform expeditious 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 Narragansett Bay Commission sewer system. Formal staff plan review meetings are conducted weekly 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 2004 as 428 wastewater discharge permits were issued in various industrial and commercial categories. This was a 7% increase from the number of permits issued in 2003. During the year, permits were issued to metalfinishers, centralized waste treatment facilities, restaurants, supermarkets, automotive repair shops, printers, photo processors, dental offices, doctor offices, and other medical facilities using x-ray equipment. Permitting of new users was ongoing during 2004, as 198 new permits were issued, the majority to non-significant industrial and commercial users. The Pretreatment and Permitting 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 2004 the Pretreatment Section performed expeditious reviews of 483 process and pretreatment system plan submittals. Of these 483 plan submittals, 233 were promptly approved, 101 approved with conditions to be met, seven were rejected since NBC requirements were not satisfied and no action was taken on 142 plans since additional information was required for approval.

  The Permitting Section continued to meet its goal of responding to Sewer Connection Applications within two days and issuing permits within ten business days in 2004. During 2004, 163 Sewer Connection Permits were issued. Additional information regarding this is provided in CHAPTER VII.

- **2004 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 50% of the mill complexes situated within the two sewer districts to identify new and previously unknown sewer users.

  Accomplishment: For many years, the NBC has conducted a program of performing unannounced inspections of mill complexes to identify facilities discharging without a permit. This program has been quite successful in the past. During 1998, 1999, and 2004 senior pretreatment staff conducted surveys of the NBC district to ensure that the existing list of known mill complexes and industrial parks was complete. As a result of these surveys, the number of industrial parks and mill complexes requiring annual inspections was greatly increased. The 2004 goal was met and surpassed, as 29 of the 52 industrial parks and mill complexes were inspected at least once in 2004, an impressive 55.8% of all identified locations. Many mill areas were inspected multiple times during 2004. This program of conducting unannounced inspections of industrial parks and mill complexes to locate new and previously operating unpermitted users was quite successful. In addition to performing mill complex inspections, Pretreatment staff routinely reviews newspapers, telephone books and manufacturers directories to locate new and previously unknown sewer users. All of these methods were utilized during 2004.

- **2004 Goal:** Continue the restaurant grease removal study, complete the data collection and develop a report in preparation for a public workshop regarding restaurant grease removal technologies. The NBC also proposes to publish technical papers detailing the results of the grease study once it is completed.

  Accomplishment: In 1990, the NBC began to require restaurants located in problematic drainage areas of the district and all new restaurants to install grease removal equipment. Since that time, the NBC has been assessing the effectiveness of the grease removal equipment available. The grease removal study is an on-going project, which consists of a wastewater sampling program and user survey program to determine the effectiveness of the various types of grease removal equipment. During 2001, Pretreatment staff selected several restaurant and food preparation facilities to work with to determine optimum grease removal unit maintenance requirements. During 2002, Pretreatment staff further defined the restaurants to be sampled and the sampling protocols to be used. Monitoring began in 2003 to evaluate the effectiveness of the optimization methods implemented at the restaurants. The data was reviewed during the early part of 2004. Based on the conclusions the study was redefined to incorporate better controls. Sampling began for the redefined study in 2004. This information will be used to develop Best Management Practices for the various types of grease removal systems used by this class of users. During 2004, 354 restaurant inspections were conducted, which represents 42.0% of all permitted restaurants
  and commercial building with cafeterias. The NBC began the process of

developing a Residential Grease Control Program to control the discharge of grease from residential connections. In early 2004 the NBC applied for a grant from the EPA. The grant application requested funding to work with local housing authorities to educate tenants of the impacts of grease on plumbing and the sewer system and purchase grease receptacles to be distributed to the tenants. This grant was not funded. However, during 2004, the NBC continued to develop a brochure to inform residential users of the effects of grease on the sewer system and how to handle grease in their own kitchens. The brochure will be mailed to all residential users.

- **2004 Goal:** Dental Mercury Sources and Control - Identify pollution prevention and control options, assist Dental community with implementing source control and review possible participation in AMSA study regarding Dental Mercury loadings to POTWs.

  Accomplishment: NBC's Pollution Prevention and Pretreatment Programs with assistance from the Public Affairs section finalized the Best Management Practices for the Management of Waste Dental Amalgam (BMP) in early 2004. The BMP included two options for the management of amalgam bearing wastewater as well as mandatory BMPs for all dental facilities to adhere to. The first option requires the dental facility to install an amalgam separator that has been certified with a removal efficiency of 99% or greater by ISO 11143. Sampling would not be required at facilities implementing this option. The second option requires dental facilities to sample amalgam bearing wastestreams and be in compliance with the stringent NBC silver and mercury NBC discharge limitations. All dental facilities are required to adhere to the following BMP standards:

  - Thoroughly clean all existing sink traps and drains to remove accumulated mercury.
  - Properly maintain and operate vacuum pump filters.
  - Create and maintain accurate maintenance records.
  - Develop and implement mercury spill control procedures.
  - Install and properly maintain chair side amalgam traps.
  - Develop and implement an employee environmental training program.

  Two informational workshops were held with the dental community. The first workshop introduced the BMP to the dental community and was held on March 31, 2004. The second workshop was held on May 12, 2004 and addressed concerns, further explained requirements of the BMP and NBC staff assisted with required paperwork. Representatives from manufacturers of amalgam separation equipment were present at both workshops. Permits incorporating the BMP began being issued to dental facilities in June, 2004. Throughout 2004, Pretreatment and Pollution Prevention staff assisted the dental community to comply with the BMP. The NBC was awarded a Governor's Citation on November 23, 2004 for its efforts on the Dental BMP program.

In July 2003 baseline sampling for AMSA's dental mercury study began at Field's Point. Samples are collected at the influent, effluent, filter cake and grit. The samples are collected using clean sampling techniques. Influent and effluent samples are sent to Hampton Rhodes Sanitary District in Virginia. Solids samples are analyzed by the NBC Laboratory. This sampling continued throughout 2004.

This AMSA study, which is scheduled for completion in 2006, is evaluating the effectiveness of reducing mercury loadings to the sewer system through the installation of amalgam separators. Preliminary data indicates significant mercury loading reductions at both NBC POTWs in 2004.

- **2004 Goal:** Streamline Operations by Computerization

  Accomplishment: In 2002, Pretreatment staff worked to have the sewer maps of the cities and towns in the NBC districts copied in an electronic format. Throughout 2003, Pretreatment staff used AutoCad software to locate permitted users and their up and down stream manholes on the digitized maps. By the end of 2003 all Significant Industrial Users and Zero Discharge firms had been identified on the maps as well as many other industrial and commercial firms. During 2004, the remaining firms were identified on the maps. Also during 2004 EMDA and Pretreatment staff began to identify sanitary manholes on these maps. The digitized maps are accessible from PDAs, which are taken out in the field, as well as desktop computers. The maps will also be accessible on portable laptop computers that will be taken in the field during investigations. Locating companies and manholes on these maps will be more efficient during investigations than using the paper maps. EMDA and Pretreatment staff are working with IT staff to make the maps readily updated and accessible to both sections. This will be completed during 2005. Throughout 2004, Pretreatment staff continued to optimize templates for follow-up, restaurant and laundromat inspections to be used on PDAs to improve efficiency during inspections. These templates can be completed during the inspection and downloaded to a desktop computer. This minimizes the amount of time to complete the necessary paperwork for the inspection. The use of these templates reminds staff to inspect all required items/areas and ensures consistency between inspections. During 2005 templates will continue to be developed.

- **2004 Goal:** Develop and implement a program for remote surveillance manhole monitoring.

  Accomplishment: In 2002, Pretreatment and Engineering staff began to investigate the use of telemetry to conduct remote surveillance manhole monitoring. Staff worked with vendors, such as Telog and Comcore, to develop a unique system whereby automatic samplers would be activated only when a sensor, located in a down stream manhole, indicated a programmed set point had been exceeded. The sensor would activate the down stream sampler and call into a server at the NBC using Telog telemetry to activate the up stream sampler.

Activating the samplers only when set points are exceeded saves battery life allowing the samplers to be deployed for longer periods of time. During 2002 and 2003, the equipment was researched and the necessary components developed. Bench testing began in late 2003 and continued throughout 2004. NBC staff worked with the vendors during this time to debug the system. In late 2004 bench testing was completed. Field testing of the equipment will commence in early 2005.

- **2004 Goal:** Continue regulatory inspections of Septage Haulers as part of the NBC Septage Discharge Control Program.

  Accomplishment: During 2001, new solids removal equipment went on-line at the NBC Lincoln Septage Receiving Station. To ensure the proper operation of this equipment, the Pretreatment Section worked throughout 2001 to completely reevaluate the NBC Septage Discharge Control Program. All septage discharge and billing procedures were reevaluated and revised. Standard operating procedures were developed and implemented regarding discharging septage, billing of septage discharges, completing and maintaining septage manifests, and weighing of septage vehicles. The master septage discharge permit has been revised to incorporate these many changes. Revised permits have been issued to each permitted septage hauler during 2002. Pretreatment staff also developed and distributed an educational brochure in 2002 that summarizes the NBC septage discharge regulations and procedures. In August 2002, Pretreatment staff expanded its procedure for verification of Septage Manifest forms. Pretreatment staff verified the authenticity of 361 items reported on manifest forms during 2004. Additional information regarding the NBC Septage Discharge Control Program is provided in CHAPTER VII.

- **2004 Goal:** Complete the reevaluation of the pH discharge limitations and submit a report to RIDEM if pH revisions are needed.

  Accomplishment: During 2004 EMDA and Pretreatment staff finalized the reevalution of the allowable pH discharge limitations for the two NBC POTWs. A detailed report requesting the allowable pH limitations in both districts to be standardized to 5.0 standard units to 11.0 standard units was submitted to the DEM in September 2004. The DEM determined that this request was a non-substantial Pretreatment Program Modification. The request was submitted along with other minor revisions to the NBC Rules and Regulations to the DEM. All revisions were approved. The revised Rules and Regulations, including the standardized pH limitations, became effective on December 13, 2004.

- **2004 Goal:** The Pretreatment staff along with EMDA staff will conduct computer monitoring of the influent of the Field's Point and Bucklin Point treatment plants to ensure protection of the POTWs and Narragansett Bay.

  Accomplishment: During 2004, the Field's Point Telog and PI computer monitoring systems were checked daily for unusual influents. All incidents of unusual influent were investigated. Most of these incidents were slightly high pH influents of short duration. The computer monitoring equipment at both wastewater treatment facilities will continue to be monitored routinely during 2005.

- **2004 Goal:** Conduct NBC Intra-Sectional Training to be proactive to Environmental Incidents.

  Accomplishment: During 2004, a training session on boom deployment was held with the Pretreatment Section and EMDA staff. During the training, an oil containment boom was deployed in the Woonasquatucket River. The boom was deployed as a part of the Floatables Control Program. Intra-Sectional training will continue to be conducted during 2005.

- **2004 Goal:** Provide the HAZWOPER hazardous waste emergency response training to NBC staff to ensure agency compliance with OSHA regulations.

  Accomplishment: All new employees hired prior to July 2004 in the Pretreatment and EMDA Sections were given 40-hr HAZWOPER training. This training will be given annually to all new employees of these Sections. During 2004 NBC continued its program of conducting 8-hr HAZWOPER refresher training using in-house trainers and expertise. Pollution Prevention, EMDA, Laboratory and Pretreatment staff certified in 40-hr HAZWOPER training will be given at least 8-hrs of refresher training throughout the year on such topics as: Hazard Communication and Hazard Recognition, Chemistry of Hazardous Materials, Confined Space Entry, Scene Response and Traffic Control and Emergency Equipment Use. In addition, during 2004 NBC conducted in house employee training on CPR/AED.

- **2004 Goal:** Continue work on the development of the Pretreatment Program and Environmental Monitoring Manuals of Standard Operating Procedures and Protocols. The purpose of these manuals is to clearly detail all standard operating procedures in the two sections. These manuals make invaluable reference tools for Pretreatment and Monitoring staff and will provide a great resource for NBC employees working outside the Pretreatment and Environmental Monitoring Sections.

  Accomplishment: During 1996, Pretreatment supervisory personnel began to develop a Pretreatment Program Manual of Standard Operating Procedures and Protocols. Work on this project continued during through 2004 and at this time the manual consists of all existing standard operating procedures. As existing

procedures are reviewed and revised or new procedures are developed, they are documented in this manual. During 2000, all Environmental Monitoring sampling procedures were documented and provided to all staff conducting these activities. In 2004 EMDA Staff updated it's standard operating procedures manuals to reflect updates in standard protocols at the Field's Point and Bucklin Point facilities, SIU monitoring and manhole monitoring. The EMDA manuals include detailed diagrams and photos of sampling locations and procedures and are more detailed than previous versions.

- **2004 Goal:** Continue work with individual industrial users as part of the CLEAN P2 Program (See program description in CHAPTER VII).

  Accomplishment: During 2004 NBC's Pollution Prevention Program worked with several companies on CLEAN P2 related projects, including:

  - Textile Pigment Manufacturer – pilot studies were conducted on the use of membrane filtration to remove color from wastewater and possibly recycling the cleaned water back into the production process.

  - Metal Finishing Company – Performed a Pollution Prevention Audit of company operations and worked with company engineer to redesign pH monitoring and adjustment system.

  - Trash Hauler – Worked with company to design trash handling system and procedures that will minimize exposure of trash and debris to storm-water.

- **2004 Goal:** Work with RIDEM to adopt Project XL rule changes and initiate Project XL (See program description in Chapter VII).

  Accomplishment: On September 25, 2000, the NBC, EPA New England and the RIDEM signed a Project XL Final Project Agreement (FPA), and on October 3, 2001 EPA publishes a Final Rule on Project XL in the Federal Register (Vol. 66 F.R. 50334). NBC is currently awaiting RIDEM to make necessary modifications to their applicable regulations in order to allow NBC to initiate this program. In preparation NBC's Pollution Prevention Program continues to collect and analyze metal finishing environmental performance data and continues its work encouraging the use of pollution prevention and Environmental Management Systems by this industrial sector. Additional information regarding NBC's Project XL program is provided in CHAPTER VII.

- **2004 Goal:** Continue soliciting the water audit program to business and industry (See program description in CHAPTER VII).

  Accomplishment: NBC continues to solicit larger commercial and industrial water users in an attempt to have them participate in the NBC Water Audit Program. During 2003 NBC staff worked with the owner/operators of McCoy Stadium, home of the Pawtucket Red Sox, on water conservation efforts. In 2004 the NBC will continue to sponsor a booth at the Rhode Island Business Expo to promote this and other NBC programs. Due to continued construction growth in the service districts, staff time was reallocated in the sewer connection permit section away from the water audit efforts to focus on prompt review and issuance of sewer connection permits. Additional information regarding the NBC Water Audit Program is provided in CHAPTER VII.

- **2004 Goal:** Environmental Merit Awards Program - Solicit nominations from companies and staff, evaluate all SIU performance data, hold Awards Ceremony.

  Accomplishment: During 2004, the NBC recognized two companies for their extraordinary pollution prevention efforts, with Environmental Merit Awards, and 12 companies received Perfect Compliance Awards, which are for SIUs achieving 100% compliance with all NBC regulatory requirements.

- **2004 Goal:** College level pretreatment and pollution prevention class - offer class for the Spring Semester.

  Accomplishment: The NBC offered this class at the Community College of Rhode Island however insufficient enrollment resulted in the cancellation of the course for the Spring 2004 semester. In the future this course will be offered every other year starting in the Spring of 2006.

- **2004 Goal:** Complete two Best Management Practices (BMPs) (See program description in CHAPTER VII).

  Accomplishment: During 2004 NBC Pollution Prevention and Pretreatment distributed a Best Management Practices document for the Dental Community on the Management of Waste Dental Amalgam and finalized a BMP for Art Schools and Artists. Additional information regarding BMPs is provided in CHAPTER VII.

- **2004 Goal:** Follow-up with Environmental Management Systems workshop participants (See program description in CHAPTER VII).

  Accomplishment: During 2004 Pollution Prevention staff attended meetings of the Rhode Island ISO 14001 Roundtable and encouraged participants of the NBC EMS Training Seminars to do the same through e-mails and during technical assistance site visits. Follow-up visits of several EMS workshop participants were conducted throughout the year including:

  - Providence Metallizing Company-10/14/04
  - TMI, Inc. – 05/18/04
  - Truex, Inc. – 12/30/04
  - Curtis Jewelry Manufacturing Company – 08/11/04
  - Tanury Industries – 01/30/04

- **2004 Goal:** Strategic Goals Program - Continue to assist companies with environmental performance measurement activities as part of the Strategic Goals Program (SGP) and solicit metal finishing companies to participate in the program (See program description in CHAPTER VII).

  Accomplishment: The NBC continues to work with the metal finishing industry through pollution prevention efforts and assisting companies to participate in the National Strategic Goals Program (NSGP). As of December 2004 the State of Rhode Island leads the nation in the number of metal finishing companies 15 participating in the NSGP. Additional information regarding the Strategic Goals Program is provided in CHAPTER VII.

- **2004 Goal**: Workshops – Conduct environmental compliance/pollution prevention workshop for art studios

  Accomplishment: NBC made a presentation on environmental compliance and pollution prevention best management practices for artists at the Rhode Island School of Design's "Green by Design Forum" on September 18, 2004. This presentation focused on NBC process for treating wastewater and the importance of minimizing industrial pollutants and managing stormwater.

- **2004 Goal:** Pollution Prevention in Hospitals and Health Care Facilities – Organize and hold one workshop on hospital environmental compliance and pollution prevention issues.

  Accomplishment: A half day work shop on Pollution Prevention for the Health Care Industry was held on March 31, 2004. This workshop was attended by more than 50 representatives of Rhode Island hospitals and health care facilities.

- **2004 Goal:** Auto Salvage Yard Pollution Prevention (See program description in CHAPTER VII).

  Accomplishment: During 2004 Pollution Prevention staff conducted technical assistance site visits of two auto salvage facilities, compiled a list of all Rhode Island licensed auto salvage yards, developed a draft auto salvage yard pollution prevention checklist and on September 23, 2004 made a presentation on pollution prevention technical assistance opportunities to the members of the Rhode Island Association of Auto Salvage Yards.

- **2004 Goal:** Expand the weekly manhole monitoring program 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 8 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. The EMDA staff successfully sampled 364 manholes during 2004, 138 in the Bucklin Point district and 171 in Field's Point and 55 sanitary manholes. This is an average of 7 manholes per week slightly short of the goal of 8 manholes per week.

- **2004 Goal:** Further define the sewer system sampling program to assess loadings from key drainage areas to locate potential areas of concern and drainage area loadings.

  Accomplishment: In 2004, EMDA utilized ISCO flow monitoring equipment with ultrasonic, level sensing and Doppler velocity probes and data loggers. This equipment attaches to automatic samplers used by the NBC to allow for flow proportioned sampling in the sewer system. This equipment is used to monitor major drainage areas and combined sewers during wet and dry weather. EMDA has also begun sampling in NBC interceptors at metering stations, which provide flow information, allowing the estimation of pollutant mass loadings. EMDA has continued these initiatives to better define the sources of contaminants to the influent at each treatment facility. Flow proportioned sampling of drainage basins as well as analysis of stormwater input, water supply input and sanitary sewers will be used to budget inputs and improve NBC's manhole sampling program. This study was begun in 1999, was expanded in 2000 and continued in 2004. EMDA plans to continue sewer sampling in conjunction with flow monitoring in 2004 sampling.

- **2004 Goal:** Further define the sewer system sampling program to assess loadings from key drainage areas to locate potential areas of concern and drainage area loadings.

  Accomplishment: In 2004, EMDA staff and Pretreatment staff have conducted extensive planning to aid in an improved assessment of toxic loadings from key drainage areas. The plan uses sampling at points within the collection system where flow monitoring is routinely performed. This work will begin in 2005.

- **2004 Goal:** Sample at the two NBC POTWs daily. Research and test new sampling equipment and procedures to continually improve monitoring activities. Continue scheduled activities defined in the RIDEM mandated Toxics Compliance Plan to redefine local limits for the Bucklin Point and Field's Point Treatment facilities.

  Accomplishment: The NBC complied with all scheduled activities defined in the RIDEM mandated Toxics Compliance Plan. NBC's principal progress in 2004 was the submittal of the Final Metals Compliance Plan Report to RIDEM. This report included:

  - Derivation of new discharge permit levels based on local metal conversion factors derived from dissolved and total metals data from the Seekonk and Providence Rivers and current water quality criteria;
  - Derivation of a technically-sound local limits evaluation based on maximum allowable headworks loading and domestic loading, using the new EPA local limits derivation guidance published in 2004;

  In July 1999, the responsibility of sampling the Field's Point and Bucklin Point WWTFs was transferred to the Environmental Monitoring Section from the NBC Operations Division. On January 1, 2000 "clean sampling" techniques were implemented for all permit samples. This required the purchase of new all-weather, refrigerated automatic samplers, the changing of sampling line from PVC to Teflon, the use of acid washed and double bagged sample jugs and pre-cleaned certified sample bottles. EMDA staff used "clean sampling" technique for all industrial monitoring and treatment plant sampling conducted in 2004. EMDA staff conducts this sampling 365 days per year.

  Most of the work and results for the Toxics Compliance Plan are presented in CHAPTERS VI and VII. Sanitary sewer sampling using clean sampling techniques began in June 2000 and was continued into 2004 to better define background contributions of non-industrial sources of metals and other contaminants. The potable water study was completed and the report was submitted to DEM in early 2001. Measurements of dissolved metals began in June 2000 to address the metal translators question and EMDA continued this sampling throughout 2004.

The receiving water study was conducted in 2001 and 2002 during four seasonal surveys. Surveys included the use of an Acoustic Doppler Current Profiler (ADCP) to track the effluent of each treatment facility and to map currents and waterbodies within the Providence and Seekonk Rivers. Samples were collected and analyzed for total and dissolved metals and nutrients. Physical measurements were taken for temperature, salinity, pH, dissolved oxygen and chlorophyll. A complete summary of the study and findings is included in CHAPTER VII. The study found the receiving waters of both NBC treatment facilities to meet EPA established water quality criteria for metals and ammonia toxicity at all locations except within the mixing zones at the Bucklin Point facility. This information has been provided to RIDEM and was used to remove the Providence and Seekonk Rivers from the 303(d) list of impaired waters for metals and documents the success of NBC treatment facilities and pretreatment program.

- **2004 Goal:** To review, evaluate and log all analytical data obtained from EMDA's monitoring efforts and 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: Analytical data from industrial and manhole sampling is provided to the Pretreatment staff after review. Plant data is entered into an EXCEL spreadsheet and is analyzed and reported monthly. The results of the tributary river monitoring for fecal coliforms is provided to Interceptor Maintenance (IM) staff weekly and is used to locate possible CSO maintenance problems. Trend analyses are conducted and reported to NBC staff on a monthly basis through monthly reports and periodic meetings.

- **2004 Goal**: Monitor the receiving waters of both the Fields Point and Bucklin Point WWTF to continue the EMPACT Program previously funded by a USEPA grant.

  Accomplishment: EMDA has met its goals through continuation of water quality monitoring at two fixed sites within the Providence and Seekonk Rivers for dissolved oxygen, temperature, salinity, pH, chlorophyll, and tidal amplitude. NBC staff maintained the sites at Bullocks Reach, a buoy site, and Phillipsdale Landing, a dock site. Quality assurance practices were improved in 2004 as well as increased coordination with a newly formed bay-wide monitoring collaborative that have adopted common methods for this baseline assessment.

- **2004 Goal:** Monitor the receiving waters of both NBC Wastewater Treatment Facilities.

  Accomplishment: EMDA created a new monitoring plan and initiated a water quality study of the receiving waters of both Bucklin Point and Field's Point. The overall purpose of the monitoring study 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 also continued fecal coliform 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. More detailed information about these projects is provided in CHAPTER VII.

- **2004 Goal**: To determine the best methods for differentiating between human and non-human fecal coliform species and also to determine the extent of fecal contamination of recreational surface waters by an established EPA method for Enterrococci.

  Accomplishment: In fiscal year 2004, several projects were both researched and some implemented in order to classify the types of biological contaminants produced in different aqueous environments. The first project implemented in 2004 was in collaboration with University of Rhode Island, was the "Chlorophyll Project" where several Bay samples were collected and analyzed for chlorophyll concentrations. A second project is in collaboration with the EPA will be conducted in the winter 2005. Several samples will be collected during a single wet weather event for Enterococci determination by membrane filtration. Enterococci determination will also be implemented by the NBC in 2005 using IDEXX method "Enterolert" for monitoring either bay or river samples. Fecal origin determination by "DNA Fingerprinting" using the "Ribotyping" Method on Escherichia coli (E.coli) in order to differentiate between human and non-human species will also be conducted in 2005.

Major Program Goals for 2005

Goal Category	Goal Outline	Goal Description
Inspections	Inspect industries to ensure compliance with regulations.	▪ Inspections of SIUs twice (EPA/RIDEM requires one inspection) ▪ One inspection of each non-significant industrial user ▪ One inspection of each restaurant and food processing facility ▪ Biannual inspections of all other permitted commercial users
	Identify new and previously unknown sewer users to ensure compliance with regulations.	▪ Conduct unannounced spot inspections of 50% of the mill complexes/industrial areas
	Continue regulatory inspections of septage haulers.	▪ Each technician will spend one half day monthly inspecting septage vehicles at the receiving station ▪ Staff will verify at least 25 septage manifest forms each month
Pollution Prevention and Technical Assistance Initiative	Stormwater Pollution Prevention (See program description in Chapter VII)	▪ Develop two Storm Water Best Management documents. ▪ Conduct two Storm Water Pollution Prevention Assessments
	Environmental Management Systems (See program description in Chapter VII)	▪ Continue involvement with Rhode Island ISO 14001 Roundtable ▪ Attend quarterly meetings.
	Project XL (See program description in Chapter VII)	▪ Continue work with RIDEM to adopt rule changes ▪ Initiate Project XL upon DEM Rule change
	Water Audits (See program description in Chapter VII)	▪ Continue soliciting the water audit program to business and industry
	Strategic Goals Program (See program description in Chapter VII)	▪ Continue to assist companies with environmental performance measurement activities. ▪ Solicit new metal finishing companies to participate in the program.
	CLEAN P2 Program (See program description in Chapter VII)	▪ Continue work with individual metal finishing companies
	Auto Salvage Yards	▪ Finalize pollution prevention checklist ▪ Coordinate assistance efforts with RIDEM and URI ▪ Develop a BMP
	Dental Mercury Sources and Control	▪ Assist Dental Community to implement source control recommendations in BMP ▪ Issue permits incorporating the Dental BMP
Monitoring	Sample industrial discharges to sewer system to ensure compliance with regulations.	▪ Sampling of SIUs twice (EPA/RIDEM requires one sampling) ▪ Immediately resample any SIU found out of compliance
	Further define sewer system sampling program to assess loadings from key drainage areas to locate potential areas of concern and drainage area loadings.	▪ Update maps of areas and manholes ▪ Define schedule for key manhole monitoring ▪ Continue flow monitoring as part of sample collection efforts to define total loading ▪ Continue background monitoring of residential sources of pollutants to WWTFs to better define this loading
	Conduct surveillance monitoring in sewer system to ensure compliance with regulations.	▪ As needed and dependent on specific needs defined by staff observations and reports ▪ Sample 6-10 manholes per week (including surveillance and routine monitoring) ▪ Sample up and down stream of every SIU and Zero Discharge Company at least once.

Goal Category	Goal Outline	Goal Description
Monitoring (continued)	Conduct Computer Monitoring of influent of Fields Point and Bucklin Point to ensure protection of the POTWs and Narragansett Bay.	▪ Review the Telog and PI computer monitoring systems daily to check for unusual influents ▪ Respond to 100% of unusual influent reports to ensure protection of the POTWs and Narragansett Bay, to minimize incidents of pass through and interference
	Monitor Fields Point and Bucklin Point for all RIPDES permitted parameters.	▪ Sample daily ▪ Research and test new sampling equipment and procedures to continually improve monitoring activities ▪ Analyze data and report trends to NBC Operations staff at monthly meetings
	Tributary river sampling for fecal coliform analysis	▪ 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 ▪ Provide trends analysis to NBC
	Monitor the receiving waters of both Fields Point and Bucklin Point to continue EMPACT Program previously funded by a USEPA grants.	▪ Continue monitoring at the surface and bottom at 2 stations (one off each plant) ▪ Monitor for temperature, salinity, dissolved oxygen, conductivity, pH, chlorophyll and pressure (depth) ▪ Collect bi-weekly samples at these monitoring stations for fecal coliform analysis ▪ Expand monitoring efforts of water clarity in the Providence and Seekonk Rivers through the use of Secchi disks and/or photosynthetically active radiation
	Monitor the receiving waters of both the Fields Point and Bucklin Point WWTF to continue EMPACT Program previously funded by a USEPA grant.	▪ Provide data and data interpretation to the scientific and general community on a real time basis and continue participation in the bay wide monitoring collaborative using approved QA/QC protocols ▪ Seek funding to continue this project and similar projects
	Continue to conduct baseline monitoring of the receiving waters for the NBC plants.	▪ Continue routine monitoring program of the Providence and Seekonk Rivers for nutrients and fecal coliform bacteria
	Development of an Annual Monitoring Plan	▪ Develop a monitoring plan by December 15th for approval by Directors.
Permitting	Expeditious review and issuance of permits	▪ Respond to all discharge permit applications and renewals within two weeks ▪ Review of submitted engineering plans on a weekly basis in group staff meetings ▪ Response to all sewer connection permit applications within two days with issuance of permit within two weeks ▪ Expand Silver and Mercury Discharge Control Program to incorporate Dental Amalgam BMP

Goal Category	Goal Outline	Goal Description
Data Logging and Analysis	Log, review and evaluate industrial, manhole, septage, wastewater treatment facility and other related data to provide short and long term trends and alerts.	▪ Routine data logging and evaluation ▪ Formal monthly reporting of projected short and long term trends and alert levels regarding data ▪ Timely response on data excursions and alerts to laboratory, operations and pretreatment staff, allowing opportunity for prompt corrective action (regulatory, administrative or operational)
Special Studies and Projects	Pollution Prevention in Hospitals and Health Care Facilities	▪ Organize and hold one workshop on hospital environmental compliance and pollution prevention issues
	Research sources of fecal coliform bacteria in urban rivers	▪ Continue project to identify human vs. non-human source of fecal coliform bacteria in urban rivers ▪ Seek funding to continue above research/pilot project ▪ Develop methods for Enterrocci determination for the bacterial indicator to be used to determine the extent of fecal contamination
	Streamline Operations by Computerization	▪ Continue to develop templates to be used on PDAs to improve efficiency of inspection and associated paperwork ▪ Continue to locate users and surveillance manholes on the computerized maps
	Toxics Compliance	▪ Continue river and bay background monitoring
	Remote surveillance manhole monitoring using Telog system	▪ Field test automatic samplers equipped with Telog monitors up and downstream of a SIU ▪ Investigate obtaining a patent for the system
Internal Procedures	Document all Pretreatment Program and Environmental Monitoring Manuals of Standard Operating Procedures and Protocols.	▪ Continue to detail all standard procedures and procedural changes for the two sections
Education, Training and Public Awareness	Environmental Merit Awards Program	▪ Solicit nominations from companies and staff ▪ Evaluate all SIU performance data ▪ Hold Awards Ceremony
	Workshops	▪ Conduct environmental compliance/pollution prevention workshop for NBC industrial/commercial users
	Provide the HAZWOPER hazardous waste emergency response training to NBC staff to ensure agency compliance with OSHA regulations.	▪ Conduct in-house training
	Residential Grease Brochure	▪ Develop a brochure to be mailed to customers of the NBC detailing the effects of grease on the sewer system and measures to prevent the grease from discharging to the sewer.
	River Restoration Initiative	▪ Participate in the "What's in Your River" Program for elementary schools. ▪ Develop a corporate Sponsorship Program for the restoration of the Woonasquatucket River.
	Publication of the Annual Monitoring Report	▪ Prepare a document summarizing monitoring projects and present it at a workshop