PRETREATMENT PROGRAM

ANNUAL REPORT

JANUARY 1, 2003– DECEMBER 31, 2003

The Narragansett Bay Commission

FIELD'S POINT AND BUCKLIN POINT DISTRICTS

MARCH 15, 2004

The Narragansett Bay Commission
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Vincent J. Mesolella
Chairman

Paul Pinault, P.E.
Executive Director

March 15, 2004

Dear Friends:

I am pleased to present the 2003 Narragansett Bay Commission (NBC) Pretreatment Program Annual Report for the period from January 1, 2003 through December 31, 2003. 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 Enforcement 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 922,868 pounds annually, 96.7%, while the cyanide loadings were reduced by 76,265 pounds annually, a 95% 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. Prior to this study, no surveys of this type had been conducted in over fifteen years and then with limited sampling locations and the results were not meeting water quality standards.

The NBC accepts its responsibility to protect the receiving waters of Narragansett Bay very seriously. During 2003, the NBC issued 2,267 Notice of Violation letters, enforced one permit suspension, issued one civil suit and four Administrative Orders against violators, assessing $150,000 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, P.E.
Executive Director

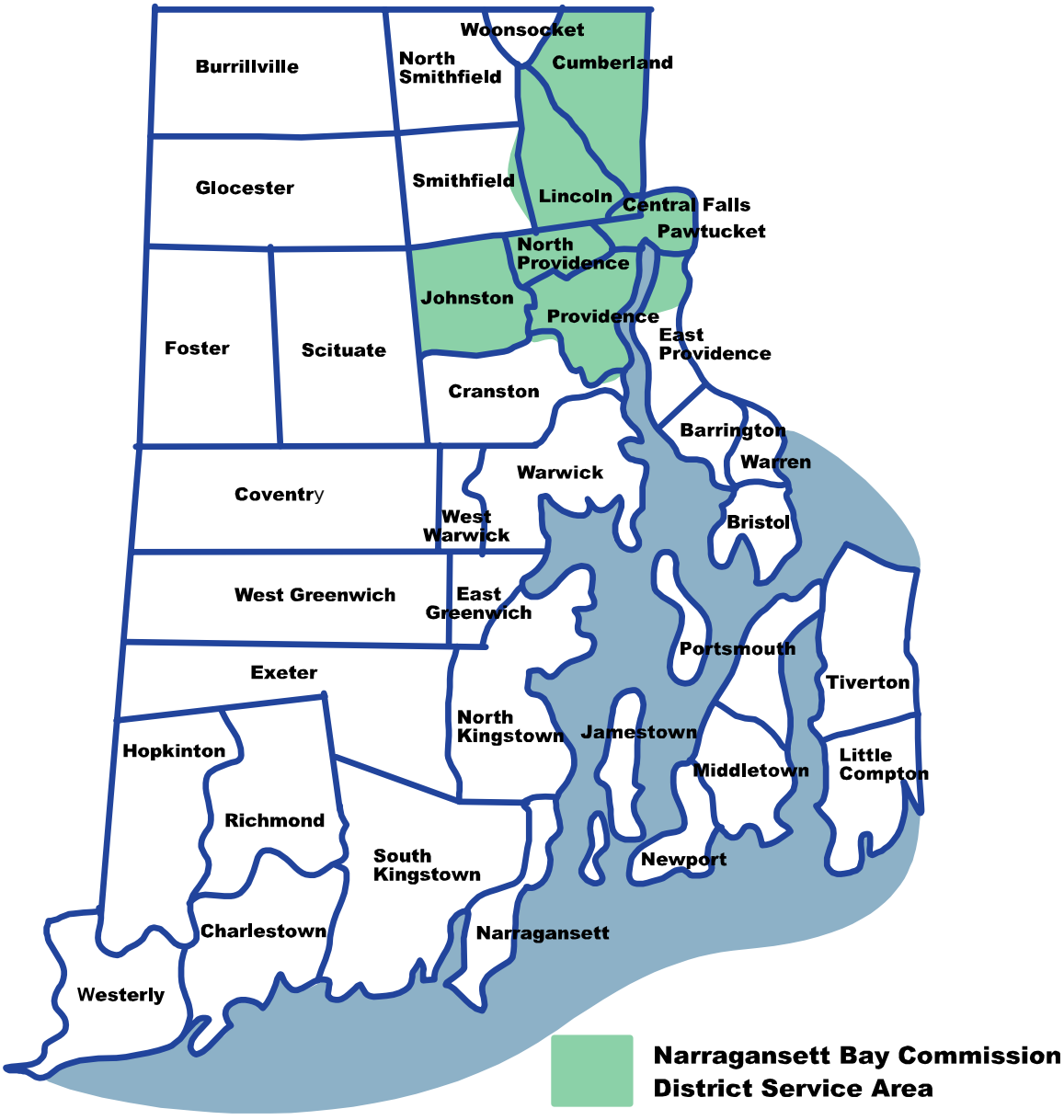
Narragansett Bay Commission
Mission Statement:

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, Annette Jacques, Esq., Legal Counsel, and Gloria Ricci, Legal Secretary, 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, or the NBC, was created in 1980 by the R.I. General Assembly, and with statewide voter approval of 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).

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 8,000 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 new 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 2003, 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 office 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 2003, Pretreatment staff issued 400 permits to users located in the Field's and Bucklin Point Districts, conducted 1,954 facility inspections, held 32 regulatory compliance meetings with users and responded to 84 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 2003, the NBC conducted 316 sampling inspections, performed 386 manhole sampling events and reviewed 3,511 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 2003, the NBC issued 2,267 Notice of Violation letters, four Administrative Orders, and assessed administrative penalties totaling $150,000 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 decreased during 2003 by 8.0%. The total metals loading to the Bucklin Point Facility increased by 15.6%. The cyanide loading to the Field's Point Wastewater Treatment Facility increased by 1,387 pounds, or 49.7% in 2003, and the cyanide loading to Bucklin Point increased slightly by 34 pounds or 4.5%.

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 2003 and describes the ambitious goals established by these sections for the year 2004.

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 and Pretreatment 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, Environmental Best Management Practice (EBMP) 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
- NBC Membership on EPA's National Common Sense Initiative Metal Finishing Sub-Committee

- 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

2003 Accomplishments

~ ***Permitting:***

- 400 Permits issued in 2003, a 25% increase from 2002
- 158 New permits issued to previously unpermitted firms
- 242 Revised permits issued

~ ***Inspections and Sampling:***

- 1,954 Non-sampling inspections conducted
- 555 Non-sampling inspections of Significant Industrial Users
- 446 Non-sampling inspections of categorical users
- 109 Non-sampling inspections of significant non-categorical users
- 1,459 Non-sampling inspections of non-significant users
- 32 Regulatory Compliance meetings held with users
- Pretreatment Staff Reviewed 3,511 User Monitoring Reports
- 84 Emergency/Special Investigations Conducted
- 358 User Samples Collected by NBC in 2003
- 316 NBC Sampling Inspections of Industry
- 135 Different Facilities Sampled by NBC
- 297 Sampling Inspections of Significant Users Conducted
- 240 Sampling Inspections of Categorical Users Conducted
- 57 Sampling Inspections of Significant Non-Categorical Users Conducted
- 19 Sampling Inspections of Non-Significant Users Conducted
- 386 Manhole Sampling Events Conducted
- 347 Industrial Surveillance Manhole Samples Collected
- 39 Sanitary Manhole Sampling Events Conducted

~ ***Enforcement:***

- 2,267 Notice of Violation (NOV) Letters Issued
- 4 Administrative Orders Issued
- 1 Permit Suspension in effect throughout 2003
- $150,000 in Administrative Penalties Assessed
- $19,270 in Administrative Penalties Collected
- 1 Civil Suit was filed in 2003 for non-payment of permit fees
- 20 Firms Listed in March 3, 2004 Public Notice in the Providence Journal as being in Significant Non-Compliance (SNC)
- 16 out of 20 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 2003, a reduction from 39% in 1992
- Rate of SIU Significant Non-Compliance reduced in Bucklin Point from 44.8% in 1994 to 9.8% for 2003
- 95.6% Overall Rate of Compliance for All Significant Users
- 95.5% Overall Rate of Compliance for All Categorical Users
- 94.3% Overall Rate of Compliance for All Non-Significant Users
- 95.1% Overall Rate of Compliance for All Users
- 62% of EPA categorically regulated users had perfect effluent compliance records with all effluent parameters excluding pH
- 64.8% of Significant Users AND 80.8% 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 few years through Pretreatment's User Education Methods

Notification of Changes in User Status

During the 2003 report period, seven users were reclassified from significant to non-significant, while four other users were newly classified to Significant Industrial Users. All of the seven users reclassified to non-significant were categorical users. These seven users were reclassified to non-significant because they either went out of business, moved out of the NBC district, or relocated within the NBC district. Three of the four firms located in the NBC district that were newly classified as significant industrial users during 2003 were classified as categorical users.

Six significant industrial users ceased discharging into the Field's Point sewer system in 2003, eliminating a total process discharge flow of 49,000 gallons daily, while the three new SIUs in this district discharge a combined daily flow of 152,180 gallons. In addition, three SIUs located in Field's Point, Monarch Metal Finishing, Park Lane Associates/Colibri Group, and Esposito Jewelry, decreased their water usage by 10,000 gallons per day or 50%, 68% or 10,900 gallons per day, and 2,000 gallons per day or 80% respectively. There were no other significant changes in industrial flow discharges to the Field's Point Wastewater Treatment Facility in 2003, therefore the facility experienced a net increase of 80,280 gallons per day of industrial process wastewater.

There was a slight increase in the industrial hydraulic loading to the Bucklin Point Wastewater Treatment Facility as the treatment plant realized a net increase of 6,600 gallons daily in hydraulic industrial loading due to the year 2003 reclassifications. In 2000, two large textile firms, Crown Yarn Dye Company and Nafta Textile Mills, closed and were responsible for a significant reduction in hydraulic loading to Bucklin Point, 335,993 gallons daily. In 2001, another textile firm, Elizabeth Webbing Mills, went out of business, ceasing the discharge of about 200,000 gallons of process wastewater daily.

In 2003, one SIU ceased process discharge, eliminating 700 gallons per day of industrial process flow to the Bucklin Point Plant. This user was classified as a categorical user.

One firm was newly classified as a significant user in 2003 in the Bucklin Point service area. This firm is categorically regulated. The new SIU previously operated a facility located in the Bucklin Point District that had discharged daily. This new SIU discharges approximately 7,300 gallons per day. Another SIU, Murdock Webbing Company, increased the flow from its facility by 50% or 10,000 gallons per day. Therefore, the net change in flow to the Bucklin Point Wastewater Treatment Facility in 2003 was an increase of 16,600 gallons daily.

A review of the baseline monitoring reports submitted by the four 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 2003 and the reason for each reclassification are detailed in TABLE 1.

In addition to the Significant Industrial Users changes noted in TABLE 1, two other changes should be noted. During 2003, two SIU firms changed their names. Vitrus, Inc. changed its name to Vitrus, A Division of Evergy, Inc. and Central Soya Company, Inc. changed its name to Bunge North America (East), Inc. Operations at both facilities remained unchanged.

TABLE 1

2003 Significant Industrial Users Classification Changes
Firms Reclassified to Non-Significant

Field's Point Firms	*Reason for Reclassification*
Alviti Creations	Firm is out of business.
Aurafin-OroAmerica, LLC – Eddy Street Facility	Firm is out of business.
Dura-Kote Technology, Ltd.	Firm closed this facility.
Fibermark, DSI	Firm closed this facility.
Lutone Plating Company, Inc.	Firm is out of business.
Quaker Plating Company, Inc.	Firm is out of business.

Bucklin Point Firms	*Reason for Reclassification*
Darlene Group, Inc. d/b/a Darlene Jewelry Manufacturing	Firm relocated to another location in the Bucklin Point District.

TABLE 1
(continued)

2003 Significant Industrial Users Classification Changes
Newly Classified Significant Users

Field's Point Firms	*Reason for Reclassification*
DiFruscia Industries, Ltd.	This new firm performs categorically regulated metal finishing operations.
Kirk's Folly	This firm began to discharge categorically regulated metal finishing wastewater in 2003.
Shank/Balfour Beatty – Ernest Street Location	This firm began to discharge greater than 5,000 gallons of wastewater per day in 2003.

Bucklin Point Firms	*Reason for Reclassification*
Darlene Group, Inc.	This firm relocated from another location in Bucklin Point and performs categorically regulated metal finishing operations.

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 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).

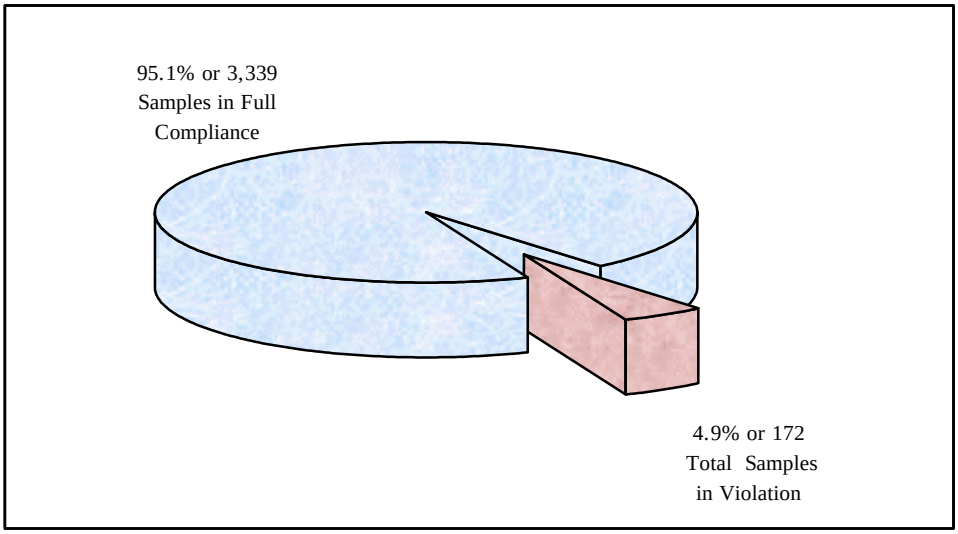
~ Evaluation of Significant Non-Compliance

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 2003 was 9.6% up from 6.5% in 2002.

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% for 2003, while the SIU rate of SNC for Bucklin Point was reduced from a high of 44.8% in 1994 to 9.8% in 2003. 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 rate of significant non-compliance for significant industrial users increased in the Field's Point District to 9.5% in 2003 from 5.2% in 2002. The SIU SNC rate for Bucklin Point increased slightly to 9.8% in 2003, from 8.2% for year 2002. Nine of the SIUs listed in SNC for 2003 were listed for administrative violations. As can be seen from FIGURE 1, 95.1% of the 3,511 analytical reports reviewed by the Pretreatment Staff during 2003 were in full compliance with effluent discharge limitations, standards which are <u>more stringent</u> than EPA categorical standards.

FIGURE 1
USER COMPLIANCE RATE
FOR ALL EFFLUENT ANALYSES



3,511 Total Analyses Reviewed

In addition, as shown in CHAPTER IV of this report, the 2003 rate of compliance of categorical users in the two districts was 95.5%, while the compliance rate for significant users was 95.6%. 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 firms located in the Field's Point and Bucklin Point Districts were listed in a Public Notice in the Providence Journal on March 3, 2004 as being in SNC for the period from October 1, 2002 through December 31, 2003. Of the twenty firms published for being in SNC, eleven users are located in the Field's Point District and nine users are located in the Bucklin Point service area.

The names of ten categorical users were published for SNC, six from the Field's Point District and four from Bucklin Point. Two significant non-categorical users were published, one is located in Field's Point and one is located in Bucklin Point. Eight non-significant industrial users were listed in the Public Notice, four from Field's Point and four from Bucklin Point. Eight of the twenty firms were listed as being in SNC solely for administrative violations such as submitting a report late. Six firms listed in the notice were cited as being in SNC solely due to violations of effluent limitations. Four firms were cited for both administrative and effluent violations and two users were cited for adversely effecting the proper operation of the Pretreatment Program by either continually failing to submit reports and ignoring NBC requirements or for bypassing a Pretreatment system. At the time of publication of this report, 15 out of the 20 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 2003, the NBC issued 2,267 Notice of Violation Letters and four Administrative Orders, one Permit Suspension was in effect throughout 2003, and the NBC assessed $150,000 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.

~ 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. The NBC Rules and Regulations satisfy all EPA and DEM requirements and are fully enforceable. The NBC Rules and Regulations will be revised in the future to incorporate the EPA Project XL participation by the NBC. Additional information regarding the EPA Project XL is provided in this chapter under Proposed Program Modifications and also in CHAPTER VII of this report.

~ Evaluation of Recent and Proposed Program Modifications

The NBC has several major program modifications planned for the future. 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.

The NBC also proposes a substantial program modification to revise the NBC Rules and Regulations. This revision is necessary to incorporate the regulatory flexibility necessary for the NBC to implement the EPA Project XL Program. Additional information regarding the NBC participation in Project XL is provided in CHAPTER VII.

During 2003, the NBC did not implement any non-substantial changes, however a reevaluation of the Silver Reduction Program was conducted and the Silver Reduction Program will be expanded to control mercury discharges from dental facilities. Additional information regarding the Silver and Mercury Discharge Control Program is provided in CHAPTER VII.

~ 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 2003 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, 2003 - December 31, 2003
Total Categorical Industrial Users as of the date of this report (throughout the reporting period)	62 (66) (See Note 1)
Total Significant Non-Categorical IUs as of the date of this report (throughout the reporting period)	7 (8) (See Note 1)
Total # Significant Industrial Users (SIUs)	69 (74) (See Note 1)

2. Significant Industrial User (SIU) Compliance

	Significant Industrial Users	
	Categorical	**Non-Categorical**
1. # Of SIUs Submitting BMRs/# Required	15/15	2/2
2. # Of SIUs Submitting 90-Day Compliance Reports/# Required	0/0	0/0
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	3	1

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	15/15	2/2
2. # Of SIUs Without Active (Expired) Permits	0	0
3. # Of SIUs With Permits Expired For 180 Days Or More	0	0
4. # Of Non-Sampling Inspections Conducted	310	32
5. # Of Sampling Visits Conducted	163	17
6. # Of Facilities Inspected (Nonsampling)	66	8
7. # Of Facilities Sampled	66	8
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	580	29	814	1423
3. Admin. Orders Issued	1	0	2	3
4. Combined Total Of Administrative Orders and Notices of Violation	581	29	816	1426
5. Civil Suits Filed	1 (see Note 3)	0	0	1
6. Criminal Suits Filed	0	0	0	0
7. Combined Total of Civil and Criminal Suits	1	0	0	1
8a. Published IUs in SNC (See Newspaper Notice in Enforcement Chapter)	6	1	4	11
8b. Rate of IUs in SNC	6/66 = 9.1%	1/8 = 12.5%	N/A	N/A
9a. Amount Of Penalties Collected (Total Dollars/IUs Assessed)	$14,150/1	$0/0	$2,500/1	$16,650/2
9b. Amount Of Penalties Assessed (Total Dollars/IUs Assessed)	$55,000/1	$0/0	$45,000/1	$100,000/2
10. # of IUs Subject to Any Enforcement Action	59	7	308	374
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.

Kevin M Brett — March 15, 2004

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.

Note 3: One civil suit was filed against one significant categorical user to enforce requirements of an Administrative Order. A discussion of this suit can be found in CHAPTER V. Additional information regarding Civil Suits is provided in CHAPTER V.

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, 2003 - December 31, 2003
Total Categorical Industrial Users as of the date of this report (throughout the reporting period)	33 (34) (See Note 1)
Total Significant Non-Categorical IUs as of the date of this report (throughout the reporting period)	17 (17) (See Note 1)
Total # Significant Industrial Users (SIUs)	50 (51) (See Note 1)

2. Significant Industrial User (SIU) Compliance

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

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	8/8	2/2
2. # Of SIUs Without Active (Expired) Permits	0	0
3. # Of SIUs With Permits Expired For 180 Days Or More	0	0
4. # Of Non-Sampling Inspections Conducted	136	77
5. # Of Sampling Visits Conducted	75	40
6. # Of Facilities Inspected (Nonsampling)	34	17
7. # Of Facilities Sampled	34	17
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

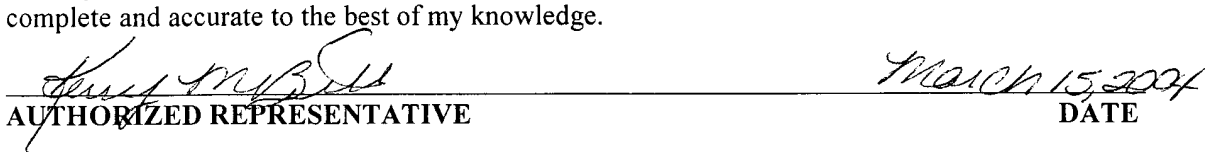
BUCKLIN POINT DISTRICT

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	300	105	438	843
3. Admin. Orders Issued	1	0	0	1
4. Combined Total Of Administrative Orders and Notices of Violation	301	105	438	844
5. Civil Suits Filed	0	0	0	0
6. Criminal Suits Filed	0	0	0	0
7. Combined Total of Civil and Criminal Suits	0	0	0	0
8a. Published IUs in SNC (See Newspaper Notice in Enforcement Chapter)	4	1	4	9
8b. Rate of IUs in SNC	4/34 = 11.8%	1/17 = 5.9%	N/A	N/A
9a. Amount Of Penalties Collected (Total Dollars/IUs Assessed)	$0/0	$0/0	$2,620/2	$2,620/2
9b. Amount of Penalties Assessed (Total Dollars/IUs Assessed)	$50,000/1	$0/0	$0/0	$50,000/1
10. # of IUs Subject to Any Enforcement Action	30	15	186	231
11. Other Actions (Sewer Bans, Etc.)	0	0	0	0

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



AUTHORIZED REPRESENTATIVE **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.

Link to Chapter II

II. PROGRAM ADMINISTRATION

Link to Chapter I

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, 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 Environmental Monitoring & Data Analysis (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

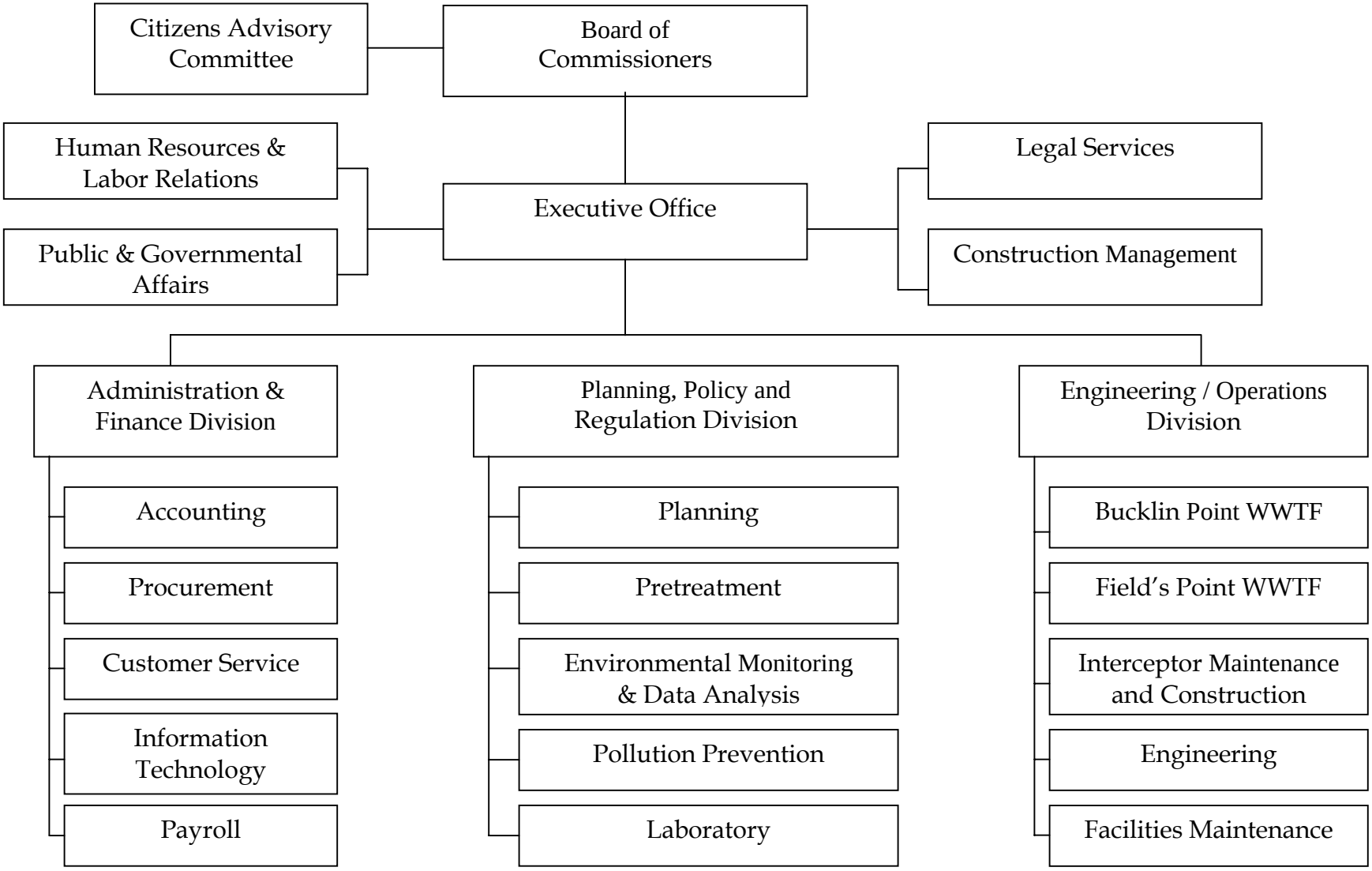
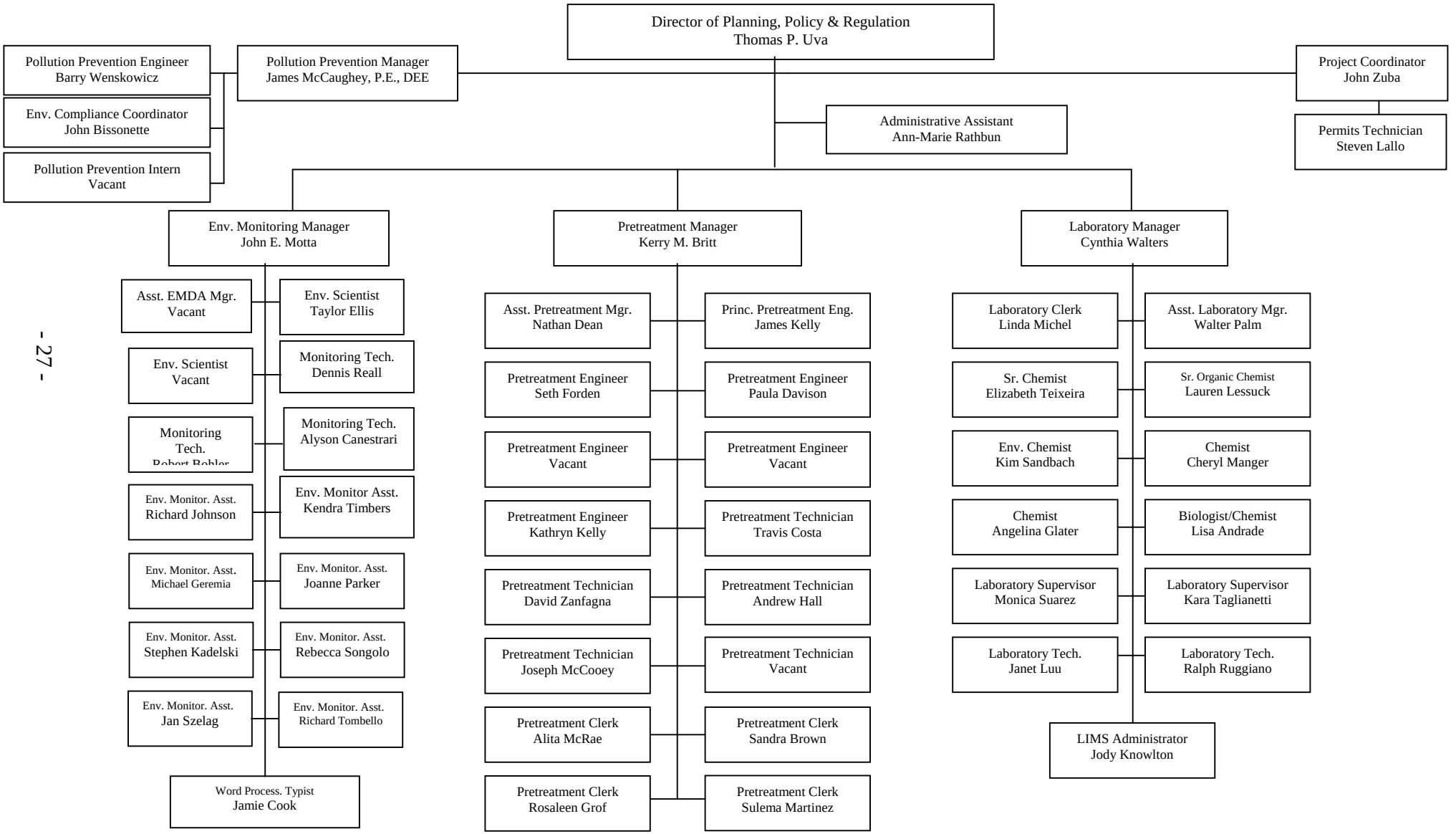


Figure 3
Narragansett Bay Commission
Division of Planning, Policy & Regulation
March 15, 2004



During 2003 there were two personnel vacancies within the Pretreatment Section. Thomas Uva was promoted on December 8, 2003 to the Director of the Planning, Policy & Regulation Division of the NBC, leaving the Pretreatment Manager position open. This position was posted in late 2003 and filled in January 2004 by Kerry Britt. In August of 2003, John Motta was temporarily reassigned to the Environmental Monitoring and Data Analysis (EMDA) Section. In October 2003, John Motta became Acting Environmental Monitoring Manager, leaving his Assistant Pretreatment Manager position vacant. This position was advertised in early 2004.

There were several personnel changes within the EMDA Section during 2003. A position of Environmental Monitoring Assistant, that was vacated in late 2002 was filled by Kendra Timbers in April 2003. Another Environmental Monitoring Assistant position was vacated by Alison Armstrong in August 2003. This position was filled by Michael Geremia in October 2003. David Perrota left his position of Monitoring Technician in September 2003 to accept a position at the East Greenwich Wastewater Treatment Plant. Alyson Canestrari filled this position in December 2003. Sarah Whitford left her position of Environmental Scientist in July 2003. This position remains vacant. In October 2003, Sharon Pavignano vacated her position of Environmental Monitoring Manager. John E. Motta became acting Environmental Monitoring Manager in October 2003 and permanently filled the position in January 2004. The position of Assistant EMDA Manager remained vacant for the entire year due to other funding priorities.

There were two personnel changes in the Laboratory Section during 2003. Francis Underwood retired from his position as Biologist in early 2003. Lisa Andrade filled this position in June 2003. Jody Knowlton filled the previously vacant Laboratory Data Base Coordinator in May 2003.

There were no personnel changes in the NBC Pollution Prevention and Planning Sections during 2003.

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 2003, various Pretreatment, EMDA, Pollution Prevention, and Laboratory personnel received training by attending seminars and classes in the following subject areas:

- Access I and II Computer Training
- Excel I and II Computer Training
- Microsoft Outlook Training
- NBC General Ledger Inquiry Training
- Autocad Basics
- Advanced Microsoft Office Training
- IPAQ Computer Training
- Sapphire (LIMS) Training

- Grant Writing Workshop
- Spill Reporting Training
- Lab Safety and Oil Grease Sample Preservation Training
- Interdepartmental Cross Training
- Management of Hazardous Waste
- Emergency Hazardous Response Training with the Providence Fire Department
- NBC CSO Tunnel Safety Training
- Sampling and Lab Procedures Training
- Gas Meter Operation Seminar
- Civil Rights and Sexual Harrassment
- 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
- Oil Spill Boom Deployment Training at Bucklin Point
- Rhode Island ISO 14000 Roundtable
- CPR/AED Training
- Vulnerability Assessment Training
- Weapons of Mass Destruction
- Crisis Management
- Environmental Management Systems
- Strategic Planning
- 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
- Grade 1 Operator 1 License Training
- Law of Evidence Class
- How to Become a Great Communicator

NBC staff don Level A suits during 40-hour 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, Environmental Monitoring, 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 2004 Pretreatment budget was $1,004,766, a 1.6% increase from the prior year's budget. This increase was necessary to cover raising healthcare costs. The fiscal year 2004 Pretreatment budget allocated 94.1% to personnel cost or $945,595.

The budget for the EMDA Section in fiscal year 2004 was $1,194,562, of which 75.4% or $900,135 was attributed to personnel expense. The FY 2004 EMDA budget increased by 45.8%, or $375,285, over the previous year.

The Pollution Prevention budget for fiscal year 2004 was $246,496, a slight increase from the FY 2003 budget of $228,659. The approved fiscal year 2004 Laboratory budget was $1,204,192, a decrease of 9.2% or $121,480, from the previous year. Personnel costs associated with the Pollution Prevention and Laboratory Sections budgets were 90.6% and 74.5% 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 ongoing since this time. 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 existing pretreatment software package is a Character Based Legacy system. The conversion of the pretreatment software package to a Graphical User Interface system will allow for improved functionality within the PC office environment utilized by the NBC Pretreatment Program. The revised software will also be enhanced to allow entry of photographs of users' sampling locations, pretreatment systems and surveillance manholes. The new pretreatment software will be implemented during 2004. 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.

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 will incorporate 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 2003, 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 17, 2003 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 April 4, 2003. This letter was issued to all users who were published in the Providence Journal Bulletin on March 6, 2003 for being in Significant Non-Compliance for the reporting period October 1, 2001 through December 31, 2002, as mandated by EPA regulations. The letter included an invoice to be paid by the user for its share of the cost to publish the notice.

The third informational form letter was sent to all industrial users on April 7, 2003 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 2003.

The fourth informational letter was sent to all permitted users on April 24, 2003. The letter outlined the topics discussed during a workshop held on March 19, 2003 which updated the regulated community regarding the NBC and its programs. A summary of each presentation made during the work shop was attached to the letter.

The fifth form letter was issued to all significant industrial users in both NBC service districts on June 6, 2003, 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.

On June 9, 2003, the sixth informational form letter was issued to all permitted septage haulers. This letter notified all septage haulers of existing procedures in operation at the NBC Lincoln Septage Receiving Station. The letter warned the septage haulers regarding problems that have occurred regarding the completion of septage manifest forms. The letter also transmitted an informational brochure detailing the NBC Septage Acceptance Policy and Regulations.

The seventh informational letter was sent to all permitted users on July 1, 2003 informing them of the updates to the NBC website, www.narrabay.com. The updates included more information on the Pretreatment Program including down loadable forms and educational materials.

The eighth informational form letter was issued to all permitted septage haulers on September 9, 2003. This letter notified the septage haulers of increases in the rates to discharge septage and for the annual septage hauler discharge permit fee.

The ninth informational letter was sent to all permitted users on October 30, 2003 notifying the users of the new rates approved by the Public Utilities Commission on June 30, 2003. The rate increase included an increase to Pretreatment Permit Fees.

The tenth informational letter was sent to vendors of dental amalgam separators and informed the vendors of the NBCs Best Management Program for the Management of Waste Dental Amalgam. The letter requested information from the vendors wishing to be included on a list of amalgam separators that will be forwarded to dental facilities in the NBC districts.

The eleventh informational form letter was issued to all SIUs on December 16, 2003. This letter educated users on the biological treatment process used at the NBC municipal treatment facilities and how toxic dumps could upset these sensitive processes. The letter thanked the industry for their continued cooperation and asked users to dispose of waste properly off-site during the holiday shutdown and clean up period. The letter warned users that the NBC would be actively monitoring the sewers during the shutdown period to ensure illegal activities do not occur and warned of enforcing civil and criminal penalties against violators caught illegally dumping. The letter also wished NBC's users a happy holiday season.

The twelfth and final form letter was issued to all permitted septage haulers on December 17, 2003 to transmit vehicle identification stickers and to notify the haulers that discharges would not be permitted without a valid sticker.

Copies of these twelve 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;
- NBC sewer fees, rate hikes, and the lien sale process for non-payment.

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 2003 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:

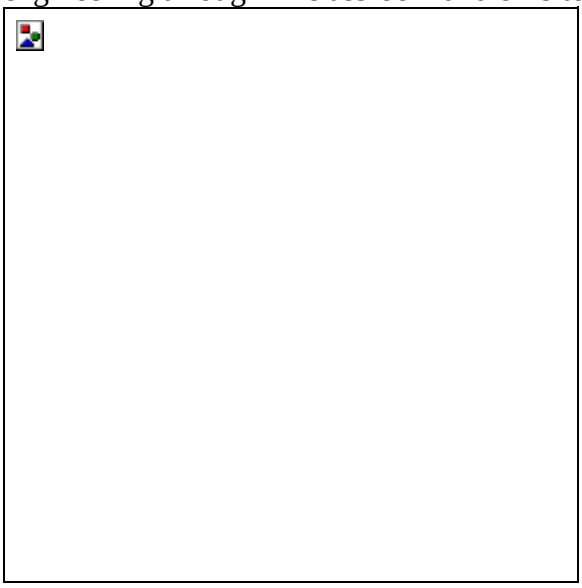
- *Facility Tours* – In past years, more than 3,000 visitors would take advantage of the complimentary tours of the NBC's wastewater treatment facilities, on an annual basis. These visitors range from school children to university students to foreign visitors from Europe, Russia and Asia. To make the tours even more accessible to area students, the NBC offers 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.

- *Reclaiming an Urban Resource:* The Woonasquatcket River Restoration Initiative – The NBC sponsored five river clean-ups in as many months 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 and local businesses 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 launched several new components to its web site. Most notably, Dr. W.C. Leachfield, NBC's intrepid animated scientist leads web surfers of all ages through The LAV, his virtual underground laboratory, in a fun and functional explanation of the problem of combined sewer overflows and how the NBC is working to solve the CSO problem.

- *Advocacy for Clean Water*– In 2003, 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 2003, 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 student to the fields of environmental science and engineering through in-classroom and on-site educational programming.



- *Celebrating the Importance of Narragansett Bay* - For the tenth 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 River Means to Me?" 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 2004 calendar poster. The NBC also sponsored a photography contest “The Four Seasons of the Woonosquatucket River” which was open to youth and adults alike. 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 eleventh 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 2003, 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 2003, 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 2003 State Employees Charitable Appeal (SECA) and raised over $17,000 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 2003, 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:

~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.

~EPA-New England Annual Pretreatment Coordinators Workshop

On June 19, 2003 Thomas P. Uva, NBC Pretreatment Manager and Seth Forden, NBC Pretreatment Engineer gave a presentation at the Annual Pretreatment Coordinators Conference in Concord, New Hampshire. The presentation outlined the NBC's program of employing telemetry equipment, automatic sampling equipment, monitoring probes and specialized manhole covers that incorporate a cellular antena to conduct surveillance manhole monitoring. This system being developed by the NBC is the only one of its kind in the country.

~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.

~ Guest Lectures at the University of Rhode Island

During 2003, Taylor Ellis of the EMDA Section guest lectured in a lab safety course offered by the Chemistry Department at the University of Rhode Island. The lab safety course lecture focused on the need for scientists to properly control the discharge of chemicals to the sewer system.

~ Waste Water Treatment Presentations

On September 30, 2003, Barry Wenskowicz gave a presentation to a group of visiting Vietnamese Environmental Officials about wastewater treatment. The presentation was given at RIDEM and focused on the different ways that NBC controls wastewater to protect Narragansett Bay.

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 2003, 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. As part of this course, issues involving pH chemistry, control equipment and trouble shooting common process problems are covered in great detail. While this course was scheduled for the spring semester 2003, insufficient enrolment (less than 10 students) forced CCRI to cancel the course. The course will be offered again in the spring of 2004.

- American Electroplaters and Surface Finishers Society (AESF) – Throughout 2003 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 presented information on environmental compliance and pollution prevention issues to AESF members and helped to arrange for speakers.

- River Ambassador Initiative – On October 16, 2003 NBC staff acted as "River Ambassadors" as part of an NBC initiative to educate inner-city grade children on the effectives pollution has on local rivers. On this day more than 1,000 students visited various rivers throughout the State of Rhode Island in order to collect and test water samples for pollution indicators such as nutrient levels, pH and dissolved oxygen levels. NBC staff helped students collect samples, perform field analysis of samples and explained the results of the tests and how pollution affects the rivers.

- The Future of Metal Fishing - On May 15, 2003 NBC organized and held a meeting between representatives of the Rhode Island Economic Development Corporation (RIEDC) and a representative of the Governor's office at NBC's Corporate Office Building to discuss the future of the metal finishing industry in Rhode Island. The purpose of this meeting was to educate the Governor's office on the current state of affairs with respect to Rhode Island's Metal Finishing Industry and to initiate discussions with Governor and EDC to identify ways the State of Rhode Island may be able to help improve this industry sector's productivity and business. During this meeting NBC staff presented information on the major causes for the current decline in Rhode Island's jewelry and electroplating industries and the effect on employment and the local economy. As a result of this meeting the RIEDC representatives offered to look more closely at these problems and to work with the metal finishing industry to utilize existing RIEDC programs, such as low interest loans, to attract more business.

- Environmental Managements Systems - On May 15, 2003 NBC organized and sponsored a half-day workshop on the development of use of Environmental Management Systems for local business and NBC staff.

- Toxic Release Inventory (TRI) Report Workshop - On June 11, 2003 from 9:00 AM - 12:00 PM NBC sponsored a workshop on TRI Reports at the NBC Corporate Office Building in Providence.

- Art Environmental Best Management Practices (EBMP) Workgroup Meeting – On May 5, and May 30, 2003 Barry Wenskowicz, NBC Pollution Prevention Engineer chaired workgroup meetings of NBC's Art Environmental Best Management Practices Working Group consisting of representatives of NBC, RIDEM, Rhode Island School of Design, Rhode Island Council of the Arts and local independent professional artists.

- URI CHE Pollution Prevention Course - On February 3, 2003 NBC Pollution Prevention Manager presented a 3-hour lecture to a class of engineering students at the University of Rhode Island as part of a graduate Chemical Engineering course on Pollution Prevention. The lecture include background information on environmental laws, regulations and pollution prevention including case studies on successful pollution prevention efforts put forth by various NBC industrial users.

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 staff made an annual presentation to the Citizens Advisory Committee during 2003 to review the Pretreatment Program's progress and achievements of 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, to name a few. Various NBC staff routinely attend association meetings and conferences and often are speakers at such events.

Link to Chapter III

III. INDUSTRIAL AND COMMERCIAL USERS, PERMITS, AND INSPECTIONS

User Classification System

To date, the Commission has identified and inspected 4,853 different industrial and commercial users located within the two NBC sewerage districts. During 2003 the Pretreatment staff identified and entered information on 255 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 5,108 industrial and commercial users have been identified through user surveys, 3,595 are still conducting business in the NBC service areas and 125 were classified as Significant Industrial Users sometime during 2003. Of the 125 Significant Industrial Users reported for 2003, there were 100 classified as categorical industries which are subject to both NBC and EPA regulations. The Commission has identified 3,470 non-significant industrial and commercial users and 25 significant non-categorical industrial users of the NBC sewer system. During this reporting period, seven 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 four firms were newly classified as significant during 2003. 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 1,387 Wastewater Discharge Permits in effect, which were issued to facilities located in the Field's Point and Bucklin Point drainage districts. Presently, 911 permits are in effect for users in the Field's Point District, while 476 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 400 permits to users located in the two NBC drainage districts. Of the 400 permits issued during 2003, there were 158 new permits issued to new or previously operating commercial and industrial users and 242 permits were reissued to existing users because the old permit expired or the firm changed process operations. One new permit was issued to a categorically regulated SIU located in Bucklin Point.

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	56	29	85
12	Metal Molding And Casting	2	0	2
13	Organic Chemical Manufacturer	0	0	0
14	Pharmaceuticals	0	1	1
15	Metal Formers	1	2	3
16	Steam Electric Power Generating	0	1	1
18	Centralized Waste Treatment Facilities (Future Use)	2	0	2
19	Transportation Equipment Cleaning	0	0	0
21	Tubbing/Vibratory/Mass Finishing	10	8	18
22	Chemical Transporters, Refiners, Recyclers, Manufacturers	4	3	7
23	Textile Firms	1	18	19
24	Printers	6	9	15
25	Industrial Laundries	0	2	2
26	Machine Shops/Machinery Rebuilding	2	2	4
27	Other Firms Discharging Toxics	12	13	25
28	Central Treatment Facilities, Hazardous	0	0	0
29	Central Treatment Facility, Non-Hazardous	0	0	0
34	Manufacturers With High BOD/TSS	0	3	3
35	Firms Discharging Conventional Pollutants	1	1	2
37	Automotive Maintenance/Service Facilities	5	2	7
40	Groundwater Remediation/Excavation Projects	9	2	11
41	Regulated Electroplating Or Chemical Processes Disconnected Or Recycled	14	4	18
42	Other Regulated Processes That Are Disconnected Or Recycled	30	15	45
43	Recycle Electroplating Or Chemical Processes With Cooling Water Or Boiler Discharges	12	4	16
44	Other Recycle Processes With Non-contact Cooling Water Or Boiler Discharges	8	4	12
46	Cooling Water With Solvents/Toxics On Site	16	4	20
49	Firms With Solvents, Toxics, Etc. On Site	0	1	1
51	Cooling Water	10	3	13
52	Boiler Blowdown/Condensate Discharges	13	6	19
53	Cooling Tower Discharges	4	7	11
59	Other Nontoxic Discharges	3	4	7
80	Septage Haulers/Dischargers	1	18	19
81	Food/Meat/Fish Produce Processing (Wholesale)	22	7	29
82	Supermarkets (Retail Food Processing)	15	8	23
83	Parking Garages/Lots	1	1	2

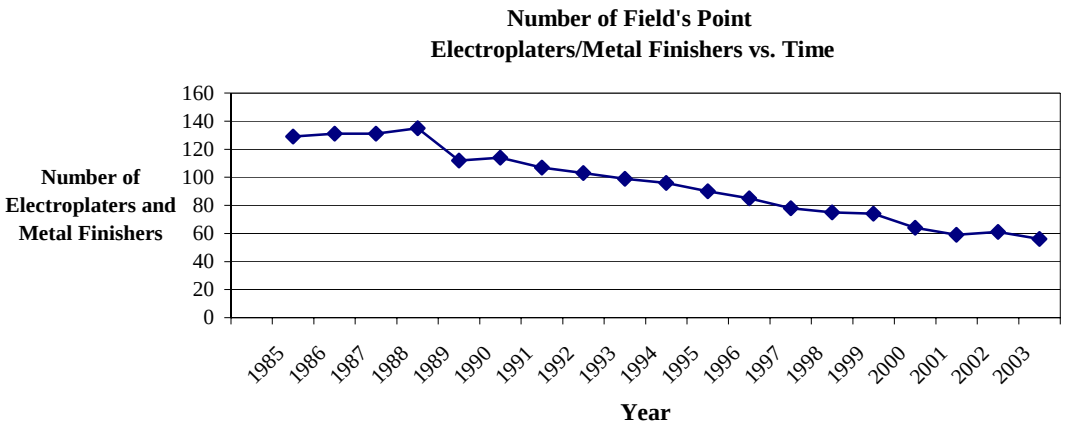
TABLE 5
(Continued)
Narragansett Bay Commission
Summary of Wastewater Discharge Permits in Effect

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	319	185	504
86	Comm. Buildings With Cafeteria/Laundry	93	24	117
89	Other Commercial Users With Potential to Discharge - Conventional Pollutants	13	0	13
90	Hospitals	11	1	12
91	Cooling Water/Ground Water/Boiler Discharges	1	0	1
92	Laundromats/Dry Cleaners	52	27	79
93	Photo Processing	21	5	26
94	X-Ray Processing	42	10	52
95	Clinical, Medical, And Analytical Laboratories	16	5	21
96	Funeral Homes/Embalming	17	12	29
97	Motor Vehicle Service/Washing	40	13	53
99	Other Commercial Users With Potential To Discharge Toxic Or Conventional Pollutants	20	11	31
	Total Permits in Effect	**911**	**476**	**1387**

There were 26 permits revised and reissued to Significant Industrial Users in the two drainage districts during 2003, while one new permit was issued to this class of users. Twenty-two of the 26 revised permits were issued to categorical users during 2003, while the four remaining revised permits were issued to Significant Non-Categorical Users. One new permit was issued in 2003 to a new categorical user in the two drainage districts. The new categorical user is located in Bucklin Point.

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 is working 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, 63 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 63 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 28 firms recycle the majority of their process wastewater, however, may discharge cooling water, condensate or boiler blowdown. 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;

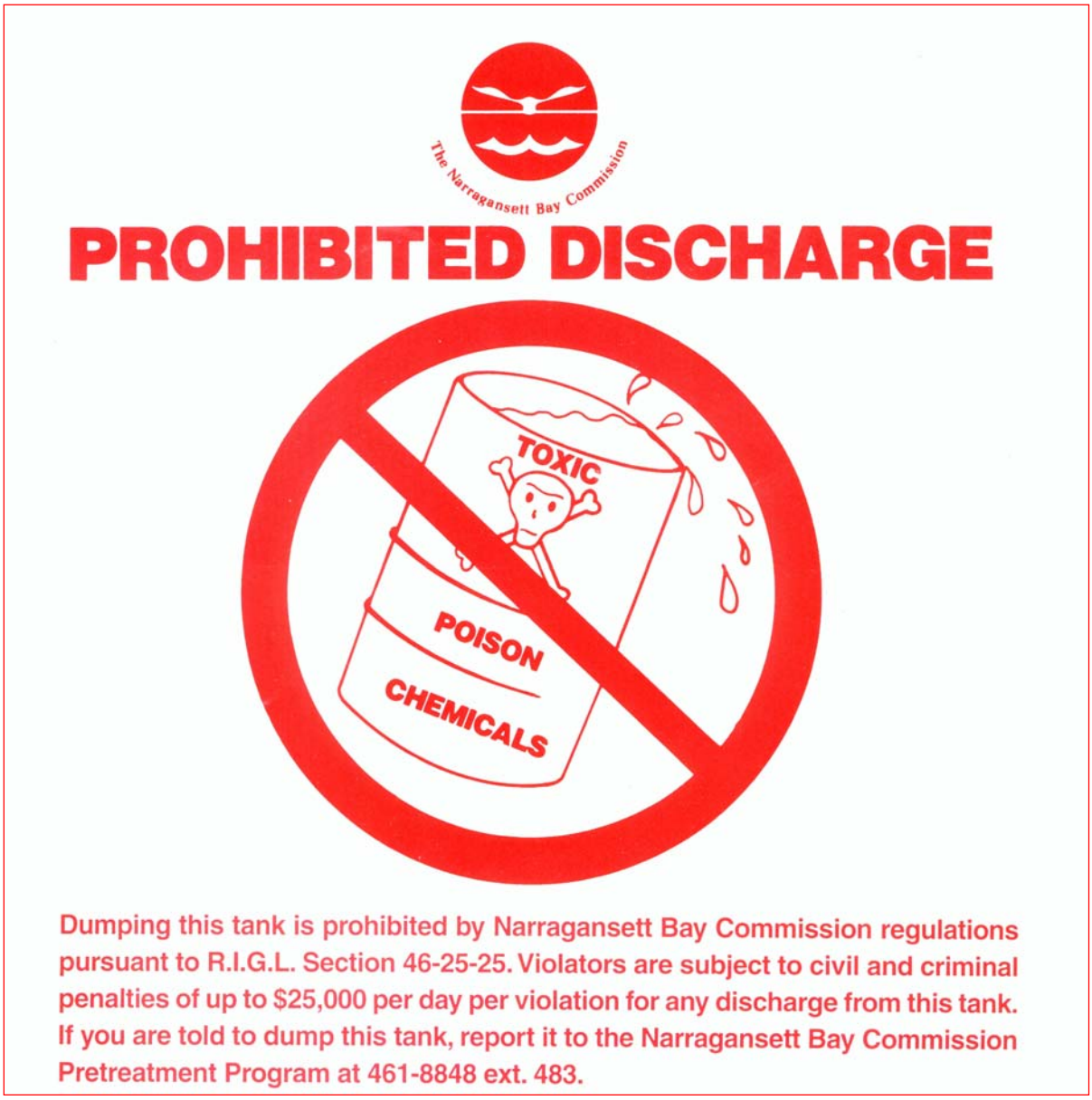
- Submission of a Spill and Slug Prevention Control Plan and a Toxic Organic/Solvent Management Plan. The user is required to contain all spills within the facility as part of the Spill and Slug Control Plan. The Toxic Organic/Solvent Management Plan requires the user to detail process operations, perform 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 are also quite 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**	
	< 2,500 GPD	$362.00
	≥ 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**	
	< 1,000 GPD	$362.00
	1,000 GPD ≤ Flow < 2,500 GPD	$725.00
	2,500 GPD ≤ Flow < 5,000 GPD	$1,087.00
	≥ 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 91 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.

Copper Recycle Ion Exchange pretreatment system at Tri-Jay Jewelry Company

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, a source that 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, 63 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 28 of these users which are classified in categories 43 and 44. Of the 91 users classified in categories 41 through 44, 64 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, Environmental Monitoring & Data Analysis 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 two Assistant Pretreatment Managers 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 2003, while the SIU Rate of SNC for Bucklin Point was reduced from a high of 44.8% in 1994 to 9.8% in 2003. The overall rate of SNC for all NBC Significant Industrial Users for 2003 was 9.6%, an increase from 6.5% observed in 2002. 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, 2003 through December 31, 2003, the Pretreatment staff conducted 1,954 inspections of users, not including sampling visits. This represents an increase of 75 inspections over the number of facility inspections conducted by the Pretreatment staff the previous year. Of the 1,954 non-sampling inspections conducted by the Pretreatment staff, 555 were inspections of SIUs and 1,459 were inspections of non-significant industrial users. The Pretreatment staff conducted 446 facility inspections of categorical users and 125 inspections of significant non-categorical industrial users in both districts, excluding sampling visits.

The Pretreatment staff conducted 32 regulatory compliance meetings with users during 2003. All facilities classified as SIUs were inspected at least twice during the 12 month report period, with the exception of one significant user. The one SIU, Electrolizing, Inc., a Tier I Environmental Performer, was inspected only once in 2003. Electrolizing, Inc. is a member of the NBC's EPA Metal Finishing 2000 Program and qualifies for reduced regulatory inspections; therefore, the firm was only inspected once by the Pretreatment office in 2003. 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 Environmental Monitoring personnel conducted 316 industrial user sampling inspections of 135 industrial user facilities, a decrease of 34 from the previous year's reported value of 350 sampling inspections. The decrease is attributed to the decrease in SIUs during 2003. Of the 316 sampling inspections, 297 sampling inspections were of significant users and 19 sampling inspections were of non-significant users. There were 240 sampling inspections of 100 categorical industries and 57 sampling inspections of 25 significant non-categorical users.

During 2003, the EMDA Section sampled every Significant Industrial User at least once. All SIUs were sampled at least twice in 2003, with the exception of two firms that either did not discharge during the year or were unable to discharge due to pretreatment equipment failures. 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 2003 by the NBC.

TABLE 7
Summary of SIUs Sampled or Inspected Less than Twice in 2003

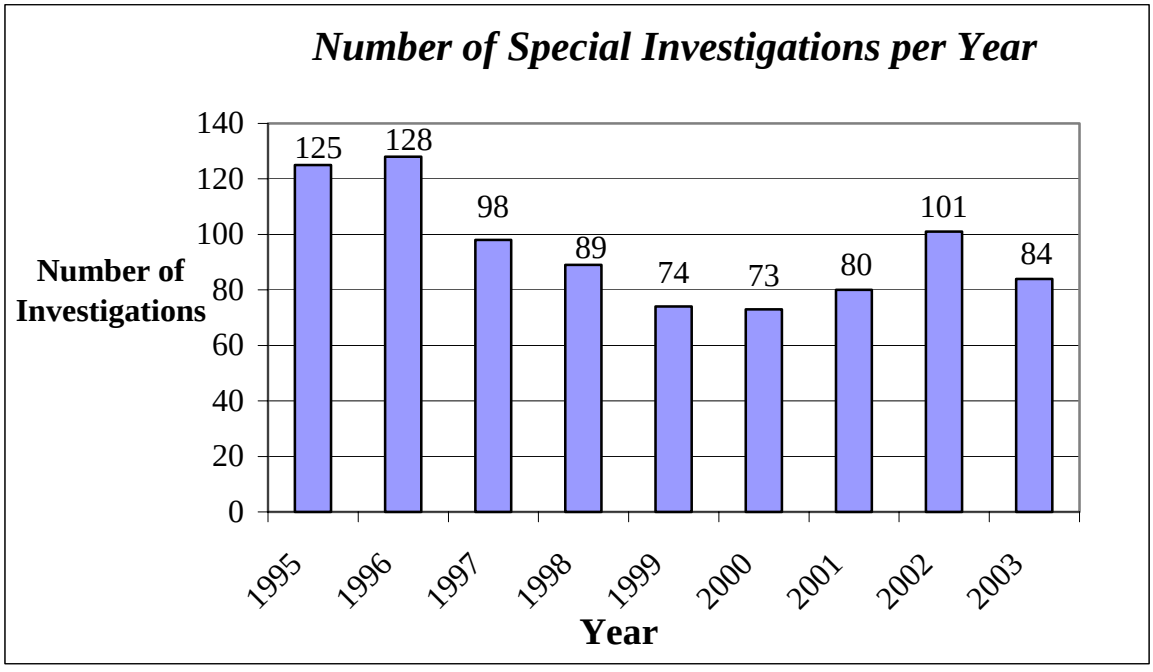
COMPANY NAME	2003 SAMPLE & INSPECTION SUMMARY	EXPLANATION
Field's Point District		
Century Plating International	1 sample only	Firm's permit was suspended and sewer connection was sealed in late 2001. Did not discharge in 2003.
Electrolizing, Inc.	1 inspection only	Reduced inspections part of Metal Finishing 2000.
Northland Environmental, Inc.	1 sample only	The firm batch discharges infrequently. Late in 2003 the firm experienced problems with pumps used for the discharge of wastewater and did not discharge to the sewer.

All NBC Significant Industrial Users with discharges were sampled at least once in 2003, 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 84 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 17 from the 101 investigations conducted in 2002. A listing of year 2003 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

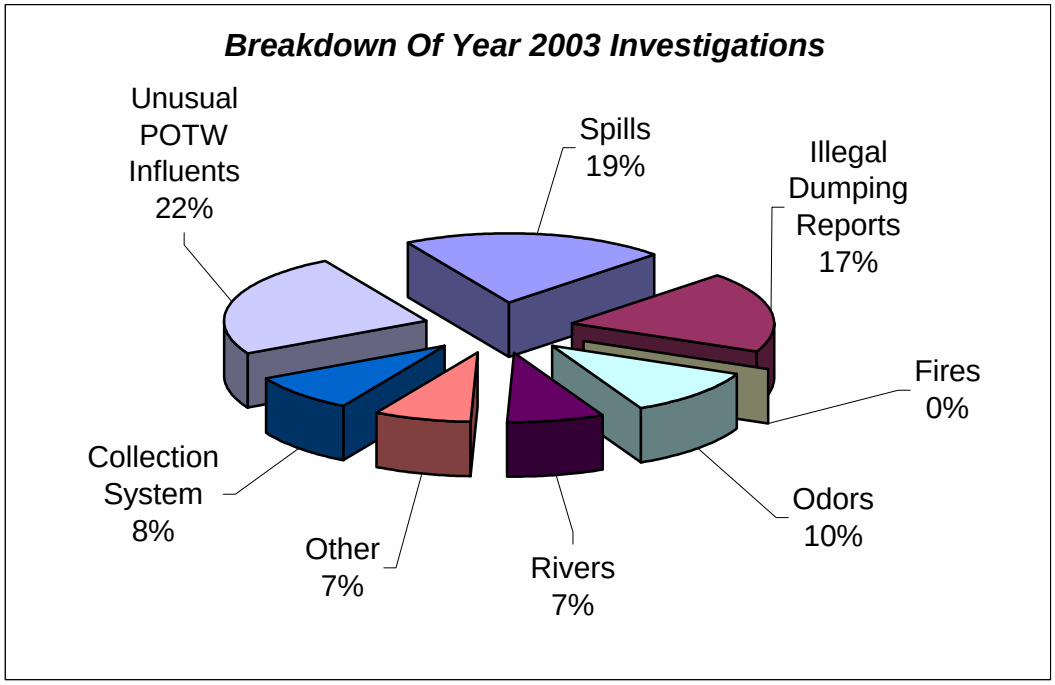


FIGURE 7 is a graphical breakdown of the types of investigations conducted in year 2003. As can be seen from the graph, the majority of Pretreatment special investigations result from unusual POTW plant influents, 22%. Of the 84 special investigations, there were 14 reports of unpermitted discharges or illegal dumping, 17% of all investigations reported.

There were seventeen investigations of gasoline, fuel, oil and/or chemical spills, eleven reports of grease discharges and blockages in sewer lines, eight odor complaint investigations, 18 reports of unusual influents, including 8 reports of colored influent to the NBC treatment plants, four unusual pH influent investigations, and three fuel oil influent investigations. 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 84 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

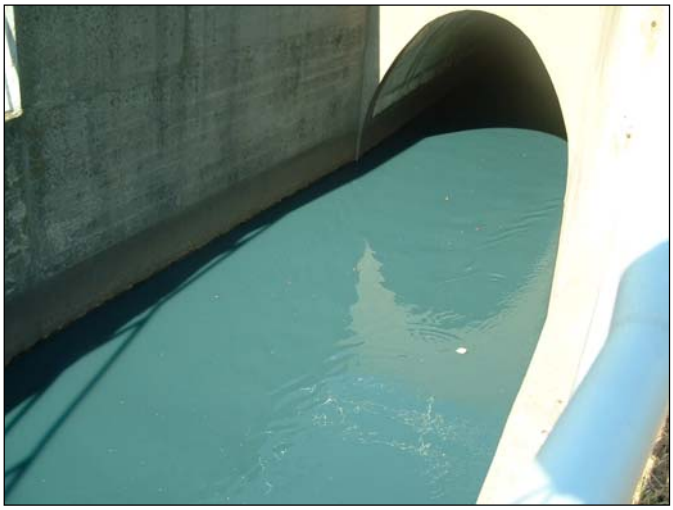
The source and chemical characteristics of colored influents impacting the wastewater treatment facilities are initially unknown; therefore, all incidents of colored influent at NBC treatment facilities are thoroughly investigated. Colored influent may potentially be attributed to a toxic chemical, to 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 personnel contact companies with the potential to discharge dye or pigment 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 personnel are deployed to track the colored wastewater through the sewer system to determine its source. Over the past year, Pretreatment personnel investigated a total of eight incidents of unusual color entering its treatment facilities, down approximately 75% from the previous year.

Six incidents of colored influent were reported at the Bucklin Point treatment facility during 2003. One event turned out to be an erroneous report in which color had not entered the plant. The other five events were of such short duration that the colored influent stopped entering the plant before it could be physically tracked through the sewer system. Nevertheless, three of the five events were able to be attributed to discharges from one, or a combination of several textile firms in the Bucklin Point district.

Two color incidents were reported at the Field's Point treatment facility during 2003. One incident was not able to be tracked due to its short duration. During the second incident, an inspection of the suspected firm revealed that wastewater being discharged was highly concentrated and of the same color that was being tracked. The firm was required to cease discharging this wastewater in order to alleviate the color impact. In response to recurring color impacts, this facility installed equipment to pretreat colored wastewater. Colored influent has not been a problem in the Field’s Point District since the firm installed the pretreatment equipment.

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.



One Bucklin Point firm's malfunctioning pretreatment system resulted in this colored treatment plant influent during 2002

Spills

During the past year, Pretreatment personnel investigated a total of ten spills within the NBC service district. Five spills in the Field's Point district were investigated, while five spill investigations were conducted in the Bucklin Point district. Of the ten investigations, six were in response to oil or fuel spills and four were in response to chemical spills.

The oil and fuel spills varied in size from a few gallons of power steering or brake fluid leaked from a vehicle to approximately 50 gallons of #2 fuel oil spilled from a facility's boiler room. Five of the six oil and fuel spills occurred outdoors. Of the six fuel or oil spills, four were contained within the spill area and did not contaminate any water collection system. One of the spills that was reported as a fuel spill was actually a discharge from a street cleaning operation. The wastewater from the operation was discharging to a storm drain. The firm was instructed to either apply for a wastewater discharge permit or install measures to prevent the wastewater from entering the storm drain. The other spill that was not contained resulted in small amounts of heating oil being discharged to nearby catchbasins and then to the sewer system. As a preventive measure, Pretreatment and Environmental Monitoring personnel installed a containment boom at the headworks of the Bucklin Point Wastewater Treatment Facility.

NBC personnel responded to four incidents of spills occurring at industrial facilities. Two investigations were of small spills of chemicals at facilities. Pretreatment personnel responded to a report in the local media of fire department activity around a large Field's Point electroplating facility. It was determined that a small amount of sodium hypochlorite had spilled from a hose during a chemical delivery. The spill occurred inside the facility where it was contained. This spill did not impact the NBC sewer or the firm's pretreatment system. The second investigation to a report of a spill was at a power company in the Bucklin Point service district. The firm reported that a small volume of boiler treatment chemical had reached a floor drain from an overflowing tank. The floor drain discharges through a tank that is monitored and nothing out of the ordinary was noted. The spill did not have any impact on the Bucklin Point Wastewater Treatment Facility.

There were two investigations to reports of chemical spills that resulted in facility evacuations. One investigation was to a report from an employee of Osram Sylvania that sulfuric acid had leaked from a tank and reacted with lime. The reaction created fumes and the firm was required to evacuate the facility. The first employee that responded to the incident shut off the flow from the wastewater treatment system to the sewer system. Therefore, no wastewater from this incident impacted the sewer system.

The second investigation was in response to a report in the local news media that a facility and the surrounding neighborhood in Pawtucket had been evacuated after a chemical release at the facility. Upon arrival, Pretreatment personnel learned that gas and liquid were released when a chemical delivery of sodium hydroxide was inadvertently deposited into a hydrogen peroxide tank. There was no impact to the sewer system from this event but the surrounding area, including the Bucklin Point Wastewater Treatment Facility, was evacuated during this event due to the gas release.

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 the past year, Pretreatment personnel investigated three reports of unusual wastewater in the collection system. These reports included two reports of solvent odors and one report of oil in the sewer. All of these events were a direct result of pressure washing the sewer pipes being performed by a NBC contracted company. 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 likely occurred over many years, prior to the implementation of the NBC Pretreatment Program.

Grease Spills at Bunge North America (East)

During the past year, Pretreatment personnel investigated six spills of vegetable shortening that were reported by and occurred at Bunge North America (East), formerly Central Soya Company, Inc. This firm is a large manufacturing facility that processes, packages, and distributes edible oil products. Two of the spills occurred when storage tanks were overfilled in the facility's tank farms. The spills ranged in size from 133 to 1,300 gallons of edible shortening products. The remaining four spills of vegetable oil were attributed to equipment failures such as broken pipes. These spills were generally much smaller and ranged from 5 to 55 gallons, with one notable exception that occurred when a pipe connection became disconnected while off-loading a tank truck resulting in a spill of 2,400 gallons of corn oil.

In the areas where each of these spills occurred, the firm was properly implementing the Spill and Slug Prevention Control Plan that the NBC required the firm to develop. Even though this facility experienced several spills over the past year, no impacts to the firm's pretreatment system or the sewer system occurred.

Cleanup underway following a grease spill inside a tank farm at Bunge North America (East)

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

The Pretreatment Section investigates all unusual influents into both wastewater treatment facilities. During 2003, Pretreatment personnel responded to eleven miscellaneous reports of unusual influent to the Field's Point Wastewater Treatment Facility (FPWWTF). Four of the eleven influent reports were due to high influent pH, four due to solvent odors, two reports were thought to be grease entering the facility, and one report was due to excessive leaves entering the main pump station.

Of the four elevated pH events, three were of short duration so they could not be tracked through the sewer system to the source. However, during one event wastewater with an elevated pH was tracked back to a local electroplating firm. Violations observed during the resulting inspection had led to the elevated pH discharge. During the event the FPWWTF influent pH increased to a maximum of 11.45 s.u. The entire event lasted over three hours. An Administrative Order was issued to the electroplating firm as a result of this event. Additional information regarding this enforcement action is provided in CHAPTER V.

On four occasions solvent or fuel odors were reported to be emanating from the plant's grit chambers, primary clarifiers, and/or aeration chambers. During one occasion the cause of the odor was not the influent at all, but rather a new epoxy floor that had just been poured at the nearby animal shelter. Pretreatment personnel attempted to track the three other odor investigations by monitoring the air in both pump stations and inspecting a nearby construction site discharge that feeds the grit chambers directly. Odors were not detected at the pump stations; however, on one occasion when staff proceeded to the construction site it was determined that their settling pond had a fuel or solvent odor and a slight sheen was observed. The firm's oil absorbent boom was in place. A sample was collected and found to be in compliance. Solvent odors have not been reported since.

On two occasions during the past year grease was reported to be observed floating in the primary clarifiers. Pump stations feeding the plant were inspected but grease was not observed. Closer inspection and discussion with Operations personnel revealed that the material was not grease at all. Excess polymer had inadvertently been fed into the clarifier and caused the unusual material to appear on the water's surface.

On one occasion a significant amount of leaves had entered the main pump station. Pretreatment personnel observed leaves at the pump station but were unable to track them to the source.

None of the miscellaneous unusual events during the past year was significant enough to adversely affect the receiving waters of the facility. However, the plant maintained compliance with their discharge permit due to a fast response from Pretreatment personnel during one significant influent pH event. 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 ten grease related investigations. There were two investigations conducted in the Bucklin Point District and eight investigations conducted in the Field's Point District. Of the ten grease investigations conducted by the Pretreatment Section, three investigations were associated with food preparation operations.

Pretreatment personnel investigated a grease-laden discharge at an unpermitted resale restaurant equipment firm. The investigation determined that the firm was cleaning restaurant equipment causing grease-laden wastewater to discharge to a catch basin on a nearby street. The firm was required to discontinue the cleaning procedure to ensure that the material did not further impact the catch basin. As a result, the firm was required to obtain a discharge permit and properly dispose of the wastewater.

Blockage due to poor maintenance on Passive Grease Traps

Eight collection system grease investigations were conducted in 2003, five were grease blockages and three were a result of grease build-up observed in sewer pipes. One of the five grease blockage investigations was of a permitted supermarket. The blockage was caused by improper maintenance performed on their indoor passive grease traps causing a blockage downstream within their outdoor grease interceptor. The firm was required to change its maintenance procedures on the indoor grease traps.

The remaining four grease blockage investigations remain on going since the source of each blockage occurrence could not be determined. Of the three grease build-up investigations, one occurred downstream of two NBC permitted users. Both sources were inspected and were found to be complying with the terms of their discharge permits. The source of the grease build-up could not be conclusively determined. The remaining two investigations occurred within residential areas. It was determined that common residential kitchen practices may have attributed to the grease build-up within the collection system.

The final grease investigation Pretreatment personnel responded to was a report of a block of grease being observed at Goose Point along the banks of the Seekonk River in Providence. It was determined that the block of grease resulted from a surcharged manhole on Gulf Avenue. The drainage area was assessed and revealed to be mostly residential. Two NBC permitted users that were potential contributors were inspected.

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 approximately 23 reports of illegal dumping or unpermitted discharges within the Field's Point and Bucklin Point Districts. Of the 23 investigations, four involved illegal and/or unpermitted discharges into local rivers. One river discharge was determined to be laundry washwater and most likely from a nearby home incorrectly connected to a storm line. The line was televised to determine the exact source. Another involved the Marriott Hotel. The hotel had reworked some of their internal piping and accidentally connected to a storm line, which went directly to the Moshassuck River. The hotel was required to immediately correct the problem. A third investigation involving discharges to the river was from a manhole on the property of an auto dealership surcharging and subsequently discharging sewage to the river. The firm was required to clean out the manhole and line and do whatever else was necessary to prevent this from happening again. Finally, there was an investigation conducted jointly with the RIDEM into oil discharging from an outfall into the river. It was determined the outfall was owned by the City of Providence. RIDEM was provided with the necessary information to complete the investigation with the City of Providence.

Seven of the 23 investigations involved various reports of dumping into catch basins and/or storm lines. Two of the seven involved pumping rain and/or ground water from property to the storm lines. In both instances, the reports were forwarded to the municipalities that owned the storm lines. Two other instances involved reports of waste oils and/or antifreeze being discharged to catch basins. For one of the instances the report was unfounded. In the other instance, none of the oil entered the sewer. The City of Providence, who owns the catch basin, was called to clean out the basin.

Of the remaining three investigations involving dumping into catch basins and/or storm lines, one was the result of a fire suppression system pipe bursting within a facility while the facility was closed. The fire department entered the facility to shut off the water. The second investigation involved a contractor rinsing a cement truck flume near a catch basin. Finally, there was an investigation at a Zero Discharge company. A stain was observed on the ground leading to a catch basin. The firm indicated that it definitely was not the result of the firm dumping nor was it the result of a spill. The firm hypothesized that the stain is most likely due to rusty footings on tanks, which had been removed. The firm was required to submit a detailed report.

Five of the 23 investigations involved odors being detected within the sewer system or near a catch basin. Three of the instances involved fuel odors. In each of these instances the sources of the fuel odors could not be determined. Another investigation involved natural gas odors. The source was a leak in the main gas line within the street. Providence Gas dispatched a crew to fix the leak. Lastly, solvent odors were detected at the Septage Receiving Station. Manifests for the day were scrutinized. However, the source of the odor could not be determined.

Two of the 23 investigations were the result of manhole monitoring showing elevated metals in Johnston, and levels of lead and zinc out of compliance downstream of Century Plating / New England Industries. A survey was conducted in the area of Johnston and as a result two auto body shops were permitted. The exact source of the elevated metals could not be determined. In the other instance, an inspection was conducted immediately at Century Plating and New England Industries. The firms are currently being closely monitored.

The five remaining investigations were various in nature. One involved a report from RIDEM of illegal dumping at AAI.Fostergrant Inc. NBC staff inspected the firm and it was determined that the firm does have wastewater discharges to the sewer. The firm was permitted for the minimal non-toxic discharges. Another of the remaining five

investigations involved a report of dumping by an auto repair facility. The facility indicated that a pipe burst recently in a bathroom and overflowed into the garage area and down a floor drain. The facility was required to either apply for a permit, or seal the floor drains. Two of the remaining five investigations involved a report of grease being discharged by a plumbing contractor, and an automotive repair facility discharging used engine oil. Both reports were determined to be unfounded. Finally, a mill complex subbasement was inspected and a dye test was performed to determine the source and discharge point of water previously observed flowing into the basement. The investigation was inconclusive, and a follow-up investigation is planned for the future.

Pass-through and Interference

During calendar year 2003, the NBC Pretreatment Section conducted 84 special or emergency investigations within the Field's Point and Bucklin Point districts. Over 58% 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 unusual influent reports, comprising 22% of all investigations. Likewise, most unusual influent reports involved an unusual color in the influent to the treatment facilities, of which there were eight incidents, six at Bucklin Point and two at Field's Point. Other unusual influent reports involved high/low pH impacts, of which there were four incidents, and four fuel solvent reports.

The next most common types of investigations, spills and illegal dumping and/or unpermitted discharges, were nearly equal in number of incidents, with 10 and 14, respectively. These investigations involved primarily oils, gasoline, and grease either being intentionally dumped or accidentally spilled.

All reports of spills, dumping activities, unusual influents and other related incidents during 2003 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 2003 resulted in interference or pass-through situations at either of the NBC wastewater treatment facilities.

Link to Chapter IV

IV. COMPLIANCE MONITORING

Link to Chapter III

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 Environmental Monitoring & Data Analysis (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.**

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 2003 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 9 parts per trillion (ppts). 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, 2003 through December 31, 2003, NBC personnel conducted 316 sampling inspections of industries located within the NBC Field's Point and Bucklin Point Drainage Districts, resulting in the collection of 358 composite and grab samples. Of these 358 samples, 310 were in full compliance with the NBC standards and 48 were not in compliance, resulting in a user compliance rate of 86.6% based upon NBC analyses, an increase from the 82.4% rate of compliance reported for 2002 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 2003. In fact, most Significant Industrial Users were sampled at least twice in 2003, with the exception of two users that could only be sampled once due to operational situations occurring at these firms. These two firms were detailed in CHAPTER III. One did not discharge in 2003. The other firm experienced operational problems during the latter half of the year that prevented the firm from discharging. The NBC satisfied all EPA requirements regarding sampling SIUs, as all NBC significant users with discharges were sampled in 2003, well within the EPA requirement to sample each SIU at least once every twelve months.

The NBC conducted sampling of 125 Significant Industrial User facilities and ten non-significant user facilities in the two NBC districts during 2003. Of the 135 total facilities sampled by the NBC, 100 facilities were classified as categorical industries at the time of the sampling event. There were 25 firms classified as Significant Non-Categorical facilities when sampled by the NBC during 2003.

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 2,414 wastewater monitoring reports for the period from January 1, 2003 through December 31, 2003. For this period, the industrial and commercial users submitted 3,153 sample results, 3,030 of which were in full compliance with the NBC and EPA standards. This is a user self monitoring report rate of compliance of 96.1%, significantly better than the 86.6% monitoring rate of compliance observed for NBC sampling events. The users submitted 30.6% 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, 2003 through December 31, 2003 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, 2003 through December 31, 2003. 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 97.3%, NBC results indicate only an 86.4% 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

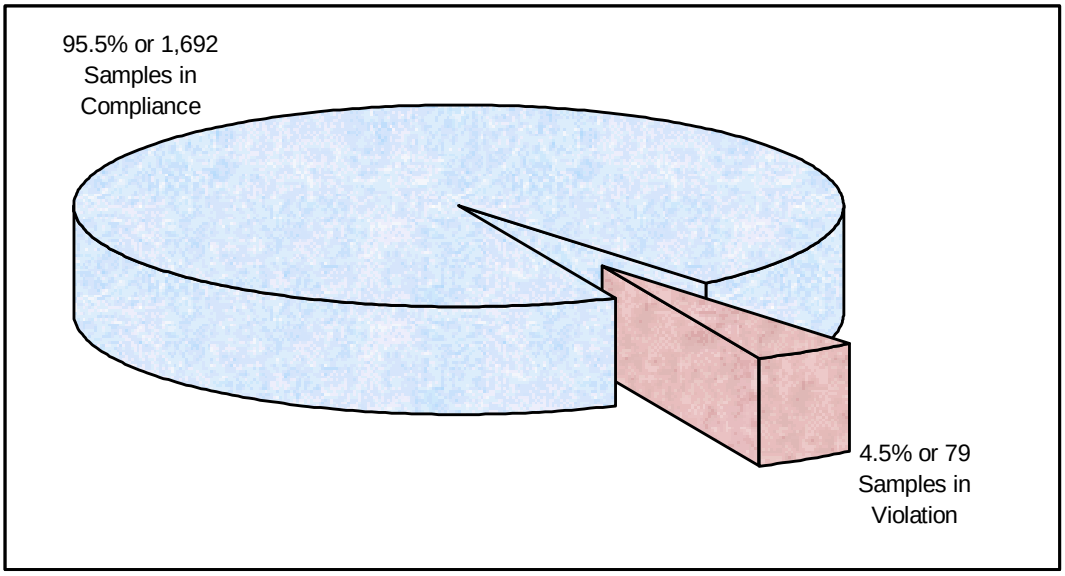
January 1, 2003 - December 31, 2003

User Self-Monitoring Results	**Categorical**	**Non-Categorical**	**Totals**
Total Samples Required	**1,137**	**1,277**	**2,414**
Total Samples Submitted	**1,516**	**1,637**	**3,153**
Total Samples In Compliance	**1,478**	**1,552**	**3,030**
Total Samples Not In Compliance	**38**	**85**	**123**
NBC Monitoring Results			
Total Samples Collected	**255**	**103**	**358**
Total Samples In Compliance	**214**	**96**	**310**
Total Samples Not In Compliance	**41**	**7**	**48**
All Results			
Total Samples Reviewed	**1,771**	**1,740**	**3,511**
Total Samples With Violations	**79**	**92**	**171**
Total Samples In Compliance	**1,692**	**1,648**	**3,340**
Total Users Sampled	**100**	**373**	**473**
Total Users With Violations	**38**	**53**	**91**
Total Users Without Violations	**62**	**320**	**382**

Figure 8

2003 Rates Of Compliance For Categorical And Non-Categorical Users
Field's Point & Bucklin Point Districts

Categorical User Analyses
Total Number Of Samples = 1,771



Non-Categorical User Analyses
Total Number Of Samples = 1,740

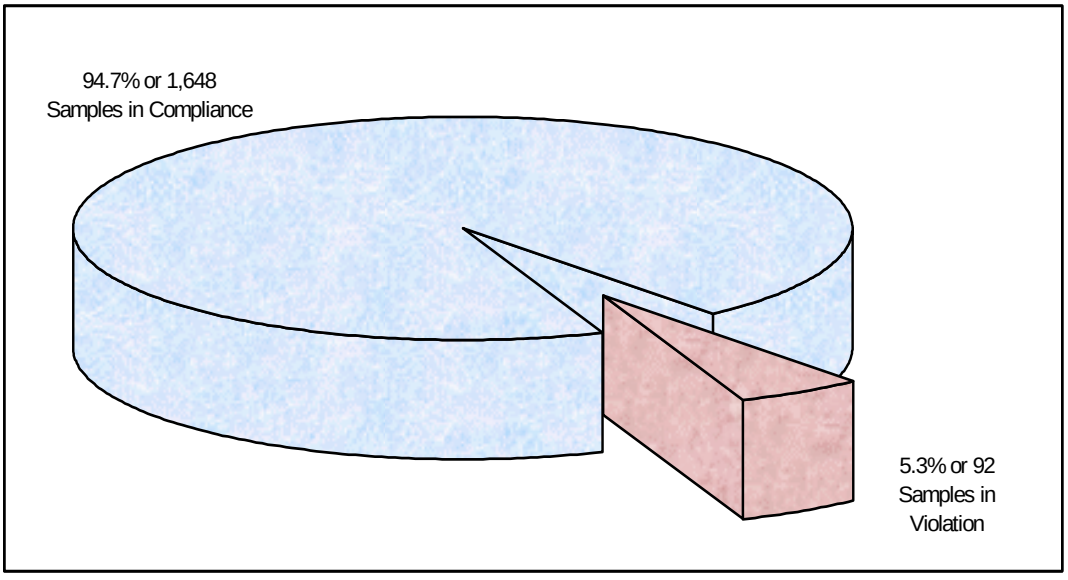


Table 10

Narragansett Bay Commission
Field's Point And Bucklin Point Districts

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

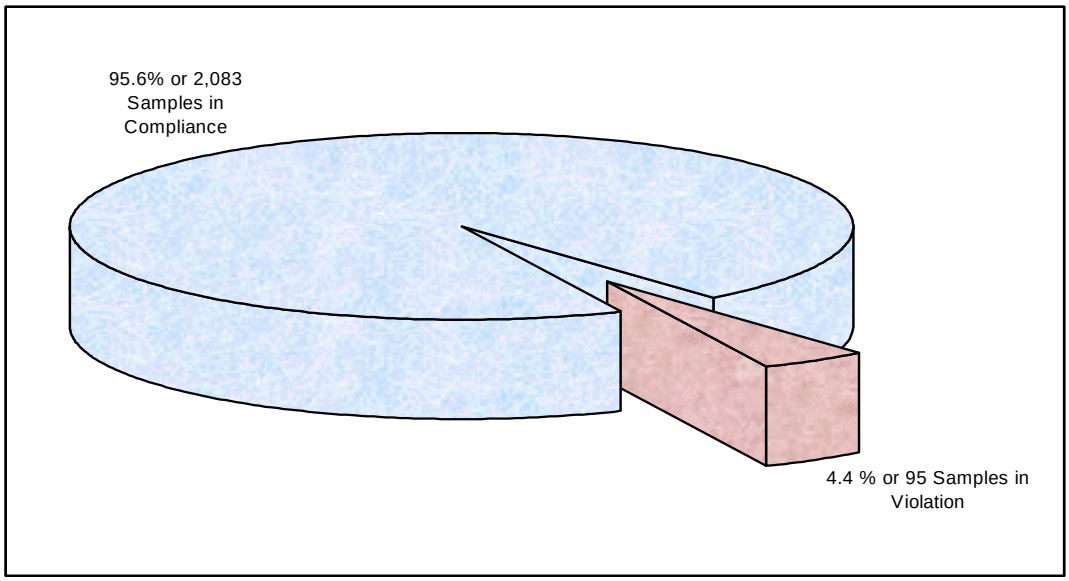
January 1, 2003 - December 31, 2003

User Self-Monitoring Results	**Significant Users**	**Non-Significant Users**	**Totals**
Total Samples Required	**1,358**	**1,056**	**2,414**
Total Samples Submitted	**1,840**	**1,313**	**3,153**
Total Samples In Compliance	**1,791**	**1,239**	**3,030**
Total Samples Not In Compliance	**49**	**74**	**123**
NBC Monitoring Results			
Total Samples Collected	**338**	**20**	**358**
Total Samples In Compliance	**292**	**18**	**310**
Total Samples Not In Compliance	**46**	**2**	**48**
All Results			
Total Samples Reviewed	**2,178**	**1,333**	**3,511**
Total Samples With Violations	**95**	**76**	**171**
Total Samples In Compliance	**2,083**	**1,257**	**3,340**
Total Users Sampled	**125**	**348**	**473**
Total Users With Violations	**44**	**47**	**91**
Total Users Without Violations	**81**	**301**	**382**

Figure 9

2003 Rates Of Compliance For Significant And Non-Significant Users
Field's Point & Bucklin Point Districts

Significant User Analyses
Total Number Of Samples = 2,178



Non-Significant User Analyses
Total Number of Samples = 1,333

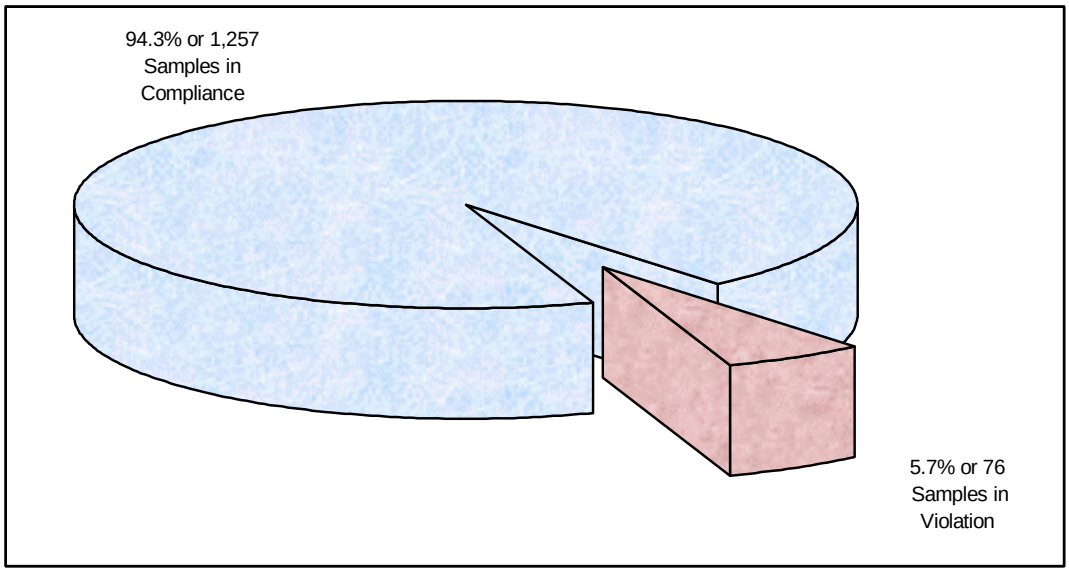


Table 11

Narragansett Bay Commission
Field's Point And Bucklin Point Districts

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

January 1, 2003 - December 31, 2003

	User Self-Monitoring	NBC Monitoring	All Results
Significant Users			
Compliance Rate	**97.3%**	**86.4%**	**95.6%**
Non-Compliance Rate	**2.7%**	**13.6%**	**4.4%**
Non-Significant Users			
Compliance Rate	**94.4%**	**90.0%**	**94.3%**
Non-Compliance Rate	**5.6%**	**10.0%**	**5.7%**
Categorical Users			
Compliance Rate	**97.5%**	**83.9%**	**95.5%**
Non-Compliance Rate	**2.5%**	**16.1%**	**4.5%**
Non-Categorical Users			
Compliance Rate	**94.8%**	**93.2%**	**94.7%**
Non-Compliance Rate	**5.2%**	**6.8%**	**5.3%**
All Users			
Compliance Rate	**96.1%**	**86.6%**	**95.1%**
Non-Compliance Rate	**3.9%**	**13.4%**	**4.9%**

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 95.0% in 2002 to 95.6% in 2003. There was a 10.9% 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 13.6%.

User self monitoring reports submitted by categorical users indicated full compliance, 97.5% of the time, while NBC monitoring found categorical users to be in compliance for only 83.9% 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 95.2%, while it was 95.1% in the Bucklin Point District. The compliance rate for categorical users located in Bucklin Point improved from 93.3% in 2002 to 96.4% in 2003.

The Fields Point categorical users were in full compliance for 95.1% of the sampling events at their facilities in 2003. This compliance rate remained virtually the same from 95.2% in 2002. Significant industrial users in the Bucklin Point District had a rate of compliance of 96.4%, slightly higher than the 95.1% SIU compliance rate observed in the Field's Point District.

The overall 2003 rate of SIU compliance in both districts was 95.6%, a slight improvement over the 95.0% compliance rate observed in 2002 for this class of user. As can be seen from TABLE 12, significant users had the highest rate of compliance, 95.6%, while the non-significant users located in the Bucklin Point District had the highest rate of non-compliance, 7.9%. The rate of user compliance for all users in both districts, remained the same in 2003 compared to 2002, from 95.2% to 95.1%.

TABLE 13 provides an analysis of the percentage of firms in each user class with perfect compliance records for effluent monitoring occurring during 2003. This analysis indicates that 62.0% of categorical users and 64.8% 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, 86.5%. During 2003, of the 473 firms that sampled their wastestream, 382 firms or 81.0% 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.

Table 12

Narragansett Bay Commission

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

January 1, 2003 December 31, 2003

	Field's Point District	Bucklin Point District	Both Districts
Significant Users			
Compliance Rate	**95.1%**	**96.4%**	**95.6%**
Non-Compliance Rate	**4.9%**	**3.6%**	**4.4%**
Non-Significant Users			
Compliance Rate	**95.2%**	**92.1%**	**94.3%**
Non-Compliance Rate	**4.8%**	**7.9%**	**5.7%**
Categorical Users			
Compliance Rate	**95.1%**	**96.4%**	**95.5%**
Non-Compliance Rate	**4.9%**	**3.6%**	**4.5%**
Non-Categorical Users			
Compliance Rate	**95.2%**	**93.9%**	**94.7%**
Non-Compliance Rate	**4.8%**	**6.1%**	**5.3%**
All Users			
Compliance Rate	**95.2%**	**95.1%**	**95.1%**
Non-Compliance Rate	**4.8%**	**4.9%**	**4.9%**

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, 2003 - December 31, 2003

	% Firms Without Effluent Violations*	% Firms With Effluent Violations
Categorical Users	**62.0%**	**38.0%**
Non-Categorical Users	**85.8%**	**14.2%**
Significant Users	**64.8%**	**35.2%**
Non-Significant Users	**86.5%**	**13.5%**
All Users	**80.8%**	**19.2%**

*** Excludes pH Parameter Violations.**

Of the 3,511 analytical reports reviewed during 2003, there were 171 reports that indicated non-compliance with one or more of the NBC or EPA effluent parameters (excluding pH). Of these 171 non-compliant sample reports, 95 analyses were of samples collected from 44 significant industrial user facilities and 76 non-compliant samples were collected from 47 non-significant facilities.

Seven of the 44 Significant Industrial Users that had effluent violations during 2003 had five or more effluent parameter violations during the report period. In fact, of the 9,662 various pollutant parameters tested by Significant Industrial Users, these seven firms were responsible for 51 parameter violations out of a total of 123 parameter violations reported by all significant users during 2003. These seven firms accounted for 41.5% of all SIU parameter violations over the past year. The NBC has initiated enforcement actions against many of the following firms, and enforcement actions may be pending against others at this time. A listing of each of these seven firms and the current status of each of these users is provided in TABLE 14.

2003 Industrial User Compliance Status Summary

During 2003, 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 2,267 Notice of Violation letters were issued in 2003. 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 ten Administrative Orders (AO) during 2003 and assessed a total of $150,000 against these ten firms. One permit suspension, which was issued in 2001, was enforced throughout 2003. A summary of NBC Enforcement Actions including the penalties assessed is also provided in CHAPTER V.

Table 14

Narragansett Bay Commission

Status of Significant Users With 5 or More Parameter Violations

January 1, 2003 - December 31, 2003

Company Name	Number of Parameter Violations	User Status
Eastern Color & Chemical Company, Inc.	7	This Field's Point chemical manufacturer experienced four oil and grease violations, two zinc violations, and one copper violation during 2003. Oil and grease violations were attributed to the firm's chemical coatings division. The firm will be required to install pretreatment for oil and grease. Zinc violations were attributed to the manufacture of a new product. The firm has proposed batch pretreatment to remove zinc from this waste stream. The firm attributed the copper violation to waste water from their pigment division. Ultrafiltration has recently been installed to pretreat this waste stream. Necessary resampling has been completed.

Table 14
(continued)

Narragansett Bay Commission

Status of Significant Users With 5 or More Parameter Violations

January 1, 2003 - December 31, 2003

Esposito Jewelry, Inc.	12	This Field's Point electroplating firm experienced six nickel violations, two copper violations, one zinc violation, one silver violation, one cadmium violation, and one lead violation. The firm could not provide an explanation for its violations. The firm has completed the necessary resampling for its cadmium, copper, lead, and zinc violations, and is currently in the process of resampling for its nickel and silver violations
Evans Plating Corporation – North Providence Facility	10	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.
Evans Plating Corporation – North Providence Facility (cont'd)	10	Over the past year, this firm experienced two cadmium, two copper, three cyanide, and three silver violations. Violations are attributed to inadequate pretreatment. The firm has installed additional pretreatment as part of an EPA enforcement action. Resampling for all violations has been completed and the firm has generally been in compliance since additional pretreatment was installed.
Ira Green, Inc.	6	The Field's Point metal finishing company experienced six copper violations over the past year. The firm attributed the violations to a chelating problem with their soaps. The firm is correcting the problem by looking into alternative soaps and methods of treating the soaps to break the chelates. The firm has completed all required resampling.

Table 14
(continued)

Narragansett Bay Commission

Status of Significant Users With 5 or More Parameter Violations

January 1, 2003 - December 31, 2003

Lutone Plating Company, Inc.	5	This Field's Point electroplating firm experienced two nickel, two cyanide, and one copper violation over the past year. The firm could not determine the source of the violations. The firm has completed all required resampling and has since gone out of business.
Tanury Industries	5	This Bucklin Point electroplating firm experienced four 4 nickel violations and one Total Residual Chlorine violations. All 4 nickel violations were from NBC sampling events. The firm attributed most of the violations to concentrated plating solutions getting into the rinse waters and onto the floors as a result of poor plating techniques. No explanation was given for the total residual chlorine violation. The firm has completed all required resampling.
Slater Dye Works, Inc. - Cumberland Facility	6	This Bucklin Point textile finishing company experienced six total oil & grease violations over the past year. After searching the facility and conducted numerous tests to determine the source of the oil and grease, the firm attributed the violations to a change in testing procedures at the laboratory that performs the analysis. The firm completed all required resampling.

Industrial Surveillance Manhole Monitoring Program

In June 1993, a new NBC Section, the Environmental Monitoring & Data Analysis Section (EMDA), was created to conduct user and manhole sampling as well as to analyze data, to determine long and short term loading trends and to conduct other special studies. This sampling had previously been conducted by the 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 2003, EMDA personnel conducted sampling of approximately an average of four 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, twenty-four (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 wastewater 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 2003, the NBC collected a total of 386 manhole samples from manholes located throughout the two NBC sewer districts. Out of the 386 samples, 355 were from industrial manholes and 39 were from residential manholes. This is a significant increase from 263 manhole samples collected in 2002. Twelve 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 219 samples from industrial surveillance manholes located in the Bucklin Point District. The compliance rate for industrial manhole samples for the Bucklin Point District was 93.2%. NBC personnel collected 128 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 87.5%. 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 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 21A

Industrial Manhole 21A is located on Warren Way in Providence downstream of Scott's Plating Company which conducts electroplating operations. On February 7, 2003 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. An inspection was also conducted. 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 2004 to monitor the compliance status of this firm.

Industrial Surveillance Manhole 39A

Industrial Manhole 39A is located on Chestnut Street in Providence downstream of Regal Plating Company which conducts electroplating operations. On April 25, 2003 and December 12, 2003 the concentrations of copper and nickel were in excess of the NBC discharge limitations of 1.20 ppm for copper and 1.62 ppm for nickel. Notices of Violation requiring the firm to investigate the source of the high concentrations of metals were issued to the firm. In April the firm determined the high concentrations were as a result of their cleaning operation. The firm has been required to further investigate the source of the concentrations and implement procedures to prevent future occurrences. Continued industrial manhole monitoring will be conducted by NBC personnel in 2004 to monitor the compliance status of this firm.

Industrial Surveillance Manhole 52A

Industrial Manhole 52A is located on Potters Avenue in Providence downstream of Century Plating, Inc. and New England Industries. Century Plating conducted electroplating operations which ceased in 2001. New England Industries is located in the same building as Century Plating International and conducts mass finishing operations. The wastewater from this operation is batch discharged and the firm must request permission to discharge. On February 7, 2003 the concentrations of lead and zinc were in excess of the NBC discharge limitations of 0.69 ppm for lead and 2.67 ppm for zinc. An investigation of the building was conducted. It was determined the process discharge connection in Century Plating International remained sealed. New England Industries was reminded of the procedures to discharge detailed in its permit. Continued industrial manhole monitoring will be conducted by NBC personnel in 2004 to monitor the compliance status of this firm.

Industrial Surveillance Manhole 53A

Industrial Manhole 53A is located on Plymouth Street in Providence downstream of Cannon and Brown Inc. which conducts electroplating operations. On January 17, 2003 and October 24, 2003 the concentration of nickel was in excess of the NBC discharge limitation of 1.62 ppm for nickel. The firm was issued Notices of Violation for each of these excursions. The firm has been inspected and was required to submit reports detailing the cause the high concentrations. The firm implemented process measures to eliminate future occurrences. Continued industrial manholes monitoring will be conducted by NBC personnel during 2004 to monitor the compliance status of this firm.

Industrial Surveillance Manhole 65A

Industrial Manhole 65A is located on Addison Place in Providence downstream of International Chromium Plating Company which conducts electroplating operations. On November 7, 2003 the concentrations of cadmium, chromium, lead, nickel, zinc and total oil and grease were in excess of the NBC discharge limitations of 0.11 ppm for cadmium, 2.77 ppm for chromium, 0.69 ppm for lead, 1.62 ppm for nickel, 2.67 ppm for zinc and 125 ppm for total oil and grease. The firm was notified of the high concentrations. The firm and surrounding areas were investigated. Continued industrial manhole monitoring will be conducted by NBC personnel during 2004 to monitor the compliance status of this firm.

Industrial Surveillance Manhole 111A

Industrial Manhole 111A is located on Railroad Avenue in Johnston downstream of G. Tanury Plating Company which conducts electroplating operations. On January 10, 2003 the concentration of copper was in excess of the NBC discharge limitation of 1.20 ppm. In addition, on November 26, 2003 the concentration of cyanide was in excess of the NBC discharge limitation of 0.58 ppm. Notices of Violation were issued to the firm. The firm has been inspected. Continued industrial manhole monitoring will be conducted by NBC personnel during 2004 to monitor the compliance status of this firm.

Industrial Surveillance Manhole 111B

Industrial 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 January 10, 2003, February 21, 2003, November 14, 2003 and November 26, 2003 the concentration of lead was in excess of the NBC discharge limitation of 0.69 ppm. In addition on February 21, 2003 and November 26, 2003 the concentration of copper was in excess of the NBC discharge limitation of 1.20 ppm. The concentrations of copper and lead were in compliance in the manholes directly up and down stream of this manhole. The area was investigated. An auto body facility is located in the area. It was inspected and is in the process of obtaining a Wastewater Discharge Permit. Continued industrial manhole monitoring will be conducted by NBC personnel during 2004 to monitor the compliance status of this firm.

Industrial Surveillance Manhole 123A

Industrial Manhole 123A is located on Starr Street in Johnston downstream of Quaker Plating Company which conducted metal finishing operations. On September 5, 2003 the concentration of lead was in excess of the NBC discharge limitation of 0.69 ppm. The company had ceased process operations and was in the process of closing the business. The company was inspected and reminded of the proper methods of disposing wastewater generated from the clean up of the facility. Another firm, DiFruscia Industries, Inc. which conducts metal finishing operations, has located in this building. Continued industrial manhole monitoring will be conducted by NBC personnel during 2004 to monitor the compliance status of this facility.

BUCKLIN POINT DISTRICT

Industrial Surveillance Manhole 34

Industrial Manhole 34 is located on San Antonio Way in Pawtucket downstream of Providence Metallizing Company and Levin Plating Company. Both firms conduct electroplating operations. On July 31, 2003 the concentration of copper was in excess of the NBC discharge limitation of 1.20 ppm. This manhole was sampled numerous times over the year as part of a study to determine the source of high chromium concentrations seen at the Bucklin Point Treatment Plant. This subsequent monitoring of this manhole showed compliance with all parameters. A further discussion of the study can be found in CHAPTER VI. Continued industrial manhole monitoring will be conducted by NBC personnel during 2004 to monitor the compliance status of this drainage area.

Industrial Surveillance Manhole 32B

Industrial Manhole 32B is located on Patterson Avenue in Pawtucket downstream of CHN Anodizing which conducts anodizing operations. On April 11, 2003 the concentration of chromium was in excess of the NBC discharge limitation of 2.77 ppm. In addition, on December 19, 2003 the concentrations of copper and nickel were in excess of the NBC discharge limitations of 1.20 ppm for copper and 1.62 ppm for nickel. The firm has been inspected. As a result of a NBC issued Administrative Order (AO), the firm proposes to modify its pretreatment system. A further discussion of the AO can be found in CHAPTER V of this report. Continued industrial manhole monitoring will be conducted by NBC personnel during 2004 to monitor the compliance status of this firm.

Industrial Surveillance Manhole 36B

Industrial Manhole 36B is located on Mineral Spring Avenue in Pawtucket downstream of Levin Plating which conducts electroplating operations. On April 11, 2003 the concentration of chromium was in excess of the NBC discharge limitation of 2.77 ppm. The firm was notified of the high concentrations and investigated the possible sources. The firm implemented changes in their process operations and cleaning procedures to prevent future occurrences. This manhole was sampled numerous times over the year as part of a study to determine the source of high chromium concentrations seen at the Bucklin Point Treatment Plant. Subsequent sampling of Manhole 36B showed compliance with all parameters. A further discussion of the study can be found in CHAPTER VI. Continued industrial manhole monitoring will be conducted by NBC personnel during 2004 to monitor the compliance status of this firm.

Industrial Surveillance Manhole 37B

Industrial Manhole 37B is located on Mineral Spring Avenue in Pawtucket downstream of Providence Metallizing Company, Inc. which conducts electroplating operations. On August 147, 2003 and August 19, 2003 the concentration of chromium was in excess of the NBC discharge limitation of 2.77 ppm. The company was notified of the high concentrations and investigated the possible sources. The company made repairs to air pollution control equipment to prevent possible chromium contamination from this source. This manhole was sampled numerous times over the year as part of a study to determine the source of high chromium concentrations seen at the Bucklin Point Treatment Plant. This subsequent sampling of Manhole 37B showed compliance with all parameters. A further discussion of

the study can be found in CHAPTER VI. Continued industrial manhole monitoring will be conducted by NBC personnel during 2004 to monitor the compliance status of this firm.

Industrial Surveillance Manhole 91

Industrial Manhole 91 is located on New England Way in Lincoln downstream of metal finishing, electroplating, metal forming, wire manufacturing and textile firms. On July 10, 2003 the concentration of cyanide was in excess of the NBC discharge limitation of 0.50 ppm. This manhole was sampled numerous times over the year as part of a study to determine the source of high chromium concentrations seen at the Bucklin Point Treatment Plant. A further discussion of the study can be found in CHAPTER VI. The subsequent monitoring showed compliance with all parameters. Continued industrial manhole monitoring will be conducted by NBC personnel during 2004 to monitor the compliance status of this drainage district.

Industrial Surveillance Manhole 92A

Industrial Manhole 92A is located on New England Way in Lincoln upstream of Tanury Industries which conducts electroplating operations and Tanury Industries PVD, Inc. which conducts metal finishing operations. On May 16, 2003 the concentration of cyanide was in excess of the NBC discharge limitation of 0.50 ppm. The area upstream of this manhole was inspected. Continued industrial manhole monitoring will be conducted by NBC personnel during 2004 to monitor the compliance status of this area.

Industrial Surveillance Manhole 92B

Industrial 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 May 16, 2003, and December 31, 2003 the concentrations of copper, nickel and cyanide were in excess of the NBC discharge limitations of 1.20 ppm for copper, 1.62 for nickel and 0.50 ppm for cyanide. On July 3, 2003 the concentration of cyanide was in excess of the NBC discharge limitation of 0.50 ppm. In addition, on August 26, 2003 and December 31, 2003 the concentration of silver was in excess of the NBC discharge limitation of 0.40 ppm. Both firms were notified of the high concentrations and were required to investigate the possible sources. The companies attributed the high concentrations to Tanury Industries. The firm conducted an investigation and determined it had run out of treatment chemicals. The firm was required to put procedures in place to prevent future occurrences. The firm has been required to submit a report detailing the cause of the high concentrations seen in December. A meeting with representatives of the two firms was held in early 2004. During the meeting it was indicated that the firms were going to implement employee training programs. Continued industrial manhole monitoring will be conducted by NBC personnel during 2004 to monitor the compliance status of this firm.

Industrial Surveillance Manhole 92C

Industrial 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 July 3, 2003 the concentration of silver was in excess of the NBC discharge limitation of 0.40 ppm. The area was investigated. Continued industrial manhole monitoring will be conducted by NBC personnel during 2004 to monitor the compliance status of these firms.

Industrial Surveillance Manhole 94A

Industrial Manhole 94A is located on Carol Drive in Lincoln upstream of Tru-Kay Manufacturing which conducts metal finishing operations. On November 21, 2003 the concentration of copper was in excess of the NBC discharge limitation of 1.20 ppm. The area upstream of this area was investigated to find the source of the high concentration. The investigation is on-going. Continued industrial manhole monitoring will be conducted by NBC personnel during 2004 to monitor the compliance status of this area

Link to Chapter V

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

Link to Chapter IV

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 2,267 Notices of Violation were issued for various violations of NBC Rules and Regulations. During 2003, the NBC issued four administrative orders and assessed a total of $150,000 dollars in penalties against violators. The NBC also enforced one sewer suspension throughout 2003 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 Commission 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 220 Letters of Deficiency to users during 2003. 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 Commission issued 154 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 Commission issued 504 notices of this type during 2003.

~ *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 Report on time. A similar letter is issued for failure to properly complete or sign a Self-Monitoring Compliance Report or pH Monitoring Report. The Commission issued 641 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 2003, fourteen 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 2003, there were 23 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 2003, the Commission issued a total of 396 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 2003, the Pretreatment Staff issued 268 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 2003, the Pretreatment Section issued 154 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 2003, 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 (20) firms found to be in Significant Non-Compliance with Commission regulations were listed in an advertisement in the PROVIDENCE JOURNAL on March 3, 2004 for violations occurring between October 1, 2002 and December 31, 2003. 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. Depending on the amount owed, the collection 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 2003, one civil suit was initiated. The civil suit was filed against an industrial firm located in the Field's Point district.

2003 Administrative Orders

During 2003, the NBC issued a total of four Administrative Orders (AO) for violation of NBC rules and regulations and/or permit requirements. Three AO's issued in 2003 were issued to users located in the Field's Point District. The remaining one AO was issued to a user located in the Bucklin Point District.

A sample Administrative Order is provided in ATTACHMENT VOLUME I, SECTION 4. A listing of Administrative Orders issued during 2003 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, 2003, 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, 2003 through December 31, 2003

Field's Point District

AO #	Company	Issue Date
#FP-01-03	Town of Johnston	09/10/03
#FP-02-03	Victory Finishing Technologies	09/10/03
#FP-03-03	New England Industries	09/10/03

Bucklin Point District

AO #	Company	Issue Date
#BV-01-03	C.H.N. Anodizing	03/27/03

- 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 file a Building Sewer Connection Permit Application prior to issuing a building permit and 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 responded to the Cease and Desist Order and requested its right to a hearing. A Consent Order resolving both this and a previous AO against the Town of Johnston has been tentatively reached.

- AO #FP-02-03 was issued against Victory Finishing Technologies 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 Finishing 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. A status conference was held in November 2003 addressing the violations in attempts of reaching a Consent Order. Victory had begun by hiring an independent environmental engineer to ensure that all filings were made, and all systems were being operated properly. NBC anticipates that a Consent Order will be reached, however, due to unrelated issues with the Bankruptcy, the matter is still pending.

- 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 of sampling results. An administrative penalty of $35,000 dollars was assessed. The AO also required New England Industries to cease and desist from processing any materials from its sister company, Century Plating, and complying with all terms of its Wastewater Discharge Permit. New England Industries requested its right to a hearing. A status conference was held in December 2003, at which time New England indicated that it is in the process of closing both this and its Century Plating facility. A tentative Consent Order has been reached requiring New England Industries to pay a penalty of $2,000; pay its outstanding permit fees; pay stipulated penalties for future effluent limitations violations in the amount of $50

per violation; submit a Facility Shut Down Procedure; and provide NBC with manifests for all chemicals, solutions and/or wastes generated from both this and the Century Plating facility. The matter is still pending, as the executed Consent Order has not been received.

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 also required CHN to comply with 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 reports on time; report pH to the required accuracy; notify NBC of any spills; and, adhere to the approved spill control plan. CHN requested its right to a hearing, and also requested a status conference. NBC has met with CHN on two separate occasions, due to their retaining new counsel. Terms for a Consent Order, including a possible SEP, were discussed. NBC received CHN's proposed Consent Order, which proposed four separate SEPs and no penalty. The matter was reviewed with NBC staff, and is unacceptable as the proposals do not comply with DEM/EPA guidelines for SEPs. As such, the matter is pending, and will be scheduled for hearing.

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 2001, the NBC issued a total of two Letters of Wastewater Discharge Permit Suspension. Both letters were issued to users located in the Field's Point District. The NBC did not issue any Permit Suspension letters in 2003; however, one permit suspension issued in 2001 was in full effect throughout 2003. 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 letter. Prior to that, the firm discharged very infrequently for at least a year prior to the issuance of the letter. 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 has been in full effect throughout 2002 and 2003.

Update of Past Enforcement Actions

Field's Point District

- 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. The Town of Johnston responded to the Cease and Desist Order, and repaired the illegal connection immediately. The Town failed to preserve its right to a hearing, and has not resolved the Assessment of Penalty issued under the AO. As such, this matter is still pending.

- AO #FP-02-01 was issued against Ultra Metal Finishing Co., Inc. and Edward Medici on December 27, 2001. The Administrative Order 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 Commission's facilities; its wastewater discharge permit was revoked, and an administrative penalty of $5,000 was assessed. Prior to the issuance of the Administrative Order, Ultra Metal's permit had been suspended for failure to comply with the terms of the Consent Order and previous AO, which had required Ultra Metals to submit a Facility Shut Down Procedure. At the time of the suspension, his 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 Metals failed to appeal the Administrative Order in order to protect its right to a hearing. As such, a Final Order was issued terminating Ultra Metal's permit. The business is closed, and has satisfied NBC's facility shutdown requirements. On or about October 29, 2003, NBC's legal department filed a Superior Court civil action against Ultra Metals 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. The Administrative Order cited Crown Plating and William D'Agostino for failure to properly maintain pH recording equipment, failure to implement Spill Control measures, failure to pay annual permit fees. An Administrative Penalty of $6,250 was assessed. Crown Plating failed to preserve its right for an administrative hearing. NBC staff attorneys and

engineers held a status conference with Crown Plating in 2001 in order to reach an agreement to come into compliance. Crown Plating failed to comply with the terms of said agreement. As such, 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 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. The Administrative Order cited the parties for bypassing its recycle system, failing to operate and maintain its pretreatment system, discharging to the NBC's facilities without obtaining a wastewater discharge permit, discharging a prohibited substance to the NBC facilities, and failing to comply with NBC discharge limitations for cadmium, chromium, copper, lead, nickel, silver and zinc. The AO required the parties to immediately cease and desist all discharges of sludge and process wastewater to the NBC sewer system, provide for adequate cleaning of the sewer line downstream of the facility, including proper removal and disposal of all remaining sludge and solids, and pay an administrative penalty of $40,500. A status conference was held on April 14, 1998. The parties were unable to agree on a resolution of the matter. As such, 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 matter is still pending.

- AO #FP-03-98 was issued against Allens Manufacturing, a Providence metal finishing firm and its President, Richard Squizzero, on March 25, 1998. The AO cited the parties for failing to notify the NBC prior to making changes to its process operation equipment, failing to submit resampling results, failing to properly operate and maintain its pretreatment system, failing to submit self-monitoring compliance reports on time, failing to submit pH monitoring reports on time, failing to pay annual permit fees, and failing to comply with NBC effluent discharge limitations for copper, cyanide, EPA cyanide, and nickel. The AO required the submittal of any and all outstanding results and reports within ten days of receipt of the Order, payment of delinquent permit fees in the amount of $ 3,719.97, and payment of an administrative penalty of $23,000. A status conference was held on May 6, 1998. The parties were unable to come to a resolution of the issues. As such, the matter was assigned to an administrative hearing. On June 24, 1999 Squizzero filed a Motion to Dismiss the matter

against him personally and the NBC filed an objection. The Hearing Officer ruled that Squizzero did not appeal the terms of the permit and therefore, was prevented from raising objections to its terms at hearing. On September 9, 1999, Allens Manufacturing filed for bankruptcy. The Bankruptcy Trustee has agreed not to object to NBC's proof of claim for a $23,000 administrative penalty. The hearing was continued indefinitely until the bankruptcy case is finalized. The bankruptcy case was resolved in 2003 and a penalty of $23,000 was received in accordance with NBC's proof of claim. This matter is now closed.

Bucklin Point District

- AO#BV-02-02 was issued against D.C.L., Inc. d/b/a Sewerman and Darrell Charlesworth on or about April 22, 2002. The AO cited Sewerman for a prohibited discharge of non-residential solid pollutants, grease, causing interference with the NBC Lincoln Septage Receiving Stations; falsification of septage originator/customer signature on an NBC required septage discharge manifest form; and discharge of a prohibited substance that originated outside of the boundaries of the State of Rhode Island. The AO included an assessment of penalty in the amount of $30,000. Sewerman preserved its right to an administrative hearing, and accepted the NBC's invitation to meet at an informal status conference in an attempt to resolve the AO without having to proceed to hearing. The status conference resulted in the negotiation of a Consent Order (CO) requiring Sewerman to pay a penalty of $5000, and for Sewerman to distribute NBC prepared septage discharge user informational brochures at the Lincoln Septage Receiving Station. This file will continue to be monitored until all penalty payments are complete.

- AO#BV-04-02 was issued against Instant Septic Environmental Services and 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. The AO required Instant Septic to immediately cease and desist all septage discharges to the NBC Lincoln Septage Receiving Station, and assessed a penalty in the amount of $20,000. Instant Septic preserved its right to an administrative hearing, and accepted the NBC's invitation to meet at an informal status conference in an attempt to resolve the AO without having to proceed to hearing. The NBC encouraged Instant Septic to consider a public notice in the Providence Journal addressing the requirements of the Septage Receiving Station program as part of an offer in compromise. The attorney for Instant Septic requested time to review the NBC Rules and Regulations prior to making the NBC an offer to settle the matter. Since that time, Instant Septic has closed. The main corporation, Instant Plumber Plumbing and Heating, Inc., remains open, and the AO was amended to include the proper corporate name. Several pre-hearing conferences have been held in this matter. The matter remains pending and is scheduled for hearing in April 2004.

- AO#BV-05-02 was issued against Estrela Do Mar and George Rodrigues on or about September 23, 2002. The AO cited Estrela Do Mar with failure to submit pretreatment and process plans, including but not limited to, a grease removal unit, and failure to install an NBC required and approved grease removal unit. The AO required Estrela Do Mar to immediately submit its kitchen facility plans, to install a grease removal unit, and assessed a penalty in the amount of $5,000. Estrela Do Mar failed to preserve its right to an administrative hearing, and ignored the NBC's attempts to meet at an informal status conference in an attempt to resolve the AO without having to proceed to hearing. As a result, a Final Decision and Order was issued in January 2003 requiring Estrela Do Mar to pay the penalty, install the required equipment and submit the required plans by March 3, 2003. Estrela Do Mar failed to comply with the Final Order and as a result, the wastewater discharge line was sealed. NBC unsealed the discharge line upon completion of the required equipment installation. Estrela Do Mar entered into a Consent Judgment to pay the $5,000 fine over 10 months. Estrela Do Mar has failed to adhere to the payment terms. The NBC legal department is pursuing a 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 Commission'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).

To celebrate Field's Point centennial anniversary, NBC EEF monies were used to sponsor a Waterfire Event in Providence on July 21, 2001. Photo by Sandor Bodo.

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 Commission 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 provide environmental education classes aboard the Blackstone Valley Explorer.

In late 2000, the NBC solicited proposals for use of Environmental Funds. As a result, eight (8) proposals were submitted to the NBC Board of Commissioners for reviews and were approved in early 2001. The following projects were funded in year 2001 and several were still being funded in 2003. The NBC expects to solicit new proposals in the spring of 2004 as Environmental Enforcement Funds become available.

BVTC River Studies	$5,000
River Science	$2,500
Waterfires Event for FP100	$15,000
40 Hour HazMat Training for NBC staff	$5,000
Shellfish Transplant	$29,489
URI Scholarship	$5,000
Classroom Under Sail Program	$10,000
17 Gordon Street Green Building Project	$10,000
River Restoration Initiative	$10,000
"Hard to Dispose of" Study	$20,000
Total Approved in 2001	**$111,989**

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 Commission 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 Commission 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 Commission. 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 recently 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, 2002 through December 31, 2003 was published in an advertisement in the PROVIDENCE JOURNAL on March 3, 2004. A copy of this advertisement is provided in FIGURE 10, while the Affidavit of Publication is provided in FIGURE 11.

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 firms were listed in the March 3, 2004 public notice in the Providence Journal. Of the twenty firms listed in Significant Non-Compliance, eleven users are located in the Field's Point district and nine are Bucklin Point users. There were ten firms in SNC subject to EPA categorical standards and are all classified as either electroplaters or metal finishers.

Two violators listed in the SNC public notice was classified as a significant non-categorical user and eight firms are classified as non-significant industrial users. These ten 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 year 2003 was 20, an increase from the 2002 number of 16. Of the 20 users listed in the March 3, 2004 SNC Public Notice, 16 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 10
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, 2002 through December 31, 2003. 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
Accent Plating Company, Inc.	Failure to submit report on time. (6)	Report has been submitted.
Bliss Manufacturing Company	Copper (2)	Firm is *now* in compliance.
CHN Anodizing, Inc.	An Administrative Order (AO) cited this firm for failure to comply with effluent limitations, failure to operate and maintain its pretreatment system, failure to maintain records of its pretreatment system, failure to properly report effluent pH discharges, failure to notify the NBC of a spill at the time of the incident, and improperly storing chemicals. Firm is in SNC due to this group of violations adversely effected the operations of the Pretreatment Program. (8)	An AO was issued assessing a $50,000 fine. Firm is still experiencing compliance problems
Esten Dye & Finishing Company, Inc.	Failure to submit reports on time. (6)	Reports have been submitted.
Northeast Knitting, Inc.	Failure to submit report on time. (6)	Report has been submitted.

Central Falls

Company Name	Violations Cited	Present Status
Graham Fields Bandage, Inc.	Zinc (1, 2) Failure to submit reports on time.	Firm is *now* in compliance. 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.
Stackbin Corporation	Total Oil and Grease (2)	Firm is *now* in compliance

Cumberland

Company Name	Violations Cited	Present Status
Slater Dye Works, Inc. Cumberland Facility	Total Oil and Grease (2)	Firm is *now* in compliance.

Field's Point Service Area

Providence

Company Name	Violations Cited	Present Status
Eastern Color & Chemical Co.	Total Oil and Grease (2)	Firm is *now* in compliance.
Esposito Jewelry, Inc.	Failure to submit reports on time. (6) Copper (2) Nickel (2) Silver (2)	Reports have been submitted. Firm is still experiencing compliance problems.
Ira Green, Inc.	Copper (2) Failure to submit reports on time. (6)	Firm is *now* in compliance. Reports have been submitted.
JRB Associates, Inc.	EPA - Cyanide (2)	Firm is still experiencing compliance problems.
Meller Optics, Inc.	Failure to submit report on time. (6)	Report has been submitted.
Sprague Industries Division of Theta Products	Failure to submit reports on time. (6) Copper (1, 2)	Reports have been submitted. Firm is still experiencing compliance problems.
Victory Finishing Technologies, Inc.	An Administrative Order (AO) issued cited this firm for numerous violations including pH violations, effluent violation for nickel, silver and total residual chlorine, failure to properly operate the pretreatment system, violations of approved spill control plan, making process changes without providing proper notification. Firm is in SNC due to this group of violations adversely effected the operation of the Pretreatment Program. (8)	An AO was issued assessing a $55,000 fine and required immediate compliance with all aspects of the firm's Wastewater Discharge Permit and also required the firm to evaluate its wastewater treatment system in order to improve compliance.

North Providence

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

Johnston

Company Name	Violations Cited	Present Status
Colorlith Corporation	Silver (1, 2)	Firm ceased discharges. Firm is *now* in compliance
Eastern Screw Company, Inc.	Failure to submit report on time. (6)	Report has been submitted.
Evans Plating Corporation - Johnston Facility	Failure to submit reports on time. (6)	Reports have been submitted.

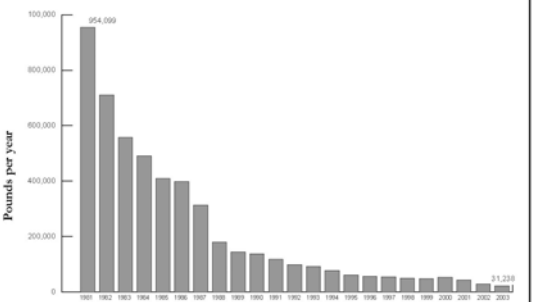
THE NARRAGANSETT BAY COMMISSION IS COMMITTED TO PROTECTING THE STATE'S TWO LARGEST WASTEWATER TREATMENT FACILITIES AND NARRAGANSETT BAY FROM TOXIC DISCHARGES. This is accomplished by the issuance of discharge permits to commercial and industrial sewer users. These discharge permits specify the level 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 noncompliance 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 94.8% 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, 1981-2003



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 11
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 7th day of March 20 03,
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
Narragansett Bay Commission
Non-Compliance
a true copy of which is hereunto annexed, was duly inserted in **THE PROVIDENCE JOURNAL** in its issue of
Thursday March 6, 20 03,

Laurence Ricardo

Subscribed and sworn to before me this 7th
day of March, 20 03

Notary Public

My Commission expires: 1/5/06

TABLE 16
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/03
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

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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

TABLE 16
SUMMARY OF ENFORCEMENT ACTIONS THROUGH 12/31/03
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-04-92 ALLENS MFG.	06/04/1992	BANKRUPT	$11,250.00	$11,250.00	$0.00	$11,250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO # FP-05-92 GENERAL ELECTRIC	09/01/1992	CONSENT ORDER 08/10/93	$9,500.00	$7,500.00	$7,500.00	$0.00	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00
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	$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

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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./SCAMBATO & 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

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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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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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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	HEARING PENDING BANKRUPTCY RESOLUTION	$23,000.00	$0.00	$0.00	$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	INJUNCTION TO SEAL CONNECTION FILED IN SUPERIOR COURT	$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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AO #FP-02-00 ULTRA METAL FINISHING, INC.	12/28/2000	CONSENT ORDER NOT SIGNED BY COMPANY	$22,000.00	$0.00	$0.00	$0.00	$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	$1,650.00	$8,350.00	$2,000.00	$2,000.00	$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	$0.00	$0.00	$0.00	$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	PENDING NEGOGIATIONS	$10,000.00	$0.00	$0.00	$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	PENDING NEGOTIATIONS	$10,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO#FP-05-02 TOWN OF JOHNSTON	10/24/2002	PENDING NEGOTIATIONS	$25,000.00	$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 12/31/03
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

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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	PENDING NEGOTIATIONS	$112,000.00	$112,000.00	$0.00	$112,000.00	$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	$1,260.00	$3,740.00	$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	PENDING NEGOTIATIONS	$20,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
AO#BV-05-02 ESTRELA DO MAR	09/23/2002	PENDING NEGOTIATIONS	$5,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

Link to Chapter VI

VI. ENFORCEMENT

Link to Chapter V

NBC Impact on the Control of Toxics and Incompatible Wastes

The influent metals and cyanide loading data provide a measure of the amount of industrial waste being discharged to the sewer system and are an effective indicator of the NBC's effectiveness at controlling and reducing the discharge of toxic pollutants into the sewer system. The NBC has analyzed and tracked the toxic pollutant loading trends at its treatment facilities since the creation of the agency. Recently, emphasis has also been placed on trends in the effluent loading to the receiving waters. NBC's goal is to improve receiving water quality by limiting the impact of Wastewater Treatment Facility (WWTF) effluent on Narragansett Bay.

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 permissible level.

At the Field's Point Wastewater Treatment Facility (FP WWTF), cadmium, hexavalent chromium, lead, tetrachloroethylene, 1,1,1-trichloroethane, trichloroethylene, 1,2-dichloroethylene, methylene chloride, and bis (2-ethylhexyl) phthalate have been removed from frequent monitoring. Monitoring of these pollutants will continue as part of a semi-annual priority pollutant scan.

At the Bucklin Point Wastewater Treatment Facility (BP WWTF), pollutants were also removed from frequent monitoring due to historically low concentrations. Removed from the Bucklin Point permit were total cadmium, tetrachloroethylene, 1,1,1-trichloroethane, trichloroethylene, and dichloromethane.

This marks a historic step through continued reduced loadings to the treatment facilities and into the receiving waters. This reduction in permitted parameters is a direct result of control efforts by Pollution Prevention, the Pretreatment Program and the Environmental Monitoring and Data Analysis (EMDA) sections. These efforts combined with low level, trace analysis by NBC's Laboratory Section and effective treatment performed by the Operations Section staff are all components of an efficient wastewater treatment organization.

The studies and results presented in this report deal with monitoring of the NBC WWTFs, the sewer collection system, Significant Industrial Users (SIU), and the receiving waters of Narragansett Bay and are 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 WWTFs are performed with strict adherence to U.S. EPA protocols. According to the NBC's current RIPDES permits, the Field's Point and Bucklin Point WWTFs 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 sample for hexavalent chromium is collected as a single grab sample at Bucklin Point. Metals and cyanide measurements are required twice-weekly at both WWTFs.

In 2003 RIDEM and NBC agreed on the need to improve the collection of cyanide samples at the influent and effluent of the two WWTFs. 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, began in the fall of 2003, and 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 of one grab sample that may be substantially different from the normal concentration range. This increased frequency of collection, conducted by autosamplers, will create a more representative sample for this important parameter.

During 2003, EMDA personnel collected a total of 4,067 24-hour composite samples of waste streams at the two WWTFs. 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 collected on a flow-paced schedule and analyzed separately. Field's Point influent samples are collected on a flow-paced basis at the single interceptor that feeds the facility. Final effluent collections are flow-paced at both facilities. The 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, and ammonia; effluent total phosphorus is also analyzed. Permit requirements mandate weekly monitoring of all nutrients except ammonia. However, the NBC monitors twice weekly for these parameters.

During 2003, there were 1,728 grab samples collected, preserved and composited into 416 daily samples, which were analyzed for total cyanide at the two WWTFs, with equal numbers at the two facilities. The NBC Laboratory also analyzed 210 grab samples for hexavalent chromium collected at Bucklin Point.

Collections for other required monitoring include daily fecal coliform bacteria, the conventional pollutants biochemical oxygen demand (BOD) and total suspended solids (TSS), oil and grease, pH, total residual chlorine (TRC), and bioassays are also conducted at both WWTFs.

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 a 1600-Series Methods Guidance for "Ultra-Clean" sampling for trace metals analysis. 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 WWTF 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 continuing to evaluate its sample collection and handling procedures to ensure that contamination will not significantly affect the data results. EMDA is following an ultra-clean sampling methodology developed by Hampton Roads Sanitation District of Virginia 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, a potential source of contamination. Experience gained in this study will help EMDA determine the best way to continue to improve the performance based clean sampling methods.

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 WWTFs are a result of improved environmental practices by industry, better regulatory oversight, extensive user education programs, and improved collection and analysis methods.

Sampling Improvements at the Field's Point Wastewater Treatment Facility

EMDA staff maintain and monitor thirteen automated sampling instruments on site, six of which collect flow proportioned composite samples. The other samplers collect samples on a time-based program. EMDA staff also collects process control samples for operational needs. Throughout 2003, EMDA has made the following improvements to the sampling process at Field's Point:

- Automated samplers have been placed at the influent and effluent for cyanide collections. To comply with the new RIPDES permit, nine cyanide grab samples must be made, with three collections made per shift with at least two hours of separation between samples. Collections are made in discrete bottles every two hours, for two 24-hour periods per week. Of the 12 bottles collected in a 24-hour period, nine collections for a twenty-four hour period are composited. The remaining three samples are discarded unless they are used as a backup within the needed shift. This replaces the three-grab composite for a twenty-four hour period made by EMDA and Operations staff, for more representative and consistent samples.

- In conjunction with the automated cyanide sampling, the influent and effluent streams are checked in the field, on a daily basis, for chlorine residual and sulfides.

- New carboy containers have been placed into service at the influent sampler and final effluent trace metals sampler as well as the daily final effluent sampler used for total suspended solids and biochemical oxygen demand analyses. Spigots have been placed on these carboys. In conjunction with the spigots, magnetic stirring bars are placed in the carboys to ensure consistent mixing and dispensing of samples at the laboratory. Previously, sample carboys were shaken manually by laboratory staff and poured off into individual sample containers. The new procedure minimizes the chance of contamination occurring during this laboratory sample transfer.

- Heaters have been installed at most automated samplers. These heaters are placed under the cover of the pump head / control unit to minimize freezing during cold weather.

- EMDA staff continue to clean and replace suction and pump tubing on an established schedule, and collect equipment blank samples to verify the absence of sample contamination.

- EMDA staff check the agreement, on a daily basis, between continuous pH probes at the Field's Point influent and effluent and pH grabs analyzed by the laboratory. This provides greater data validity.

- EMDA staff worked with Engineering staff to study improvements to the Field's Point Grit facility. EMDA collected samples associated with grit removal in a study designed by Engineering staff.

- EMDA staff at Field's Point have supported Laboratory and Operations staff by improving the low-level total chlorine residual testing of the final effluent through performing weekly acid rinsing of the sample delivery tubing and analytical cell.

- EMDA staff continue to study the recycled flows in the Field's Point Facility, including cyanide concentration in the incinerator scrubber water. EMDA collects a monthly grab of the incinerator scrubber water that reduces stack emissions; this scrubber water is returned to the influent flow prior to the primary settling basins. EMDA performs this work in order to better understand the source and fate of cyanide in the facility, protect the microbial population of the activated sludge and ensure effluent permit limits are met.

- EMDA staff has studied the changes in effluent BOD at Field's Point and its relationship with partial nitrification.

- EMDA has continued to improve sample handling through the use of larger composite collection containers and the use of pre-cleaned containers for permit and process-control samples.

Sampling Improvements at the Bucklin Point Wastewater Treatment Facility

The Bucklin Point EMDA staff maintains eight automated samplers, four of which collect flow-proportioned composite samples. The other four samplers collect samples on a time-based program. Permit and/or process control samples, are collected by EMDA staff on a daily basis. All samples are transferred from the Bucklin Point Facility, with internal chain of custody documentation, and delivered to the NBC Laboratory at Field's Point for analysis. The proper collection and transfer of these permit and process samples is essential to Operations for accurate data for process control and to meet RIPDES permit requirements. Throughout 2003, EMDA staff at Bucklin Point performed the following essential tasks:

- EMDA staff cleaned and replaced suction and pump tubing for automatic samplers on an established schedule and collected equipment blank samples to verify the absence of sample contamination.

- New carboy containers have been placed into service at the influent sampler and final effluent trace metals sampler as well as the daily final effluent sampler used for total suspended solids and biochemical oxygen demand analyses. Spigots have been placed on these carboys. In conjunction with the spigots, magnetic stirring bars are placed in the carboys to ensure consistent mixing and dispensing of samples at the laboratory. Previously, sample carboys were shaken manually by laboratory staff and poured off into individual sample containers. The new procedure minimizes the chance of contamination occurring during this laboratory sample transfer.

- EMDA has continued to improve sample handling through the use of larger composite collection containers and the use of pre-cleaned containers for permit and process-control samples.

- EMDA staff review daily WWTF data and compares it to a recent acceptable range of values in order to recognize sampling problems and take needed corrective action. EMDA staff monitor these values on a daily basis to ensure that each one of the eight sampling locations is sampling correctly.

- Automated samplers have been placed at the influent and effluent for cyanide collections. To comply with the new RIPDES permit, nine cyanide grab samples must be made, with three collections made per shift with at least two hours of separation between samples. Collections are made in discrete bottles every two hours, for two twenty-four hour periods per week. Of the 12 bottles collected in a 24-hour period, nine collections for a twenty-four hour period are composited. The remaining three samples are discarded unless they are used as a backup within the needed shift. This replaces the three-grab composite for a twenty-four hour period made by EMDA and Operations staff, for more representative and consistent samples. In conjunction with the automated cyanide sampling, the BVI / EPI influent waste streams and effluent discharge are checked daily for chlorine residual and sulfides.

- As of January 1, 2004 Bucklin Point 3rd shift Operations staff began collecting a second daily fecal coliform sample of the final effluent; this is a new RIPDES permit requirement. The sample is collected following NBC protocol and stored in a refrigerated ISCO sampler for EMDA staff to deliver it within the six hour holding time to the FP lab.

- EMDA staff perform daily laboratory analyses for both permit and process samples. The effluent pH, temperature and chlorine residual measurements of the contact tank effluent prior to dechlorination are performed daily. Results are communicated to the laboratory and Operations for permit compliance and process control applications. The QA/QC program requires calibrations, checks, and documentation that the pH meter and colorimeter used for these tests are operating properly. EMDA staff also continue to assist Operations with providing the low-level final effluent TRC standard and de-ionized water used in its testing.

- BP Operations, US Filter managers, and EMDA staff worked closely together over the past year to improve plant sampling locations. Wooden platforms were placed at influent and primary effluent locations for better accessibility during rain events. Electrical outlets were installed at these locations so that sampler power cords can reach the new sampler positions. The EPI location has been modified to insert the suction line into the guide tube that holds it in position in the wastestream. This change allows EMDA staff easier access to the guide tube for cleaning purposes.

- Heaters have been installed at most automated samplers. These heaters are placed under the cover of the pump head / control unit to minimize freezing during cold weather.

- Railings were installed at the Chlorine Contact sampler catwalk for additional safety precautions for EMDA staff during routine cleaning and maintenance of this sampling station.

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

- Improvements and additions to the many EMDA sampling points provide Bucklin Point / U.S. filter with clean, representative results from sampling and analysis for plant process and operations. These results allow Bucklin Point Operations to closely monitor changes in and throughout the treatment process. Bucklin Point is undergoing an upgrade which began in 2002 and scheduled for completion in 2006. The upgrade is ahead of schedule and all the major structures built. The renovation includes a new influent channel, new influent screw lift and grit removal, new primary clarifiers, wet weather treatment, the capacity for full secondary treatment, UV disinfection of final effluent and nitrogen removal. Upon completion the Bucklin Point facility will be the most advanced technological WWTF in Rhode Island.

Future of Sampling at the WWTFs

EMDA is continuing to play a larger role in sampling and monitoring at the Field's Pont and Bucklin Point WWTFs.

- EMDA will continue its efforts to fulfill Engineering's needs for investigations into biological nutrient reduction processes at the Field's Point facility; in 2004, NBC will conduct a pilot study on nutrient removal of the Hydroxyl –F'RAS System at Field's Point beginning in April 2004.

- EMDA investigates new instrumentation that can aid process control at the WWTFs. One example is the use of a continuous BOD analyzer that provides real-time data that correlates well with the five day BOD test. EMDA has led NBC research on continuous analyzers for control of dechlorination applications and on continuous nutrient analyzers.

- EMDA works closely with Operations to conduct special sampling to address process control questions and concerns. This relationship will continue to expand as treatment processes evolve. Studies in 2003 focused on tracking cyanide in the WWTF and on the possible impact of bisulfite addition on effluent BOD concentrations;

- At Field's Point, a new ISCO 3700 sampler will replace a sigma sampler at the Primary Effluent. This sampler will be placed at the base of the screw lifts instead of the top. The change in position will eliminate problems of buildup in the lines to the sampler, which will improve sample representativity for process control.

- EMDA is continually upgrading the services it provides to the NBC. It is ready to meet the challenges of tighter regulations and provide greater technical support and sampling as required by Operations and Engineering into the future.

Analysis of Influent Loading Data

A comparison of recent and historical influent data is a useful indicator of the success of the NBC's Pretreatment Program in controlling the quality of industrial wastewater discharge to the NBC 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 WWTF, which was acquired by the NBC in 1992. The historical Bucklin Point data presented here cover the period from 1994 to present for metals, and 1991 to present for cyanide.

Field's Point District - Influent Loading Analysis

FIGURES 12 and 13 depict the reduction in metals and cyanide loadings to the Field's Point WWTF 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 (FIGURE 12). Cyanide loading data for the same time period indicate a similar overall downward trend (FIGURE 13). The success in reducing the metal and cyanide inputs to the WWTFs is largely due to the efforts and success of the NBC's Pretreatment and Pollution Prevention programs.

Figure 12
Field's Point WWTF Total Metals Influent Loading Trend Analysis

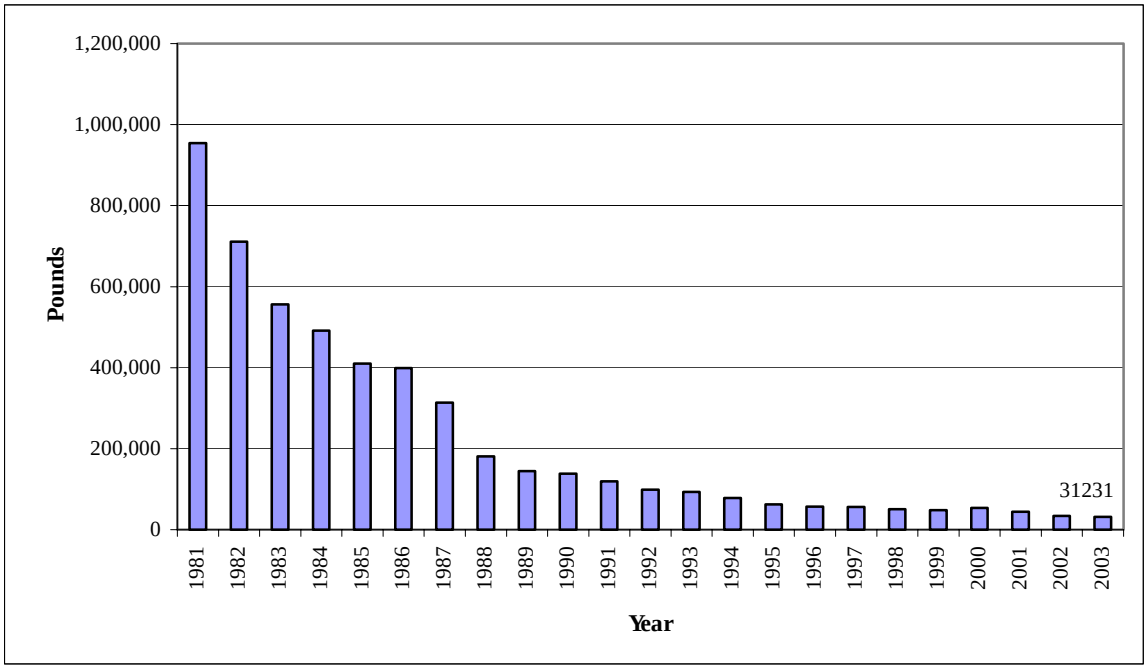


Figure 13
Field's Point WWTF Cyanide Influent Loading Trend Analysis

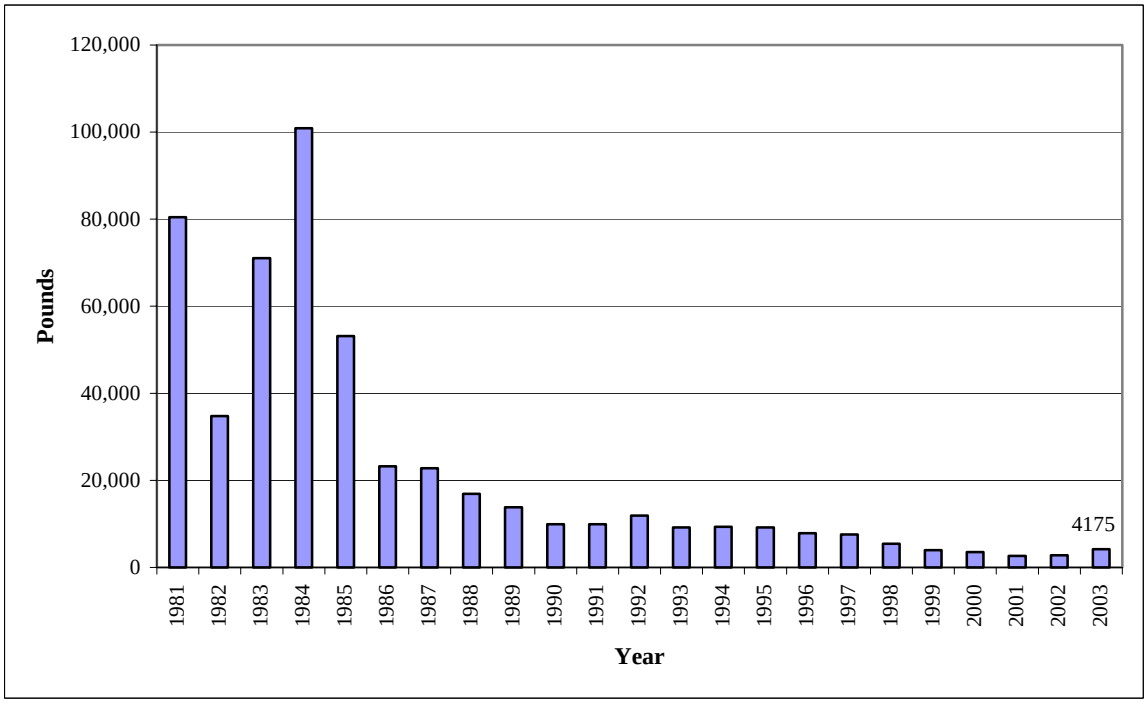


TABLE 17 provides a comparison of the 2002 and 2003 metals loadings to the Field's Point Wastewater Treatment Facility. Loading figures were calculated based on monthly averages of concentration and flow.

TABLE 17
Comparison of 2002-2003
Annual Loadings to the Field's Point WWTF

Pollutant	2002 (pounds)	2003 (pounds)	Total Pound Change	% Change
Total Cadmium	96	134	38	40%
Total Chromium	1,302	1,307	5	0
Total Copper	9,469	7,710	-1,759	-19
Total Lead	2,270	1,951	-319	-14
Total Mercury	11	16	5	45
Total Nickel	5,324	6,058	734	14
Total Silver	777	655	-122	-16
Total Zinc	14,664	13,400	-1,264	-9
Total Metals	33,913	31,231	-2,683	-8
Total Cyanide	2,789	4,175	1,386	50

As noted in TABLE 17, the annual loading of cyanide showed a significant increase in 2003 as the cyanide loading to Field's Point increased by 1,386 pounds, or 50%. Since 1991, the total cyanide loading to Field's Point decreased by 95%. Other toxics observed to increase in 2003 included cadmium, mercury, and nickel at the Field's Point facility.

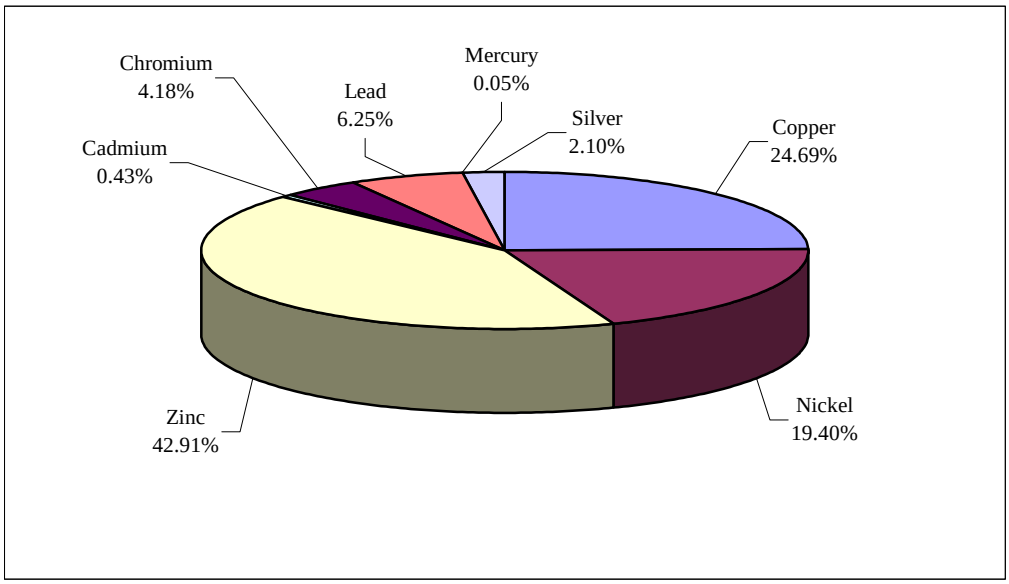
The largest percent reduction of annualized loadings to Field's Point was for total copper, as a 19% reduction was observed. Loadings of lead, zinc, and silver to Field's Point also decreased in 2003 while total chromium was essentially unchanged. The overall decrease in total metals loading to the Field's Point WWTF since 1981 is 96.7%.

Downward trends in copper and zinc inputs, historically two of the three largest contributors to metal loadings, along with nickel, are symbolic of the trend in total metals loadings. Reductions in these two metals contribute significantly to the overall decrease in total metals loading. The 2003 total metals loadings to the plant are down approximately 8% from last year. This follows a similar 23% reduction the previous year.

The copper loading to Field's Point was reduced by an impressive 1,760 pounds. It was the largest heavy metal pollutant reduction noted in absolute pounds. The zinc loadings to Field's Point were also significantly reduced by 9%, a reduction of 1,265 pounds. Since this pollutant is used by metal finishing facilities, this reduction can be partially attributed to NBC Pretreatment and Pollution Prevention Program efforts and by improved operations by industry.

A percentage breakdown of the various metals discharged to the Field's Point WWTF is provided in FIGURE 14. The greatest metal loadings contribution to the Field's Point WWTF is from zinc, nickel and copper. These metals account for 87% of the total metal loadings to the Field's Point Wastewater Treatment Facility; this is the same relative contribution as last year. The loading of total zinc in 2003 was 13,400 pounds, or 43%, 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 7,710 pounds, followed by nickel at 6,058 pounds.

Figure 14
Breakdown of Total Metals – Field's Point 2003 Influent Loading



~Oil and Grease Inputs to Field's Point WWTF

Monthly sampling of oil and grease inputs to the Field's Point WWTF reveals low and consistent concentrations. Concentrations ranged from 16 ppm to 31 ppm during 2003. Effluent concentrations are significantly lower, ranging from 4 to 5 ppm. Low inputs are the direct result of Pretreatment efforts to permit, inspect, and monitor industrial and commercial establishments, including restaurants. The WWTF 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 WWTF: 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 lab for analysis. EMDA staff collected 730 samples for this parameter during 2003. The pH range of these 730 measurements was between 6.50 and 8.48 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 standard unit. 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 facility process has knowingly been negatively impacted by influent pH fluctuations during the year. The most significant pH event that affected Field's Point influent occurred on February 13, 2003. The influent pH was above 8 s.u. for approximately 6 hours, reaching a maximum of 11.45 s.u. This incident was the result of a pretreatment equipment malfunction at a regulated user's facility. Pretreatment staff tracked the high pH influent to its source, and required the firm to immediately cease discharge. No negative effect on normal plant operations process control was noted. Furthermore, effluent pH was not raised significantly due to this input. Effluent grabs, also collected twice daily over the year, ranged from 6.25 to 7.27 s.u. All 730 effluent laboratory pH measurements of grab samples throughout the year were within the permit discharge range of 6.0 to 9.0 s.u.

Bucklin Point District - Influent Loading Analysis

The Bucklin Point WWTF influent data demonstrated a downward trend in total metals loading between 1993 and 1997, followed by an upward trend between 1997 and 2000 (FIGURE 15). Data from 2001 and 2002 showed reductions to influent metals loadings. Data from 2003 showed another increase, the majority coming from short-lived high chromium inputs that occurred from January 28th through June 3rd observed in the influent coming from the Blackstone Valley Interceptor. NBC's Pretreatment and EMDA sections launched an extensive investigation to pinpoint the source of the increased loads. The investigation consisted of installing automatic sampling equipment in key drainage areas downstream of users known to use chromium in their process operations and conducting detailed inspections of these facilities. The sampling element of the investigation began in July 2003 and ended in October 2003. Samples were collected twice per week. Due to the intermittent and variable nature of the high chromium loads, the source could not be positively identified prior to concentrations returning to normal.

Cyanide loadings at Bucklin Point are similarly variable but also exhibit a decreasing trend overall (FIGURE 16). Data from 2003 show only a 5% increase in cyanide loads to Bucklin Point over the prior year.

Figure 15
Bucklin Point WWTF Total Metals Influent Loading Trend

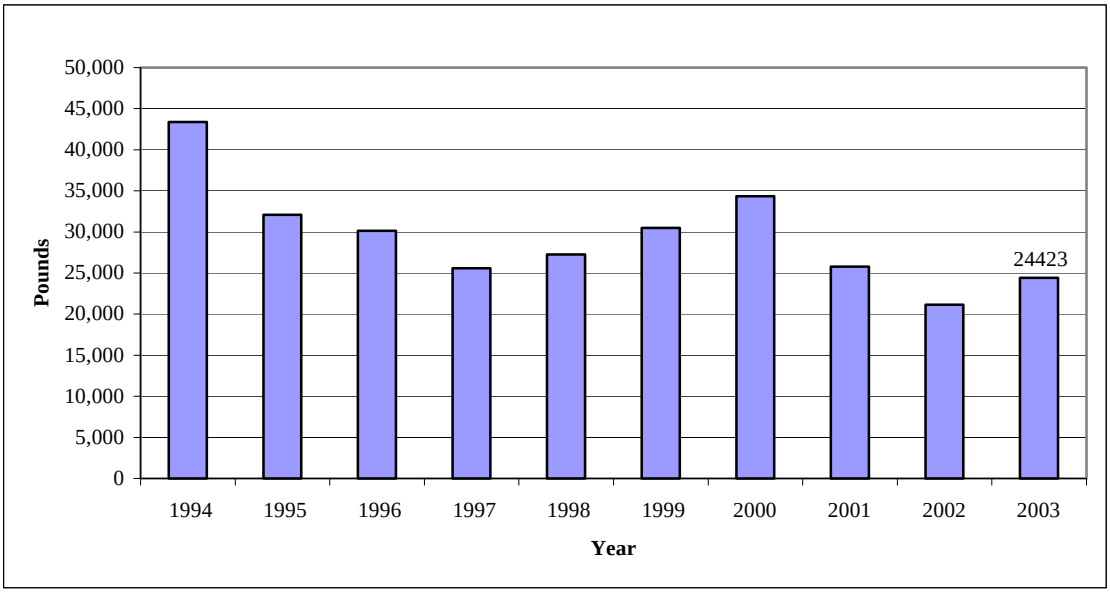


Figure 16
Bucklin Point WWTF Cyanide Influent Loading Trend

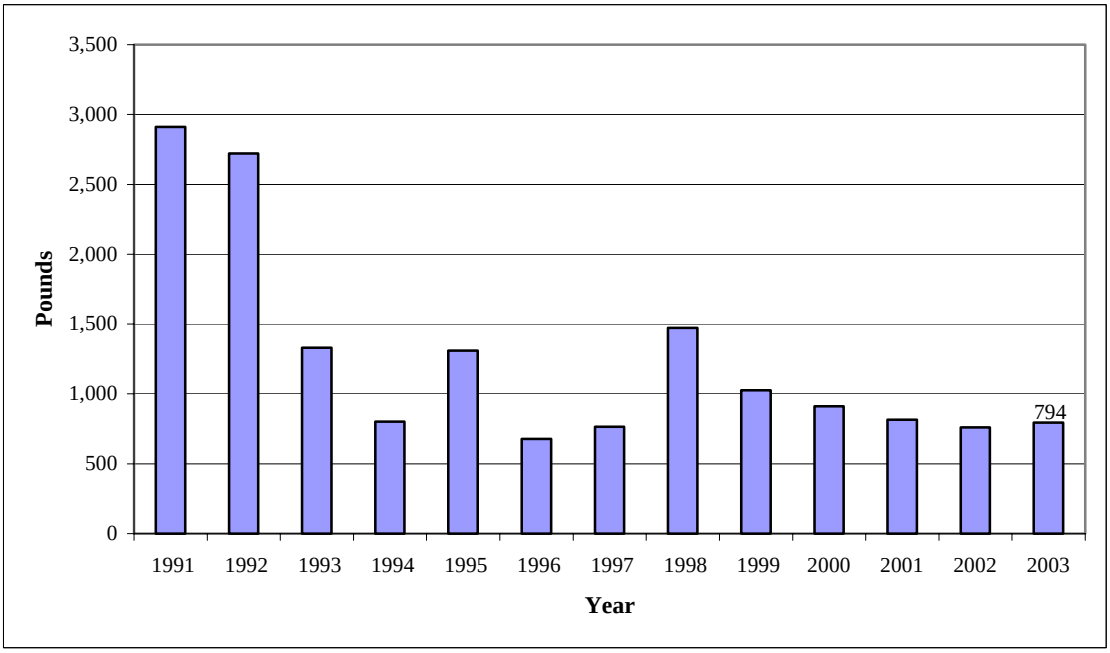


FIGURE 17 provides a breakdown of the various metals discharged to the Bucklin Point WWTF. The graph clearly illustrates that zinc and copper are the largest contributors to total metals loading to Bucklin Point.

Figure 17
Breakdown of Total Metals – Bucklin Point 2003 Influent Loadings

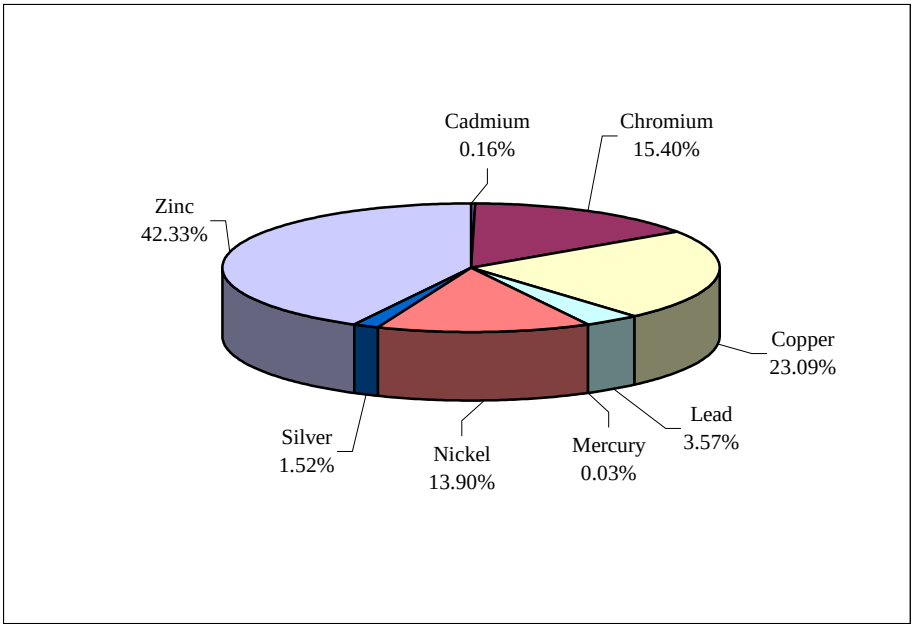


TABLE 18 shows the comparison of Bucklin Point metals and cyanide loadings for 2002 and 2003. Loadings for copper and silver to the Bucklin Point WWTF were reduced in 2003. The single largest reduction on a pounds basis was for copper, reduced by 503 pounds or 8% in 2003. Silver exhibited the largest percent loading decrease in 2003, as this pollutant was reduced by 232 pounds or 39%. The impressive reduction in silver loadings is directly attributed to reductions in discharges from industrial and commercial sources. The section on background monitoring in this chapter indicates that nearly all silver comes from non-residential sources. The reductions are due to improved Pollution Prevention user education efforts, and the Pretreatment Silver Reduction Program. The overall decrease in total loading in pounds to the Bucklin Point facility between 1994 and 2003 is 44% for total metals and 73% for cyanide.

TABLE 18
Comparison of 2002-2003 Annual Loadings to the Bucklin Point WWTF

Pollutant	2002 (Pounds)	2003 (Pounds)	Difference In Pounds	Percent Change
Total Cadmium	38	39	1	2.63
Total Chromium	918	3,762	2844	310
Total Copper	6,141	5,638	-503	-8
Total Lead	870	873	3	0
Total Mercury	6	6.5	0.5	8.3
Total Nickel	2,845	3,396	551	19
Total Silver	603	371	-232	-39
Total Zinc	9,715	10,337	622	6
Total Metals	21,136	24,423	3287	16
Total Cyanide	760	794	34	4.5

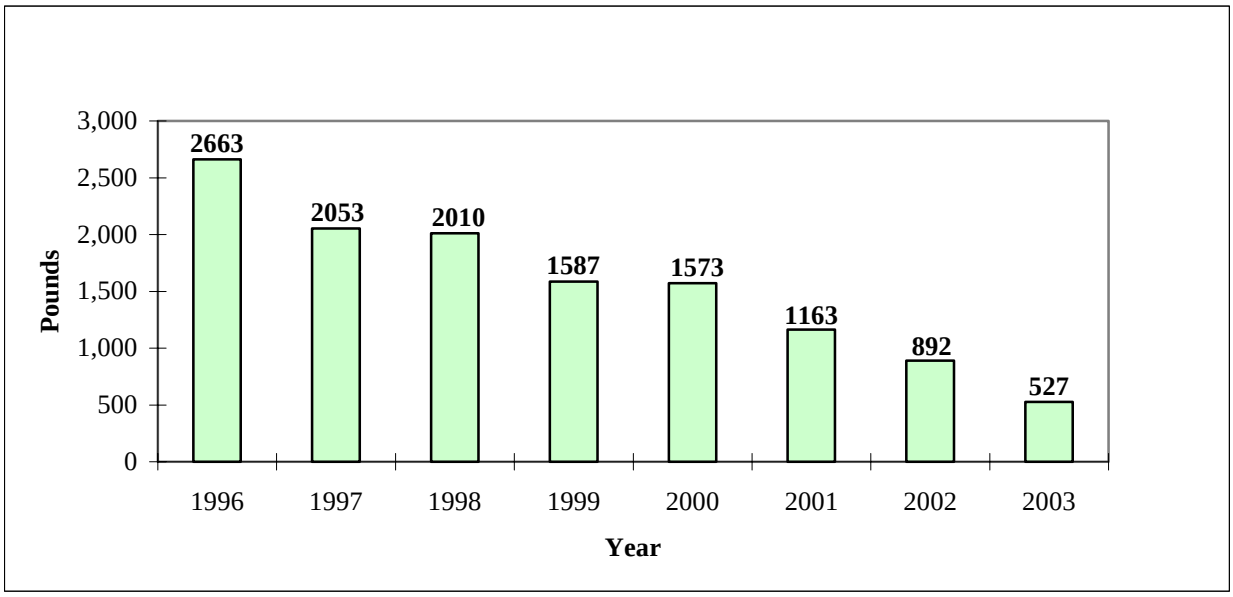
~Oil and Grease Inputs to Bucklin Point WWTF

Monthly sampling of oil and grease inputs to the Bucklin Point WWTF reveals low and consistent concentrations. Influent oil and grease concentrations in 2003 ranged from 17 ppm to 81 ppm. Effluent concentrations were commonly below the detection limit of 4 ppm. This data is listed in ATTACHMENT VOLUME II, SECTION 11.

~Septage Loading to Bucklin Point

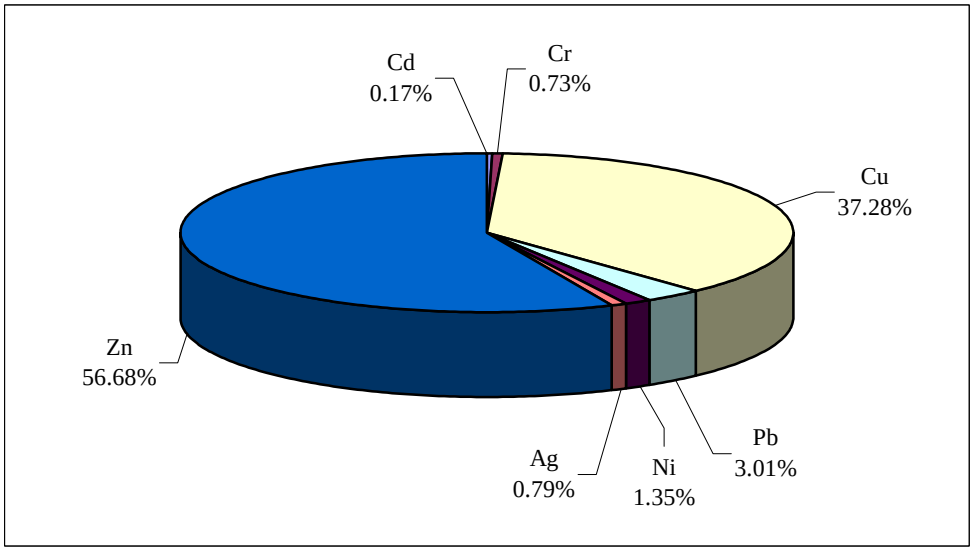
An analysis of recent volume trends indicates an approximate decrease of 25% from 2000 to 2001, a 2% decrease from 2001 to 2002, and roughly a 24% decrease from 2002 to 2003. Overall, the volume reported in 2003 is approximately 25% lower than the average volume discharged in 1996. This decrease in volume coincided with a proportional decrease in total metal loadings from septage. From 2000 to 2001 there was approximately a 26% decrease, a 23% decrease from 2001 to 2002 and in 2003 a 41% decrease from 2002 (FIGURE 18). 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. In addition to the decreased metals loading, the septage contribution of metals to the Bucklin Point influent has also been consistently decreasing from 8.8% in 1996, to 4.5% in 2001, to 4.2% in 2002 and to 2.2% in 2003.

Figure 18
Trend Analysis of Total Metals Loadings in Septage



Zinc and copper are the major metal contributors, 299 pounds and 196 pounds, respectively, in septage. These two metals make up 94% of the total septage metals loading. Regardless, zinc loading through septage represents only 2.9% of the total influent zinc loading to Bucklin Point. Similarly, copper in septage amounts to 3.5% of the total copper loading to Bucklin Point. FIGURE 19 illustrates the average composition of metals in septage wastewater. The septage monitoring data are provided in ATTACHMENT VOLUME II, SECTION 11.

Figure 19
2003 Breakdown of Total Metals in Septage



A Lakeside solids and grit removal system was installed at the septage receiving facility and is operational. Sampling procedures, which included installation of a composite sampler at the discharge end of the Lakeside unit were proposed, however, for a variety of reasons, this did not occur. Instead a new sampling apparatus, which will enable more representative sampling of each individual truck has been developed and will be implemented in early 2004.

Studies of Background Sources of Metals to the WWTF Influent Load

The NBC is studying possible background sources of the total metal influent loadings to the Bucklin Point and Field's Point WWTFs. Sources such as potable water and residential sources of metals have recently been studied by NBC. Additional information regarding these projects and studies are presented below.

~Potable Water Study

As part of the metals compliance plan, NBC conducted a study to determine the contribution of metals in potable water to the influent loading to the two NBC wastewater treatment facilities. Hot and cold water samples from residential, commercial, and industrial facilities were collected over a six-month period in the second half of 2000. Clean sample collections were used to reduce contamination during sample collection and storage. Samples were analyzed at the NBC Laboratory as well as at Microinorganics, Inc. in Narragansett, RI, a laboratory specializing in trace metals analysis. The results of the work indicate the following:

- Copper, zinc, and iron are the only metals consistently detected in potable water.
- Cadmium, chromium, silver, and mercury were found in extremely low levels.
- Lead, nickel, and hexavalent chromium were detected in parts-per-trillion concentrations, although occasionally higher concentrations were experienced.
- Aluminum and iron concentrations were highly variable, despite the fact that they were detected in the majority of samples.
- Copper and zinc showed nearly equal concentrations with both parameters detected in over 90% of the samples. These two metals tend to leach from pipes and solder and will be found in higher concentration in water samples taken from pipes with less flushing. Copper and zinc in potable water are minor contributors to POTW influent, accounting for approximately 5% of the influent loads of these metals.
- In all cases where metals were detected, the levels were well below drinking water standards.

Based upon this study, approximately 5% of copper and zinc loadings to the influent of the NBC wastewater treatment plants are from the potable water supply.

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

Collections begun in 1993 from sanitary 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 WWTFs. During 2003, EMDA staff collected 39 samples in residential sanitary and combined sewers. Samples were collected as 24-hour composites in wet and dry weather conditions.

TABLE 19 summarizes the results for the background sewer collections for 2003 and compares them to influent concentrations at the WWTFs. Industrial and commercial sources account for only about 7.8% of total flow into the Bucklin Point WWTF and 5.9% of the total flow at the Fields Point WWTF. 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 were measured above laboratory detection limits. Detection limit values were entered for samples with concentrations at or below the laboratory's detection limits. Median concentration values are used in the data analysis in order to reduce the influence of high values in the data set which proved highly variable. Results of samples taken from both collection districts were used in calculations. Average concentration results are used for the WWTF influent. Results of concentrations are in parts per billion. TABLE 19 summarizes the results.

TABLE 19
Results from 2003 Background Metals Contribution Study (ppb)

	Cd	Cr	Cu	Pb	Ni	Ag	Zn
Background	0.49	5.55	29.25	12.25	6.64	0.65	92.45
FP influent	0.92	8.82	52.73	13.46	41.02	4.51	91.32
BP influent	0.52	46.33	74.04	11.76	43.36	4.79	137.1

These results are an approximation of the impact of non-industrial loading to the Bucklin Point and Field's Point WWTFs. 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 even exceeds the Field's Point influent concentration. The range of values for the residential zinc was 29 to 878 ppb and a standard deviation of 176. Given the highly variable data, these median value comparisons of wastestream concentrations

should be considered approximations. 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 and silver. Background contributions are less than 20% for these metals. Cadmium 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 WWTFs and to Narragansett Bay. EMDA is working to use flow measurements and data to choose study sites that will 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 the Field's Point and Bucklin Point Wastewater Treatment Facilities 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 insure 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 resulting from 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 the Field's Point WWTF were first developed in 1982 as part of NBC's original pretreatment program and were subsequently revised by the NBC Pretreatment staff in 1987. The 1987 discharge limits development report projected WWTF influent and effluent concentrations expected if all users were in compliance with the then proposed discharge limits. These projected influent and effluent loadings for the WWTFs have been used as goals to measure the effectiveness of the NBC Pretreatment Program.

Over the years the NBC Pretreatment and Pollution Prevention Programs have been very effective at reducing and controlling the loadings of toxics to the NBC treatment plants and, hence, Narragansett Bay. Cyanide and metals loadings continue to decrease.

TABLE 20 provides a comparison of year 2003 loading levels with the existing loading goals established for each wastewater treatment facility. Differences in loading goals between the two facilities reflect differences in the dilution factors assigned to the chronic and acute mixing zones in the receiving waters of the treatment plants.

TABLE 20
Comparison of 2003 Influent Loadings to Existing Loading Goals

	Field's Point			Bucklin Point		
Parameter	**Existing Loading Goals**	**2003 Loading**	**Goal Met?**	**Existing Loading Goals**	**2003 Loading**	**Goal Met?**
Cadmium	97	134	**No**	485	39	Yes
Chromium	9,834	1,307	Yes	12,211	3,762	Yes
Copper	22,570	7,710	Yes	5,290	5,638	**No**
Lead	8,705	1,951	Yes	3,402	873	Yes
Mercury	161	16	Yes	265	6	Yes
Nickel	26,923	6,058	Yes	7,142	3,396	Yes
Silver	8,060	655	Yes	1,763	371	Yes
Zinc	33,532	13,400	Yes	7,362	10,337	**No**
Total Metals	109,883	31,231	Yes	37,559	24,423	Yes
Cyanide	9,834	4,175	Yes	2,204	794	Yes

TABLE 20 shows that the total metals loadings for both WWTFs are well within the loading goals established to protect the treatment plants, sludge quality, public health, and Narragansett Bay. Field's Point WWTF meets all loading goals except for cadmium by a narrow margin. Bucklin Point exceeds its goal for only copper and zinc. As was noted above, approximately half of the copper and virtually all of the zinc loading to Bucklin Point is believed to be from residential sources, so a residential user education program may be necessary to achieve the loading goals for these metals.

The loading goals presented below in TABLE 21 were developed in the year 2000 using current WWTF data and the most recent water quality criteria. These recently calculated goals reflect annual headworks loadings that would allow for the WWTFs to conform to all discharge regulations and protect the WWTF process from toxic interference.

From TABLE 21, it is obvious that the Field's Point WWTF is meeting the preliminarily calculated loading goals for all parameters based upon the loading goal calculations using the current data. However, based upon these new preliminary loading goals, the Bucklin Point WWTF would still be exceeding the loading goals for copper, nickel, and cyanide.

TABLE 21
Comparison of 2003 Influent Loadings to Recently Calculated Loading Goals

	Field's Point			Bucklin Point		
Parameter	**Preliminarily Calculated Loading Goal**	**2003 Loading**	**Goal Met?**	**Preliminarily Calculated Loading Goal**	**2003 Loading**	**Goal Met?**
Cadmium	3,643	134	Yes	3,336	39	Yes
Chromium	155,176	1,307	Yes	37,007	3762	Yes
Copper	15,015	7,710	Yes	3,077	5638	**No**
Lead	18,943	1,951	Yes	5,544	873	Yes
Mercury	146	16	Yes	29	6	Yes
Nickel	20,659	6,058	Yes	2,613	3396	**No**
Silver	4,228	655	Yes	745	371	Yes
Zinc	42,557	13,400	Yes	15,124	10337	Yes
Total Metals	260,367	31,231	Yes	67,477	24423	Yes
Cyanide	8,730	4,175	Yes	186	794	**No**

The annual loading goals presented in TABLES 20 and 21 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 annual means 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.

The preliminarily calculated loading goals presented in TABLE 21 currently use EPA default values for the metal translator conversion factors that estimate a WWTF effluent's contribution to the dissolved metal concentration of the receiving water.

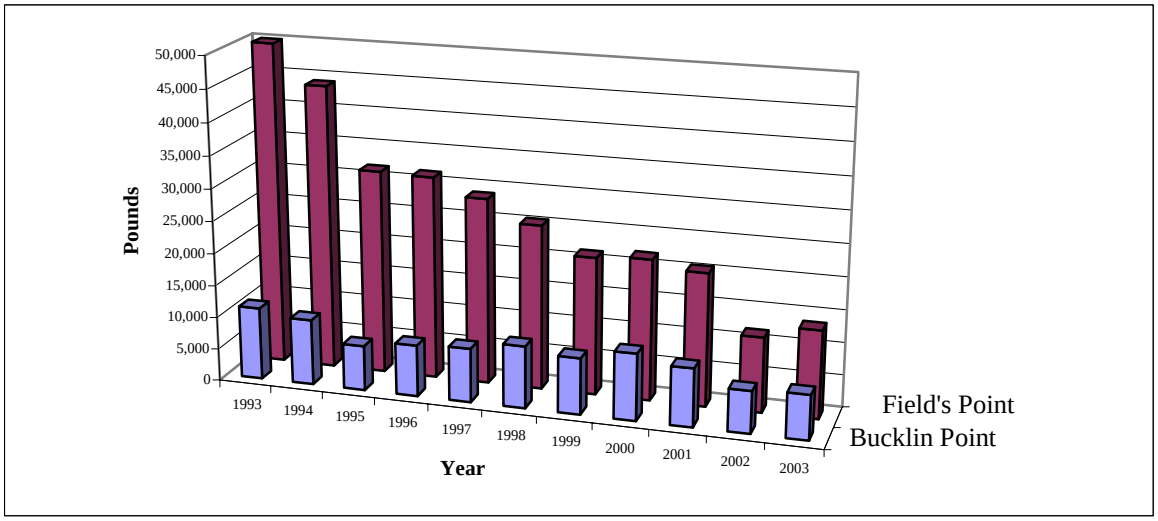
During 2001 and 2002, EMDA conducted studies of the Seekonk and Providence River reaches of Narragansett Bay to determine accurate metal translator conversion factors for the NBC receiving waters. The preliminary calculated loading goals in TABLE 21 will change as a result of using accurate metal translator conversion factors. Local limits and loading goals shall be recalculated in 2004 for both treatment facilities, using recent treatment plant, background, and receiving water data. The results of that work will be presented in next year's Annual Report.

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 2003 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 discharge from both NBC WWTFs is shown in FIGURE 20. 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 1993 until this year. In 2003 total metals, defined as the sum of the total metals cadmium, chromium, copper, lead, nickel, mercury, silver and zinc, in Field's Point effluent increased by 17% compared to year 2002 values. Bucklin Point effluent showed a 6% increase. Increased flow due to higher rainfall totals may be one reason for the increases in 2003 at both facilities. Approximately one-half of the observed increase was caused by erroneous placement of the final effluent Teflon suction tubing. The tubing was mistakenly placed in the proximity of a galvanized zinc pipe, leading to elevated and anomalous zinc concentrations to be measured in 8 of the 107 twice-weekly composite collections. Corrective action has been taken to prevent a reoccurrence of this problem.

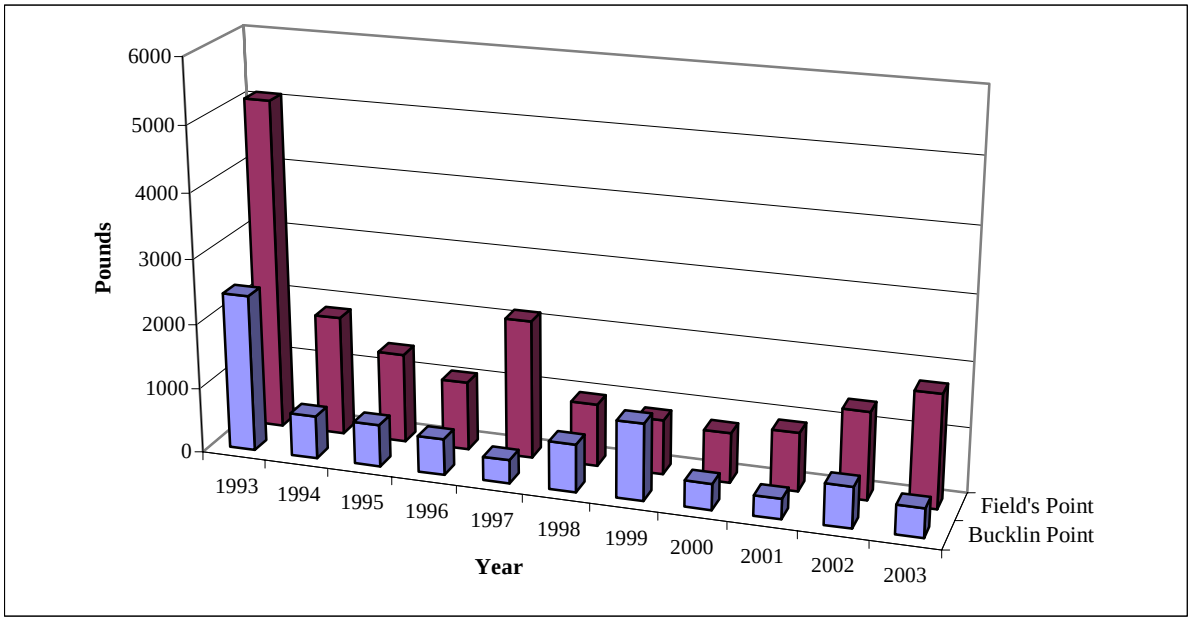
Figure 20
NBC WWTFs Total Metals Effluent Loadings Trend Analysis



Over the past few years, sampling at Bucklin Point was improved significantly. An improved sampling location at the final effluent, in place since the beginning of 2001, combined with cleaner sampling techniques and improved quality control and assurance within the laboratory is at least partially responsible for more consistent measured metals concentrations.

As illustrated in FIGURE 21, cyanide effluent loadings exhibit similar reductions over time, but with more fluctuation. Annual effluent cyanide loads in 2003, relative to 2002, showed increases again at both facilities, 29% for Field's and 6% for Bucklin Point facilities. Changes in effluent concentrations may be a result of influent loading and treatment facility process control that alters the fraction removed in the facility. Annual loadings of cyanide in the influent for 2003, compared to 2002, showed an increase of 49% for Field's Point while the Bucklin Point cyanide influent load increased by 4%. This demonstrates that the increases in effluent cyanide loadings may be partially due to changes in wastewater treatment within the facilities, not necessarily the result of higher influent loads. EMDA is investigating the sources of the higher effluent cyanide concentrations by examining the recycled flows within the facilities and tracking cyanide concentrations throughout the entire treatment process. In the fourth quarter of 2003, EMDA instituted changes to the cyanide collections in the plants after discussion with RIDEM. Presently, nine grab samples are composited, instead of three as had been done in the past, for each daily influent or effluent sample. Collections are made with automatic samplers, into bottles already preserved with sodium hydroxide. EMDA tests for the presence of sulfides and chlorine residual on a daily basis to ensure the integrity of the cyanide collections. The higher frequency grabs are providing more representative daily average loadings data.

Figure 21
NBC WWTFs Cyanide Effluent Loadings Trend Analysis



Breakdown Analysis of POTW Effluents

The individual breakdown of total metals (FIGURES 22 and 23) in the effluent from both plants is very similar. The 2003 proportion of copper in the Field's Point effluent decreased from 17.7% to 14.51% of the total metals loading. The percentage of zinc increased from 43.4% to 44.80%. This high proportion is significant in that zinc is a contaminant found in high concentrations in residential sewers, sources outside of the control of the Pretreatment Program. The relative proportions of Bucklin Point effluent metals, see FIGURE 23, showed an increase in year 2003 for chromium, from 3.4% to 6.1%, due to increased concentrations of chromium from the intermittent, high influent loads early in the year; see section on Bucklin Point influent loading analysis, earlier in this chapter, for more discussion of this issue. The other trace metals showed minor relative changes.

Figure 22
Breakdown of Total Metals – Field's Point 2003 Effluent Loading

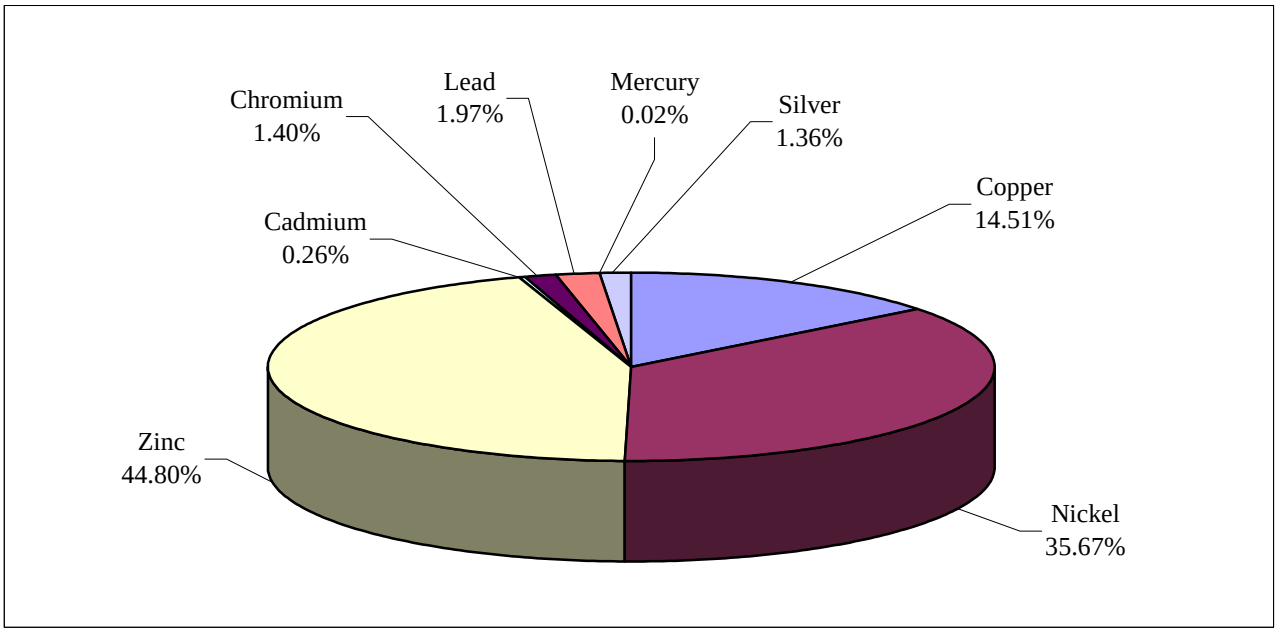
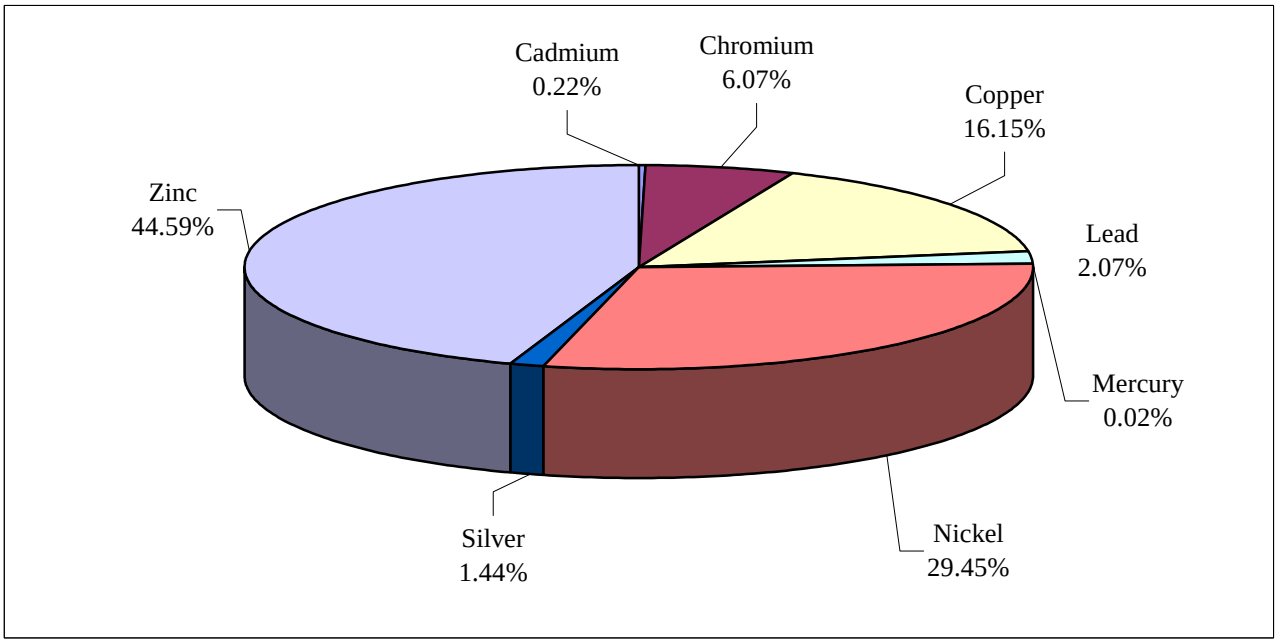


Figure 23
Breakdown of Total Metals – Bucklin Point 2003 Effluent Loading



Bioassay Data

The two NBC Wastewater Treatment Facilities are required to conduct bioassay studies quarterly. 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 2003 for both WWTFs. At both facilities the species tested are *Americamysis bahia* and *Arbacia punculata*. Samples are collected only in dry weather, defined as 48 hours prior to or during sampling.

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 2003 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. TABLE 22 lists the new permit's limits for metals and cyanide and the old Consent Agreement values for contested parameters. RIDEM and NBC resolved differences over the contested items in January 2004 and agreed to a new Consent Agreement, RIA-330. TABLE 22 presents the limits as well as the measured maximum daily values and maximum monthly averages for parameters of interest. TABLE 23 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 2003.

TABLE 22
Comparison of Field's Point RIPDES & Consent Agreement Limits With 2003 Wastewater Treatment Facility Results

	RIPDES Permit Limits		**Consent Agreement Limits**		**2003 Results**	
Parameter	Maximum Daily (ppb)	Average Monthly (ppb)	Maximum Daily (ppb)	Average Monthly (ppb)	Maximum Daily* (ppb)	Average Monthly** (ppb)
Copper	23	23	274	133	43.20	26.89
Mercury	8.5	0.4			0.07	0.03
Nickel	332	127			56.80	40.11
Silver	10	-			3.71	1.85
Zinc	380	380			148	74.76
Cyanide	4	4	182	84	120	24.28
BOD Percent Removal	-	85%				>85% in all months
TSS Percent Removal	-	85%				<85% in 4 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 2003 is reported for comparison against the RIPDES permit. 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.

TABLE 23
2003 Compliance Status with RIPDES & Consent Agreement Limits For Field's Point Facility

Parameter	2003 Compliance with RIPDES Permit?		2003 Compliance with Consent Agreement?	
	Maximum Daily	Average Monthly	Maximum Daily	Average Monthly
Copper	**No**	**No**	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	Yes	N/A	N/A
TSS Percent Removal	N/A	No	N/A	N/A

TABLE 23 shows that in 2003, the Field's Point WWTF was in compliance with the daily and monthly discharge limitations specified in the Consent Agreement for all toxic pollutant parameters listed in TABLE 22. 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 will, at RIDEM's request, recalculate permit limits based on the metal translator study conducted by NBC in years 2001 and 2002. The calculated, new permit limits will be used in a new local limits determination, also at the request of RIDEM. RIDEM will then evaluate all aspects of the permit calculations and local limits development. It is important to note that studies performed by NBC in 2001 and 2002, and summarized in last year's Pretreatment Annual Report, found the Providence and Seekonk Rivers met water quality criteria for the trace metals analyzed: cadmium, copper, lead, nickel, and silver.

Field's Point had four daily violations for TSS, when values were greater than 50 mg/liter, one day when a sample was not collected, and one day when laboratory quality control fell outside of an acceptable range. Three of the four daily TSS violations occurred on days of high flow due to rainstorms. Daily violations for BOD at Field's Point consisted of one day greater than 50 mg/liter, one day without sample collection, and four days when laboratory quality control did not meet acceptable levels. The daily fecal coliform bacteria maximum of 400 MPN per ml. was exceeded seven times in year 2003. The monthly average limit for fecal bacteria was not exceeded.

RIPDES Permit Compliance – Bucklin Point Facility

When the NBC acquired the Bucklin Point WWTF, 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 consent agreement RI-330, issued by RIDEM in January 2004, will be used in next year's Pretreatment Annual Report 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. The study data shows that the Seekonk River meets water quality criteria, except in the direct vicinity of the outfall. This data will be fully reported in a metals compliance document to RIDEM in year 2004. TABLE 24 outlines the current permit limits and monitoring requirements for Bucklin Point and the 2003 effluent results.

TABLE 24
Comparison of Bucklin Point RIPDES & Interim Effluent Limits with 2003 Wastewater Treatment Facility Results

	RIPDES Permit Limits		Consent Agreement Limits		2003 Results	
Parameter	Maximum Daily (ppb)	Average Monthly (ppb)	Maximum Daily (ppb)	Average Monthly (ppb)	Maximum Daily* (ppb)	Average Monthly** (ppb)
Hexavalent Chromium	997	60	-	-	26.00	14.25
Copper	5.2	5.2	274	133	35.30	18.86
Lead	199	10.3			9.80	2.63
Mercury	1.7	0.04	8.5	8	0.07	0.02
Nickel	67	13.7	718	326	91.40	44.28
Silver	2.0	-	32	16	3.46	1.73
Zinc	76	76	718	380	87.80	58.84
Cyanide	0.8	0.8	182	84	29.10	9.45
BOD Percent Removal	-	85%	-	85%	-	>85% all months
TSS Percent Removal	-	85%	-	85%	-	< 85% in 5 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 2003 is reported for comparison against the RIPDES permit; for BOD and TSS the number of months in violation is entered.

TABLE 25 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 2003. 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 were exceeded only on two days in the year; BOD never exceeded 100 mg/liter. Daily TSS violations occurred on two days of high flow due to rain events. Four daily samples for BOD were discarded due to laboratory quality control limits being out of tolerance. Seven TSS daily samples had concentrations greater than 50 mg/liter and eight BOD analytical results were greater than that value. It is also interesting to note that TSS and BOD daily maximum pound loading permit limits were never exceeded in 2003. This impressive compliance record is a testament to the careful management the WWTF receives from the Bucklin Point Operations staff, as the facility operated 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 three years, with elements of the upgrade coming on-line in 2004.

Table 25
2003 Compliance Status with RIPDES & Consent Agreement Limits For Bucklin Point Facility

	2003 Compliance with RIPDES Permit Limits?		**2003 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	Yes	Yes	Yes
Nickel	**No**	**No**	Yes	Yes
Silver	**No**	**-**	Yes	
Zinc	**No**	Yes	Yes	Yes
Cyanide	**No**	**No**	Yes	Yes
BOD Percent Removal	-	Yes	-	Yes
TSS Percent Removal	-	**No**	-	Yes

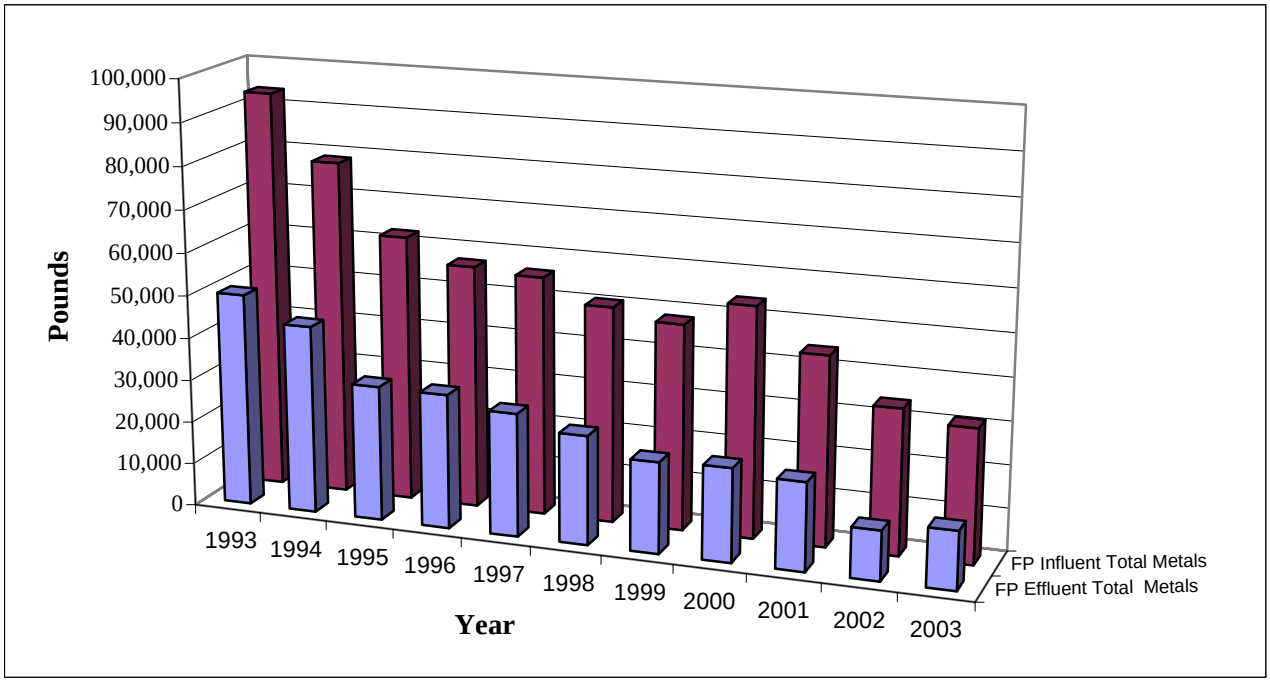
~Bucklin Point Final Effluent pH Variability and Permit Compliance

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 2003 was 6.04 to 7.66 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 24 contains a comparison of historic Field's Point WWTF influent and effluent loadings for total metals. The removal rate of metals entering the WWTF generally varies from 17 to 86 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 yield more accurate effluent concentrations and removal rates.

Figure 24
Field's Point Influent and Effluent Total Metals Loadings Trend Analysis



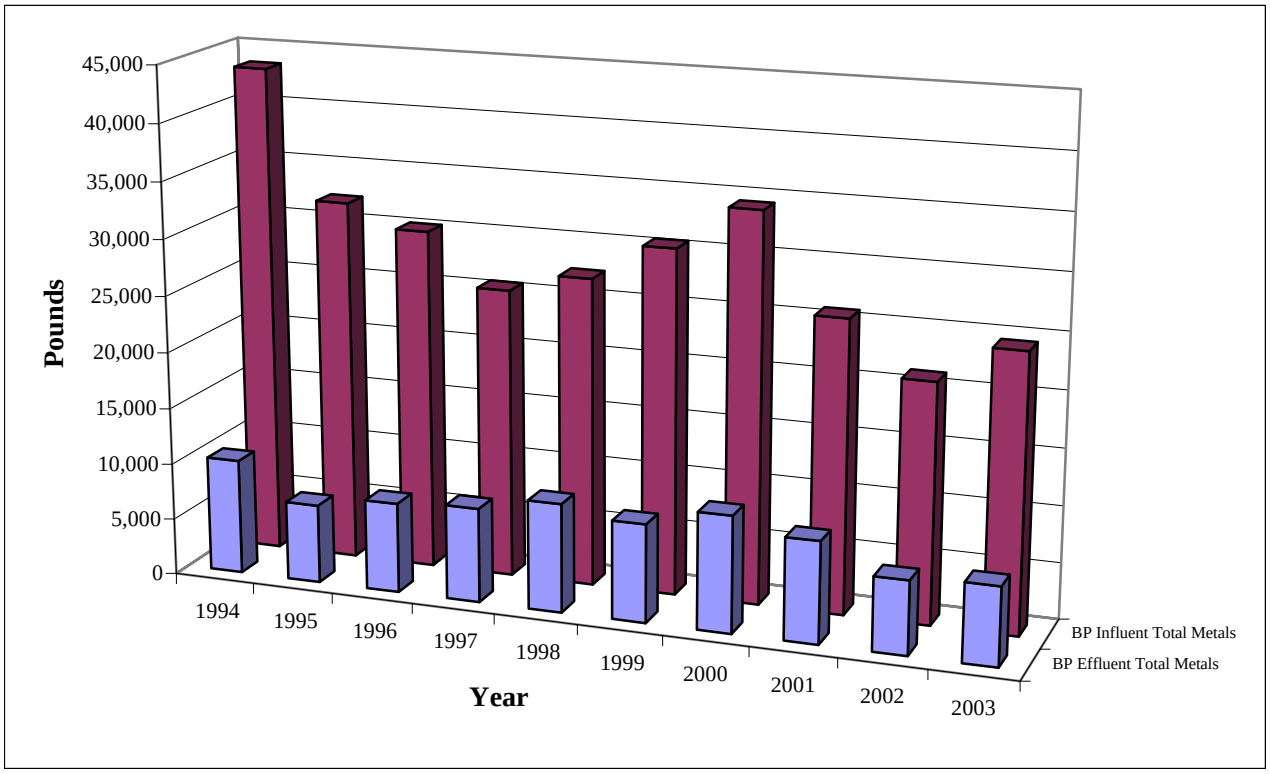
The term “removal” means the reduction of pollutants in the wastewater through their incorporation into settable solids, which are later concentrated into the sludge material. Wastewater treatment plants were not designed to treat and remove heavy metals. Those metals that are strongly associated with 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 26 provides removal rates for metals and cyanide at both NBC Wastewater Treatment Facilities. From TABLE 26 it is easy to see that a major portion of all toxic pollutants, with the exception of nickel and cyanide, are removed from the wastestream at the NBC plants prior to the effluent being discharged to the receiving waters of Narragansett Bay.

TABLE 26
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	0.92	0.25	73	0.52	0.19	63
Chromium	8.82	1.3	85	46.33	5.12	89
Hex.Chromium	52.33	17.5	67	62.69	12.72	80
Copper	52.73	13.86	74	74.04	14.47	80
Lead	13.46	1.89	86	11.76	1.89	84
Mercury	0.11	0.02	82	0.09	0.02	78
Nickel	41.02	33.96	17	43.36	26.17	40
Silver	4.51	1.29	71	4.79	1.28	73
Zinc	91.32	43.45	52	137.1	39.58	71
Cyanide	28.56	12.13	58	10.37	5.84	44

FIGURE 25 provides a comparison between the historic influent and effluent total metal loadings for the Bucklin Point WWTF. As noted for the Field's Point facility, 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 sources. Rain events also affect plant operations by causing detention times to be decreased in the facilities and disrupting process treatment. Wet weather events must be considered when evaluating changes to effluent loadings.

Figure 25
Bucklin Point Influent and Effluent Total Metals Loadings Trend Analysis



WWTF 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 WWTF. Total metals are measured twice weekly. In 2003, 52 Field's Point and 52 Bucklin Point effluent samples were analyzed for dissolved metals. The NBC and RIDEM will use this data to better understand the fate, effect, and physical partitioning of metals discharged from the WWTFs. 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. WWTFs are permitted in total metals. Therefore, the RI DEM must use a "metal translator conversion factor" to estimate the WWTFs total metal fraction that is dissolved in the receiving waters 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 WWTF effluent and in the receiving waters.

TABLE 27 summarizes the data from this study during 2003. 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 27
Final Effluent Phase Partitioning Study Results, 2003

Bucklin Point WWTF dissolved/total as a fraction					
	Cu	**Ni**	**Zn**	**Al**	**Fe**
Mean	0.55	0.94	0.93	0.12	0.17

Field's Point WWTF dissolved/total as a fraction					
	Cu	**Ni**	**Zn**	**Al**	**Fe**
Mean	0.62	0.95	0.93	0.14	0.19

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. Aluminum and iron are mainly associated with particles. The NBC Laboratory is developing methods and bringing instrumentation on-line in 2004 that will enable more precise low-level measurements, with lower detection methods.

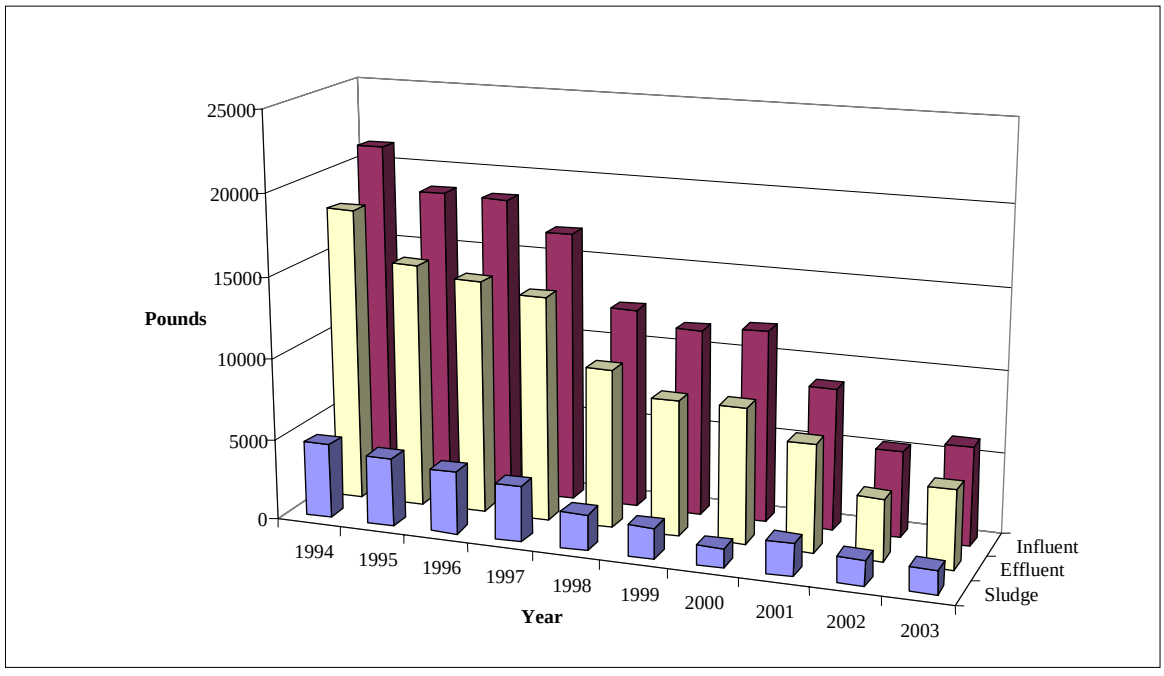
Work done by Microinorganics Inc., an outside contractor that specializes in ultra-clean low-level metals analyses, on NBC final effluent provided data similar to the NBC lab for copper and nickel partitioning; data on silver indicates a low portion, near 10%, in the dissolved phase. Given the stringent water quality standards for copper and silver, these results will prove useful for RIDEM when evaluating and setting appropriate future discharge permit limits for the Bucklin Point and Field's Point WWTFs. Data for 2003 total and dissolved metals analysis results are included in ATTACHMENT VOLUME II, SECTION 11.

Sludge Analysis

To provide further insight into influent trends and WWTF 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 WWTF 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 2003 sludge data are included in ATTACHMENT VOLUME II, SECTION 11.

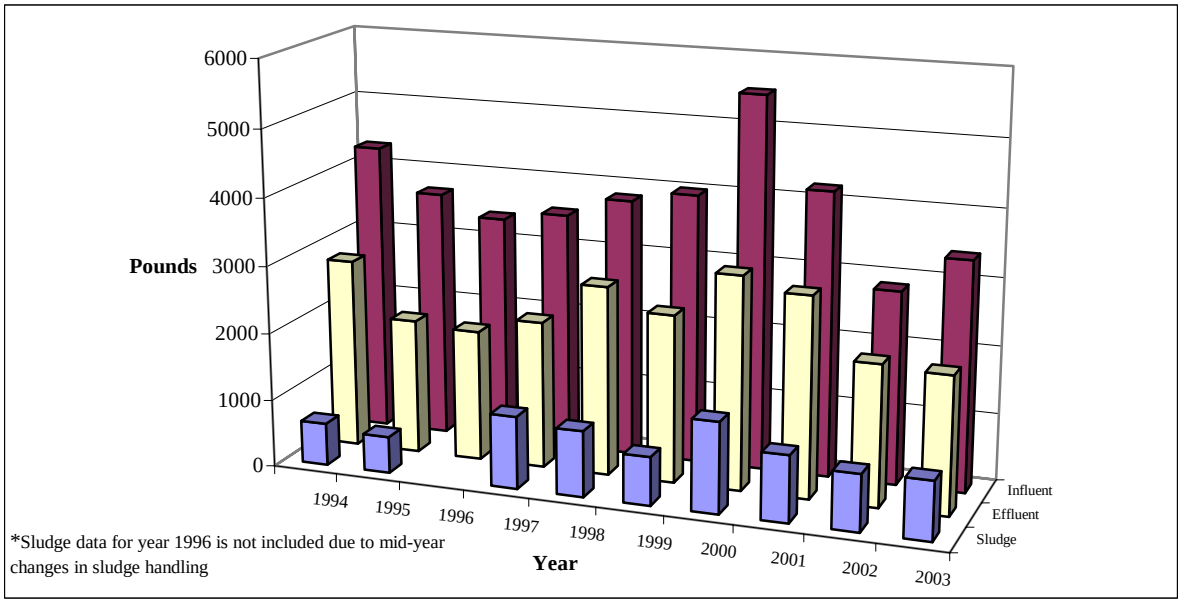
The Field's Point sludge loading results for nickel (FIGURE 26) show general agreement with declining nickel inputs to the Field's Point WWTF influent. Note that the center row of columns on the figure represent final effluent loading. The relatively low removal rate (17%) is confirmed in the low sludge loads.

Figure 26
Nickel Loading Trend Analysis in Field's Point Sludge, Influent and Effluent



Bucklin Point sludge nickel loading (FIGURE 27) follows the same general trends as influent loading. The relatively low 2003 Bucklin Point nickel removal rate (40%) is confirmed in the low nickel sludge loading. The agreement between 2003 nickel effluent loading in pounds and the value calculated from the influent loading minus the sludge loading is remarkably close: 17%.

Figure 27
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 28 and 29 show the loading trends for zinc, while FIGURES 30 and 31 detail the copper loading trend analyses. Copper is more often found in the particulate phase than are nickel and zinc. NBC data show that approximately one-half of the copper in the final effluent is in both the particulate and dissolved phases.

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 48% 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 14%, for this mass balance comparison.

EMDA is studying the reasons for the discrepancies; the Field's Point influent sampling location will be carefully studied in 2004 to assure that it is a representative site for all parameters. 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.

Figure 28
Zinc Loading Trend Analysis in Field's Point Sludge, Influent and Effluent

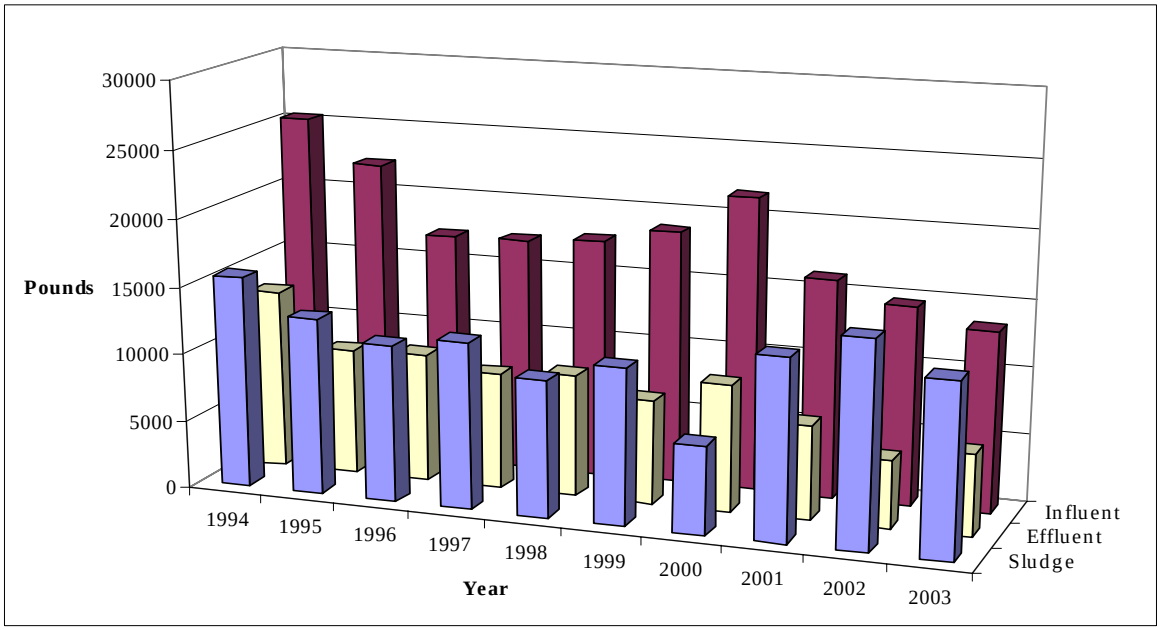
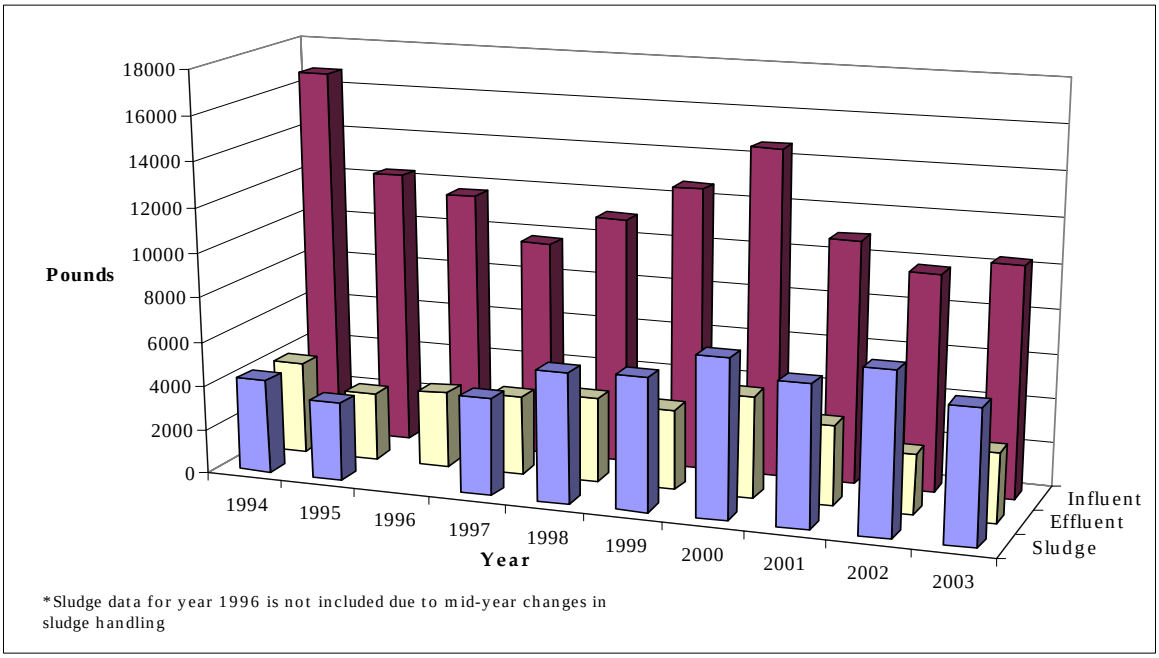


Figure 29
Zinc Loading Trend Analysis in Bucklin Point Sludge, Influent and Effluent



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

Figure 30
Copper Loading Trend Analysis in Field's Point Sludge, Influent and Effluent

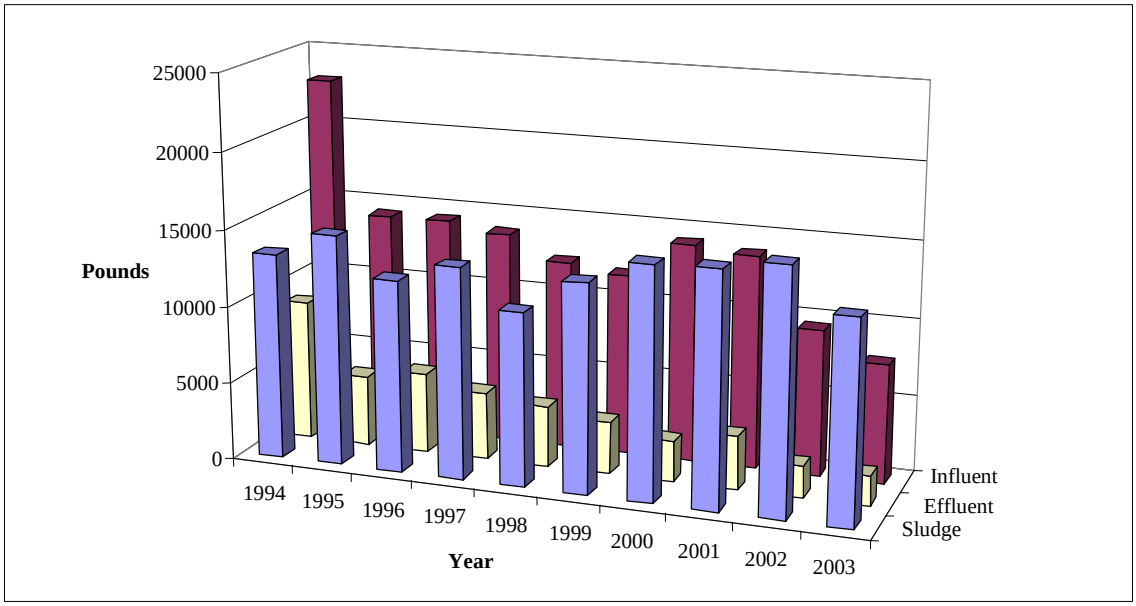
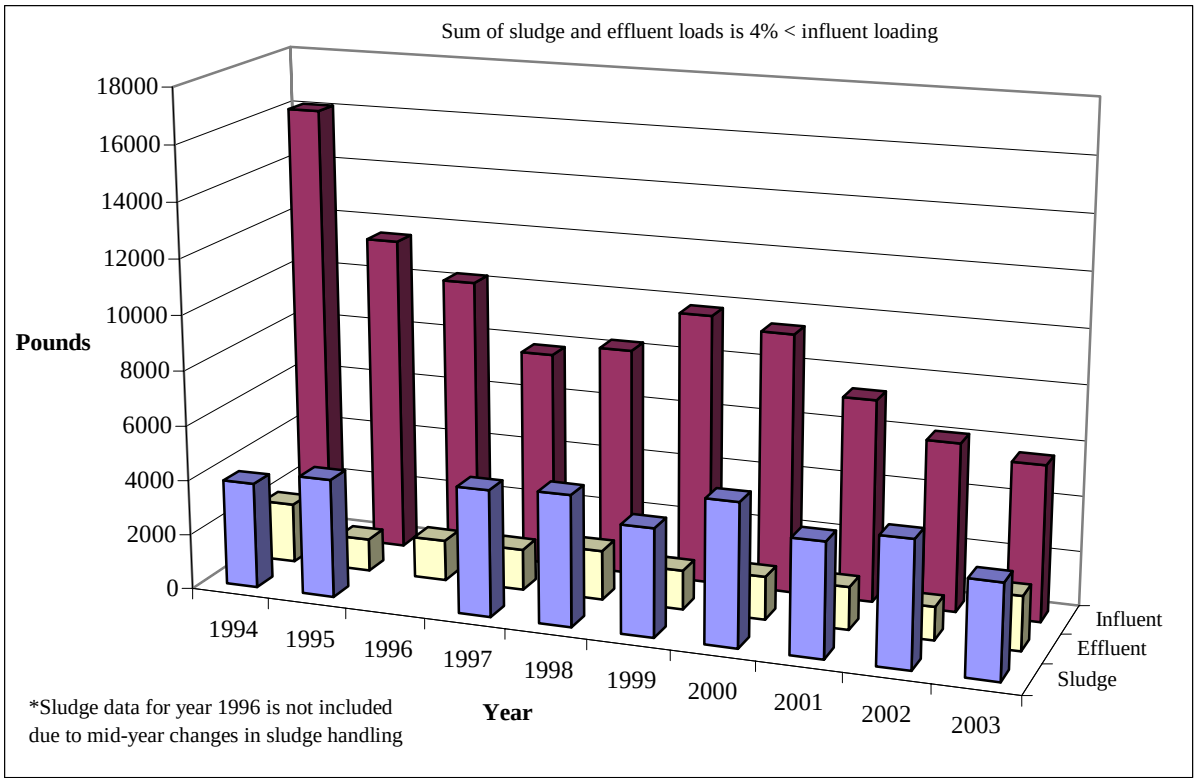


Figure 31
Copper Loading Trend Analysis in Bucklin Point Sludge, Influent and Effluent



Comparison of Final Effluent Concentrations in 2003 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 is presently working toward full implementation of 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. This study used ultra-clean sampling and analyses methods overseen and performed by Microinorganics, Inc. Metals analyzed were copper, nickel, lead, silver, and cadmium. All 118 samples in the Providence River, collected on four days in

different seasons, at multiple locations and depths, and over a complete tidal cycle met saltwater quality criteria. In the Seekonk River, 103 of the 113 samples met criteria; the ten samples with higher than criteria concentrations for copper and nickel were all located within the mixing zones, next to the Bucklin Point outfall. This study demonstrated that the most impacted parts of Narragansett Bay meet saltwater quality criteria for metals.

Dissolved metals are measured weekly at the two plants; total metals are measured twice weekly. TABLE 28 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 dissolved maximum at both facilities is even lower than the chronic criteria.
- Silver shows annual maximum dissolved concentrations lower than the acute water quality criteria; no chronic saltwater quality criterion is 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 annual maximums less than the acute saltwater quality criteria.
- Zinc at Bucklin Point has a dissolved annual average and dissolved annual maximum less than the corresponding chronic and acute criteria. Field's Point's dissolved zinc annual average concentration is less than the chronic saltwater quality criteria. Five of fifty-two dissolved phase measurements for zinc exceeded the acute saltwater quality criteria at Field's Point.
- Nickel's dissolved annual maximum at Field's 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 at both facilities meet saltwater quality criteria for chronic and acute comparisons.

Table 28

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	8.00	8.55	3.1	
	Dissolved phase effluent annual maximum	15.40	21.40		4.8
	Total effluent annual average	14.47	13.86		
	Total effluent annual maximum	36.60	43.20		
Lead	Dissolved phase effluent annual average	1.20	1.20	8.1	
	Dissolved phase effluent annual maximum	1.90	1.20		210
	Total effluent annual average	1.89	1.89		
	Total effluent annual maximum	9.82	6.30		
Nickel	Dissolved phase effluent annual average	24.70	32.30	8.2	
	Dissolved phase effluent annual maximum	80.90	65.20		74
	Total effluent annual average	26.17	33.96		
	Total effluent annual maximum	91.40	56.80		
Silver	Dissolved phase effluent annual average	0.50	0.60	NA	
	Dissolved phase effluent annual maximum	1.50	1.80		1.9
	Total effluent annual average	1.28	1.29		
	Total effluent annual maximum	3.46	3.71		
Zinc	Dissolved phase effluent annual average	36.80	40.20	81	
	Dissolved phase effluent annual maximum	63.20	118.00		90
	Total effluent annual average	39.58	43.45		
	Total effluent annual maximum	87.80	148.00		
Mercury	Dissolved effluent annual average			0.025	
	Dissolved effluent annual maximum				1.8
	Total effluent annual average	0.016	0.021		
	Total effluent annual maximum	0.068	0.065		
Cyanide	Total effluent annual average	5.84	12.13	1.0	
	Total effluent annual maximum	29.10	120.0		1.0
pH		standard units	standard units	MPN/ 100 ml. geomean	MPN/ 100 ml.
	Total effluent annual minimum	6.04	6.25	> 6 < 8.5	
	Total effluent annual maximum	7.66	7.27		> 6 < 8.5
Fecal Coliform Bacteria		MPN/100 ml.	MPN/100 ml.	MPN/ 100 ml. geomean	MPN/ 100 ml.
	Total effluent annual geomean	28	26	50	
	% > 500 MPN/100 ml.	3.6%	1.1%		< 10% >500

Summary

In general, the two WWTFs 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 is expanding that program to improve sampling of septage and sludge. 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 WWTFs. All 118 dissolved trace metal samples collected in the Providence River, which receives the flow of the Field's Point facility, met both acute and chronic water quality criteria for the metals studied, cadmium, copper, lead, nickel, and silver. Bucklin Point's receiving water, the Seekonk River section of Narragansett Bay, met water criteria in 103 of 111 samples for all metals analyzed. The eight samples that exceeded the water quality criteria were in the discharge mixing zone of the Bucklin Point facility. Based upon the results of these seasonal surveys, it is expected that the DEM will remove these receiving waters from the list of 303d impaired waters. This is a clear testament to the effectiveness of the NBC toxic reduction and control programs.

Link to Chapter VII

VII. SPECIAL PROJECTS AND PROGRAMS

Link to Chapter VI

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 Section, Pollution Prevention Section, Planning Section, Laboratory Section and Environmental Monitoring and Data Analysis (EMDA) Section.

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 teaches 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 Narragansett Bay Commission'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 2003, EMDA's activities continued to evolve beyond its historical role within the NBC. EMDA analyzed data from completed studies examining 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 research projects. This Chapter details the special projects, studies, and programs that Pretreatment, Pollution Prevention, Sewer Connection and EMDA Sections have worked on in 2003.

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 55 individual site visits of more than 45 companies throughout 2003 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 29

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

TABLE 29
(Continued)

Summary Of EPA PPIS Grant Awards To NBC

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
Total PPIS Grants Awards To NBC			**$647,000.00**

In addition to grant funded projects, NBC's Pollution Prevention Program has become involved with numerous additional 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, 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 encourages participants to reach "beyond compliance" by achieving established environmental goals by the year 2002. These goals include conservation of water, energy, and metals, reduction in hazardous waste generation and air emissions, and improved economic paybacks associated with environmental compliance costs. Participants are 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 seventeen metal finishing companies have been formally signed onto the SGP. Two additional companies are in the processes of collecting environmental performance data and signing-on.

The NBC has been involved with SGP and the CSI since the inception of the CSI in 1993. NBC's Director of Planning, Policy and Regulation, Mr. Juan Mariscal was appointed to the National CSI's Metal Finishing Sector Subcommittee. Through Mr. Mariscal's 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 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 encourages 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. NBC anticipates having EBMPs for Art Studios and Industrial Boilers developed for issuance during 2004.

- ***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 the following series of half-day Environmental Management System (EMS) development workshops:

  Introduction Session - EMS Overview and Benefits of an EMS - May 9, 2001

  Module 1 Environmental Policy and Aspect Identification - May 16, 2001

  Module 2 EMS Planning - Identification of Significant Environmental Aspects (SEAs)/Operational Control - May 30, 2001

Module 3 EMS Planning- Objectives and Targets and Environmental Management Programs - June 13, 2001

Module 4 EMS Planning- Legal and Other Requirements and Industrial Wastewater Treatment (IWT) - Aug. 1, 2001

Module 5 EMS Implementation- Structure, Responsibilities, Operational Control and IWT - Aug. 15, 2001

Module 6 EMS Implementation - Communication, Documentation, Emergency Preparedness, Training - Aug. 29, 2001

Module 7 Checking and Corrective Action- Non-Conformances, Corrective and Preventive Action and EMS Audits - Sept. 12, 2001

Module 8 Management Review and Implementation Assistance - Sept. 26, 2001

These workshops were attended by more than thirty-five representatives from fifteen local businesses, RIDEM and NBC. NBC will continue to work with each attendee throughout 2004 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, 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. A list of the individual seminars offered is as follows:

  - *Metal Finishing Guidance Manual Seminars - Hazardous Waste*
    Rhode Island College, January 13, 1999
    This workshop was the first in a series focusing specifically on the metal finishing industry. Attendees of this workshop were given a detailed overview of all state and federal hazardous waste management regulations.

  - *Metal Finishing Guidance Manual Seminars - EPCRA*

Rhode Island College, February 15, 1999
This second metal finishing seminar focused on Emergency Planning and Community Right-to-Know reporting requirements. Speakers from EPA Region I covered all aspects of hazardous material reporting as it relates to the metal finishing industry.

- *Metal Finishing Guidance Manual Seminars - TRI SARA Title III*
  Rhode Island College, May 15, 1999
  This third metal finishing seminar focused on Toxic Release Inventory Reports, which were due in April 1999.

- *Metal Finishing Guidance Manual Seminars - Industrial Wastewater Discharges*
  Rhode Island College, June 17, 1999
  This fourth metal finishing seminar offered the attending audience information on how to best comply with industrial wastewater discharge requirements and how to best use pollution prevention techniques to improve compliance and reduce operating costs.

- *Metal Finishing Guidance Manual Seminars - Improving Environmental and Plating Shop Performance (Achieving Strategic Goals)*
  Rhode Island College, November 4, 1999
  This fifth metal finishing workshop focused on the National Strategic Goals Programs and demonstrated to the attending audience the benefits of signing-on to this program.

- *Metal Finishing Guidance Manual Seminars - Improving Environmental and Plating Shop Performance – II (Measuring Environmental Performance)*
  Community College of Rhode Island, February 17, 2000
  This sixth seminar focused on measuring environmental performance through the National Strategic Goals Program.

- *Metal Finishing Guidance Manual Seminars – Managing F006 Hazardous Waste Sludge*
  Community College of Rhode Island, September 21, 2000
  This seventh and last grant funded seminar focused on the management of F006 hazardous waste and how metal finishers could take advantage of the recently published 180-day rule.

Grant funds associated with this program were fully expended in June of 2000. The NBC will however, continue to work with the metal finishing industry on similar educational programs and projects.

- ***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 RICE will conduct Pollution Prevention Audits of metal finishing companies located within NBC's servicing district in order to determine their compliance status with the MP&M Pollution

Prevention Criteria. Each company audited will receive either an "NBC Certification of Compliance with the MP&M Pollution Prevention Standard" or a detailed report on activities they must implement in order to meet the MP&M criteria. Follow-up audits will be conducted in order to assist companies with the implementation of suggested pollution prevention activities.

Metal finishing companies that can demonstrate compliance with MP&M Pollution Prevention Criteria stand to gain great benefits – less stringent wastewater effluent standards, improved environmental compliance, cost savings associated with material purchases, energy and waste disposal and the professional standing that accompanies overall improved environmental performance. Through this program NBC has develop an MP&M Pollution Prevention checklist that is used to measure pollution prevention performance levels by participating companies.

- ***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 will conduct Environmental Compliance/Pollution Prevention Audits of a select grouping of hospitals, health care and/or dental facilities located within NBC service district. These audits will focus on identifying the source of pollutants and quantifying the amounts of individual pollutants being released to the environment. Information gained through these audits will help NBC to direct additional technical assistance and education efforts and will identify environmental metrics by which to measure the overall environmental performance of healthcare facilities. Pollutant and operations reviewed as part of these audits will include but may not be limited to:

    - 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/results of these audits NBC will:

- Organize and sponsor 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;

- 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 Environmental Best Management Practices for smaller dental/healthcare facilities to possible use in place of a formal wastewater discharge permit.

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

  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. As of December 2001 this course has been offered six times: Fall 1996, Spring 1997, Fall 1997, Spring 1998, Fall 1998, Spring 2000 and Spring 2001, training a total of more than 100 students. The next offering of this course is scheduled for the spring of 2003.

NBC Environmental Merit Award Program

In June of 2003, the NBC held its ninth 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.

During 2003, the NBC recognized one company for their extraordinary pollution prevention efforts, awarding Truex, Inc. with an Environmental Merit Award, and 13 companies received Perfect Compliance Awards for achieving 100% compliance with all NBC regulatory requirements. The award winning firms are as follows:

Environmental Merit Award Recipients

- Park Lane Associates/Colibri
- S&A Paramount Printing
- A.T. Cross Company

Perfect Compliance Award Recipients

- AG&G Incorporated
- Austin Hard Chrome Plating
- Pilgrim Screw Corporation
- Spencer Plating Company, Inc.
- Fibermark DSI
- Impco, Inc.
- Northland Environmental, Inc.
- USGen New England, Inc.
- American Insulated Wire Corp.
- Popper Precision Instruments
- Providence Metallizing Co., Inc.
- Tiffany & Company
- Truex, Inc.
- American Insulated Wire (Grand Ave.)
- Angelica Textile Service
- IMPCO, Inc. (Dexter Rd., East Prov.)

NBC Perfect Compliance and Pollution Prevention Award Seals

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 2003 NBC Environmental Merit Awards will be sent out in March of 2004 and the presentation of these awards will take place in June of 2004.

Auto-Salvage and Junkyards Environmental Compliance and Pollution Prevention Programs

The State of Rhode has more that 90 licensed automotive salvage facilities within its boarders with nearly half of these licensed facilities located within urban areas of Providence, Johnston, North Providence and Pawtucket. These facilities have the potential to generate solid waste and wastewater containing oil and grease and heavy metals such as lead and mercury as well as other toxic and flammable hazardous waste materials that may be detrimental to the health and safety of the environment and surrounding communities. The RIDEM has in place a very successful Pollution Prevention program for auto-body repair facilities but little has been done to-date within Rhode Island to address environmental management issues associated with auto salvage and junkyard operations.

As part of a recent NBC initiative to restore urban potions of the Woonasquatucket River within downtown Providence, NBC staff and other volunteers, during a single day's effort, removed more than 30 cubic yards of debris including numerous car batteries, scrap metal and more than 200 automobile tires from just several hundred square feet of river bed. There are numerous auto-salvage yards located along the Woonasquatucket, and while these facilities have not been determined to be the source of the debris collected from the riverbed they are potential sources of similar waste materials and other pollutants. In addition to solid waste disposal issues auto salvage operations are potential source of oil, grease and heavy metal loadings to the combine sewer system and the surrounding environment due to storm run off.

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 will conduct Environmental Compliance/Pollution Prevention Assessment of a select grouping of auto salvage yards/facilities located within NBC's servicing district. These assessments will focus on identifying the source of pollutants and quantifying the amounts of individual pollutants being released to the environment. Information gained through these audits will help NBC to direct additional technical assistance and education efforts and will identify environmental metrics by which to measure the overall environmental performance of auto salvage facilities on a statewide basis. Pollutant and operations looked as part of these audits will include but may not be limited to:

- 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.

Water Audit and Technical Assistance Program

The Narragansett Bay Commission 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 2003, staff solicited firms for water audits. One company, McCoy Stadium in Pawtucket requested a water audit. 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

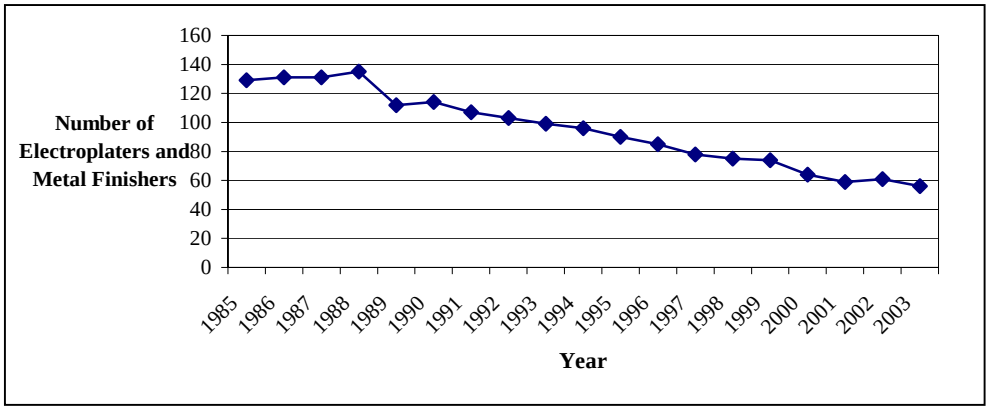
is prepared for approval by the Executive Director or his designee. In 1994, the Permit Section recognized its need for a database management computer program to efficiently and effectively analyze data (i.e. ever changing wastewater flow per district or by City/Town), generate reports (i.e. new customer 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 74 of 124 sewer connection permit requests in 2003. A majority of these 74 sewer connection permits, resulted in users required to obtain a Wastewater Discharge Permit.

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 in an attempt to determine causes for the decline.

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



The NBC plans to eventually have a workshop or large meeting to pull all available resources together to seek funding sources to provide training, investigate new plating techniques, alternative applications and provide marketing assistance to the local metal finishing industry. By working with training organizations, local, state and federal agencies, professional trade groups and local universities, the NBC hopes to address the concerns of metal finishing business owners and provide some assistance in revitalizing this once-thriving Rhode Island industry. In May of 2003 NBC met with representatives from the Governor's office and the Rhode Island Economic Development Corporation in order to educate these agencies on the issues currently facing this important Rhode Island industrial sector and to solicit their assistance with identifying possible solutions to these problems.

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 has been 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 have been delayed so that the mercury amalgam issue can be addressed and incorporated into all new wastewater discharge permits issued to dentists.

During 2002, the NBC began work to develop 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.

On December 11, 2002, the NBC sponsored a half day dental workshop at the Rhode Island Convention Center to introduce the new BMP to the dental community. As part of the NBC BMP, the dental offices will be 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 will be required to implement other programs regarding training of staff and storage and disposal of amalgam waste. During 2003, the NBC Pretreatment Staff began inspections of dental offices to implement the new BMP program. Wastewater Discharge Permits will allow the dentists the option to implement the BMP or sample and achieve compliance with the low level mercury discharge limits now in effect.

Pretreatment staff hand out informational brochures to attendees of the Dental Amalgam Workshop

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 2 year international mercury loading study of treatment plants that have implemented mercury amalgam discharge control programs.

Copper Sulfate Root Killer Prohibition Program

In 1993, Pretreatment Staff became aware of a chemical that plumbers and sewer cleaning firms typically recommend for use by residential homeowners to eliminate tree root growth in sewer lines. This chemical, which is sold under various trade names, is 99 weight percent copper sulfate pentahydrate. The Roto Rooter Services Company was notified that the NBC strictly prohibits the discharge of their Roto Rooter Root Destroyer product into the NBC sewerage system. The Pretreatment Section expanded this prohibition in 1995 by notifying all plumbers and sewer cleaning firms in the State of

Rhode Island of the copper sulfate root killer prohibition within the NBC district. To this date, this prohibition is strictly enforced by the NBC Pretreatment Program.

Commercial Pesticide Control Program

In 1991, the Pretreatment Staff conducted inspections of the larger commercial pest control and lawn care firms located within the Field's Point District to determine if pesticides, insecticides or fertilizers were routinely discharged to the sewer system. These inspections revealed that on occasion, washwaters containing toxics could potentially be discharged to the sewer system. The firms inspected were required to seal all open floor drains and non-sanitary sewer access locations to ensure proper spill control facilities were implemented. The discharge of process wastewaters from these facilities was prohibited and the firms implemented Best Management Practices (BMP) to ensure compliance without the need for a discharge permit. Process washwater at these firms is typically recycled to mix a new batch of pesticide or insecticide. During 1994, this program was expanded to include the many small pest control and lawn chemical application firms located in both the Field's Point and Bucklin Point districts. All firms have been inspected, and the program is now complete in both drainage districts.

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 2003, 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 2003, 398 items listed on manifest forms were checked from August to the end of the year. This is an increase from the 165 items that were reviewed in 2002. 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. The NBC has applied for a grant from the EPA to help with funding for this program.

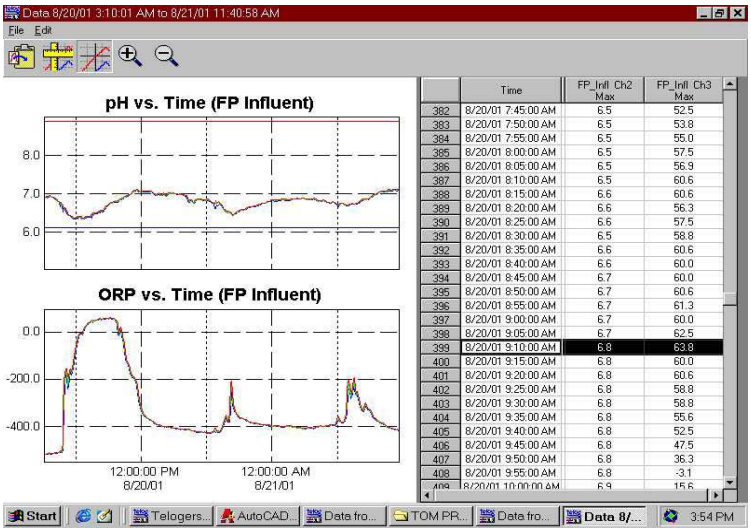
Automotive Service Industry Permitting Program

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 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.



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 firms' wastewater discharge. If a company discharges wastewater which exceeds pH set points programmed into the recorder, the monitoring device will notify Pretreatment personnel via cellular phone so that an inspection could immediately be performed. 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. The computerized monitoring of the POTW influents will continued throughout 2003 and will be expanded in 2004 to included remote site monitoring.

Nine Minimal Controls Compliance Program

Throughout 2003 the NBC Pretreatment, Pollution Prevention and EMDA Sections continued to ensure compliance with the Pretreatment, Pollution Prevention and Monitoring elements of the Nine Minimal 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 incidently or accidently discharged to sewers system. 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 determine dry weather discharges. Other extensive monitoring of the Providence and Seekonk Rivers has indicated the rivers are meeting the EPA aquatic life criteria standards for toxics. 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 waterbodies.

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

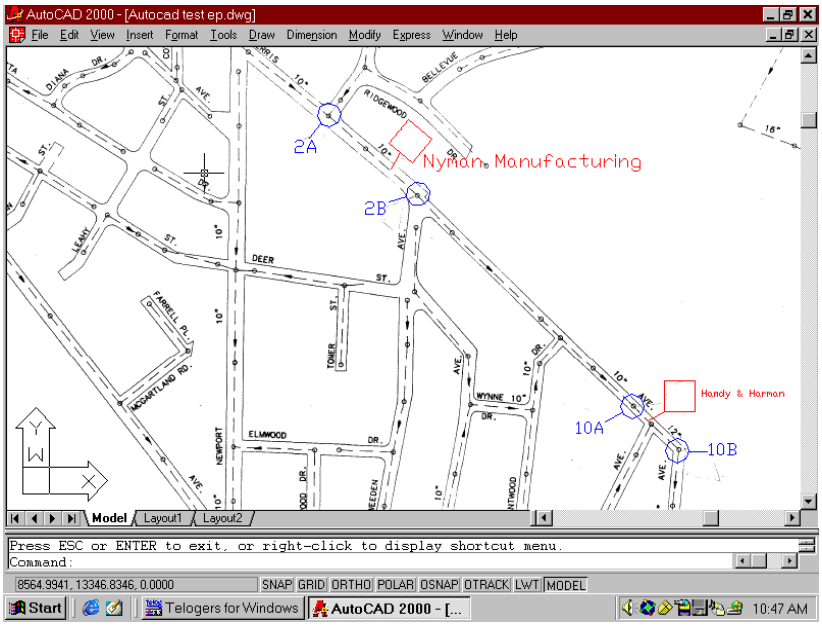
The NBC Pretreatment Program was in the forefront in the State of Rhode Island with regard to the permitting of hospitals, funeral homes, and bio-medical facilities to ensure the control of discharges of medical waste, infectious agents, and toxics.

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 EM&DA 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.



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

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 will be completed in early 2004. Information regarding each user's location is places 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.

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 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 that weighs 2 grams. 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 2004.

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 Juan Mariscal, Director of NBC Policy, Planning & Regulation Division to spearhead volunteer clean-up efforts.

During 2003, a total of three clean up events were held. The first river clean up was held April 25, 2003 on Promenade Street in Providence. The second clean up took place on May 20, 2003 and involved 20 staff members from the NBC Pretreatment, EMDA, and Pollution Prevention Sections. This clean up took place at Donnegian Park in Providence in conjunction with the "What's in Your River" program. A further discussion of this program can be found in CHAPTER II. The third clean up was held on September 25, 2003 also on Promenade Street in Providence. The clean ups that took place on April 25th and September 25th involved NBC volunteer staff members 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, TVs, toys, etc. As a result of the hundreds of tires removed from the river, the Commission 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.

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. The NBC shall also host and/or sponsor clean up events during 2004 to further enhance the beauty and public safety of the Woonasquatucket River. During 2004 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.

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 WWTFs. Representatives from the Pretreatment Section, Operations, Engineering, EMDA and Laboratory Sections meet to discuss ways to improve the performance at the NBC's WWTFs.

The meetings begin with a presentation of figures developed by EMDA's data analyst, 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 present information that pertains to industrial discharges into 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.

Discussion at meetings in 2003 focused on topics including:

- Review and suggested improvements to the final low level chlorine residual sample collection, transfer, analysis and quality control and assurance program;
- Review data and comment on improvements to the BOD laboratory analysis quality control and assurance program;
- Review quarterly bioassay testing of the final effluent for both WWTFs;
- Review data from sampling to ensure final effluent collection site is representative
- Review information on continuous BOD analyzer in use for possible application at NBC WWTFs;
- Review data from sampling at Field Point facility to verify that bisulfite addition is not impacting final effluent BOD concentrations;
- Review data on cyanide levels in the influent, effluent, pre- and post-aeration, and pre- and post- chlorination in order to better sources and sinks of cyanide within the facility;
- Review percent removal rates for TSS and BOD at both WWTFs;
- Review data from study of BVI influent flow at Bucklin Point WWTF that confirmed that representative sampling in automated collections, via comparison to manual grab samples for TSS;
- Review agreement between continuous pH probe outputs at the influent and effluent and twice daily manual grabs measured at the laboratory using an Orion pH sensor;
- Review data of sampling conducted at multiple sites of primary effluent to verify representativity of collections of this stage of wastewater treatment;
- Review the improvements to sample handling with the addition of 15 liter spigotted carboys with spin bars;
- Review the nutrient results in order to understand the onset of partial nitrification occurring in the wastewater process at the Field's Point facility;
- Review the volatile suspended solids (VSS), content of the influent, mixed liquor and solids at both WWTFs in order to check on abnormal influent mineral based loadings that led to increased ash production;
- Report on biological nutrient reduction materials and systems;
- Review available data associated with short high chlorine demand intervals in effluent at Field's Point WWTF;
- Review the problem of midge flies in the Bucklin Point area including infestation surveys, life cycle and range of the species and plant preventive actions, including the deployment of bat houses;

- Review the high, intermittent chromium loads to the Bucklin Point facility in the first half of the year and attempts to pinpoint the source through sampling upstream in the collection system;
- Planning to upgrade the current dipper type sampler used at Field's Point primary effluent with a peristaltic type;
- Review new automated cyanide collection procedures at the influent and effluent of both WWTFs;
- Review microscopic report of NBC microbiologist of mixed liquor bacterial population and improved imaging hardware;
- Review of operations process control strategy and monthly modifications.

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.

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.

Until this study, no attempt had been made to quantify potential pollutants and simultaneously characterize 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 and Microinorganics, Inc., and was intended to investigate and improve 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; and
- The fate of effluent components.

"EMDA Staff Deploy a Sonde"

To investigate study questions, approximately 25 stations over four transects were sampled in the Providence River; likewise, 22 stations were sampled over 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, thus preserving the integrity and representativeness of the sample. Nutrient samples were collected concurrent to metals samples and were processed according to the standard operating procedures of the Marine Environmental Research Lab at the University of Rhode Island Graduate School of Oceanography. During each field survey, EMDA staff collected physical data using a 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.

Metals results from the Providence and Seekonk River Background study have been analyzed and compared to water quality criteria. These criteria are concentrations established by the United States Environmental Protection Agency (USEPA), and adopted by the state of Rhode Island, as the benchmark minimum concentrations of pollutants in salt water. Water quality criteria are expressed in dissolved concentrations, as the dissolved fraction of most metals is considered the most bioavailable, and thus the most potentially harmful 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 analysis was 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. Copper limits were generally exceeded by approximately 0.08 ug/l and nickel limits were generally exceeded by about

4.5 ug/l. Prior to this study, no surveys of this type had been conducted in over fifteen years and then with limited sampling locations. Data from previous studies had been used to list the Providence and Seekonk Rivers of the RIDEM 303(d) list of impaired waterbodies. Results of this study, clearly refuting the inclusion of these two waterbodies on the 303(d) list, have been forwarded to RIDEM for review, and NBC has been recently informed that these rivers will be delisted for metals.

Nutrient analysis was 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 WWTF to the outfall station. This indicates a high amount of mixing in the rivers. It is important to note that there was not a significant difference in concentrations between the outfall station and the average of the transect closest to the WWTF in the Providence River. This indicates that the river is well mixed and that the concentrations are being highly diluted. Analysis shows that there is not substantial difference within monthly concentrations at each transect in both the Providence and Seekonk River, once again indicating good mixing. It was also shown that high TN corresponds with low salinity, meaning that closest to the WWTF where salinity is quite low, TN is highest but quickly decreases as distance increases 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 default values, for devising the metals translator for the Providence and Seekonk Rivers.

A metals translator is a tool used to calculate the amount of metal that will go into the dissolved phase and then become bioavailable based on specific conditions such as temperature and salinity. RIPDES permits regulate the amount of total metals that may be discharged to receiving waters. EPA default values are presently used to determine NBC discharge limits; these numbers are not site-specific concentrations. 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 could lead to consistently attainable compliance in problem areas. 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 five years ago, changes and improvements have been made to trace metals sampling and analysis techniques that have considerably reduced background contamination. In addition, the USEPA 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. All evidence indicates that permit discharge limits should be reevaluated utilizing recent, reliable data.

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.

Rhode Island Department of Environmental Management Dissolved Oxygen SWAT Team Surveys

EMDA participated in multi-agency dissolved oxygen surveys of Narragansett Bay over the summer of 2003, as in previous years. EMDA staff volunteered time and equipment aboard vessels at various locations throughout Narragansett and Mount Hope Bays as part of a collaborative effort to collect concurrent dissolved oxygen data from numerous locations. Night-time field surveys were conducted to reduce the effects of photosynthesis on dissolved oxygen concentrations. EMDA staff were teamed up with SWAT Team members from other agencies, including Massachusetts Coastal Zone Management, Rhode Island Department of Environmental Management, Save the Bay, Brown University, and Roger Williams University to collect hundreds of physical data points over each cruise. In addition to dissolved oxygen values, research teams collected data on depth, salinity, temperature, and oxygen percent saturation. Full sets of data were used to assess dissolved oxygen and overall ecological health of Narragansett Bay during typically lower-oxygen or hypoxic months in areas of particular concern. Analysis and conclusions will be used in management decisions intended to improve oxygen levels in the Bay where possible.

Wet Weather Monitoring of the Woonasquatucket River

EMDA collaborated with Rhode Island Department of Environmental Management (DEM) and US EPA Region 1 for the second consecutive summer, on a federally funded study of the upper Woonasquatucket River. The main focus of the study was to compile data to be used in development of Total Maximum Daily Loads (TMDLs) of trace metals and fecal coliform during wet weather events. Qualifications for a "wet weather" event were as follows: precipitation greater than 0.5 inches, with a minimum duration of twelve hours, and an antecedent dry period of five days. RIDEM contracted The Louis Berger Group to conduct a wet weather study to characterize pollutant sources to the river from storm sewers and tributaries, and EMDA contracted Microinorganics to analyze for dissolved metals and total suspended solids (TSS) using clean sampling methods. The NBC laboratory conducted all of the fecal coliform and hardness analysis for the study.

Five collection events were conducted at each of the five sampling locations. For each collection event, grabs were taken for fecal coliform bacteria, while trace metals and hardness samples were collected through an ultra-clean auto sampler equipped with acid cleaned Teflon suction lines. Two fecal coliform blanks were also taken during the study to ensure proper quality assurance/quality control. Collections were made pre-storm, at the first flush, peak-storm, post-peak storm, and post storm. River stages were noted where staff gauges were located.

Only one storm met the requisite wet weather criteria for summer 2002. EMDA staff members were deployed per request of RIDEM officials to begin collecting pre-storm samples on the morning of August 29, 2002. The storm ended on August 30, 2002. Samples were analyzed for quantification of five different metals for each of the five sites: cadmium, copper, silver, lead and zinc. All parameters met chronic water quality criteria (WQC), and silver met acute WQC. There is no chronic WQC for silver.

Water Quality for Narragansett Bay at Buoy Platforms

In 2003, the EMDA section of NBC continued work begun in 2000 on the formerly EPA-funded 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. 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 time and money 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. The 2003 data may be reviewed on the NBC EMPACT WebSite.

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 collected by the Sondes on the Bullock's Reach buoy are transmitted via radio signal to a base station at Field's Point every fifteen minutes; likewise, data from the Phillipsdale Landing station, located on the Seekonk River in East Providence, are transmitted by phone connection. EMDA staff maintain both stations, and are continually making improvements to equipment and infrastructure to ensure the reliability of data collected. During 2001 and 2002, EMDA and URI-GSO worked together to service and maintain the Bullock's Reach buoy. During 2003, data from the Bullock's Reach buoy, which is located off of Gaspee Point southeast of Pawtuxet in the Providence River, became useful to RIDEM's analysis of the Greenwich Bay anoxic event and fish kill. Data from 2001-2003 at this station shows that late summer hypoxia in bottom waters in the Providence River does typically occur for short intervals, without the problems experienced in Greenwich Bay in 2003.

As of the end of 2003, uncorrected raw data from the water quality stations became available for use by the general public via a link on the NBC website.

The NBC website, **http://www.narrabay.com/empact/**, presents monitoring station raw data in an easy-to-use and easy-to-understand format, and includes information about the history and future of Narragansett Bay. One link included on the NBC EMPACT home page is to a second website sponsored by the NBC through EMPACT funding. This site, developed by the University of Rhode Island Office of Marine Programs (OMP), includes a virtual field trip of Narragansett Bay, and interactive tools to compare the water column in the upper reaches of the Bay to the water column in down-Bay locations.

Both the NBC EMPACT website and the OMP website represent a comprehensive look at water quality and biological life in upper Narragansett Bay by providing the general public with real-time data and a wide range of information regarding water quality in Narragansett Bay.

At the Bullock's Point site, a YSI EMM450 buoy with YSI 6820 SONDEs recorded and transmitted water quality data from levels of 0.5m from the surface and 1.0m off the bottom at a 15 minute rate from May 15, 2003 to December 09, 2003. The position was to the northwest of Conimicut Point at 41 deg 43.970 minutes North and 71 deg 22.146 minutes West in 26 feet of water, west of the Bullock Point Reach of the Providence River channel. The Surface (0.5m depth) SONDE measured depth, water temperature, conductivity (salinity), pH, dissolved oxygen and Chlorophyll a. The Bottom (1.0m off bottom) SONDE measured depth, water temperature, conductivity (salinity), pH, dissolved oxygen and turbidity. All data resides in a PC in the Operations room of the Field Point WWTF of NBC and can be viewed on the Narragansett Bay Commission EMPACT WebSite. Data is uncorrected "raw data". The buoy was serviced using a trailored 14 foot rubber boat with a 15 hp outboard, launched and recovered at the Collier Park boat ramp. A water quality profile was obtained at the buoy using a YSI 600XL. All buoy data was given to personnel at the Graduate School of Oceanography of URI and the RIDEM.

The second continuous monitoring site is at the Phillipsdale Landing site on the east side of the channel of the Seekonk River in East Providence. This site uses YSI 6820 SONDEs to collect water quality data from two levels, 0.5m from the surface and 0.5m off the bottom, at a 10 minute rate. The surface SONDE measures depth, water temperature, conductivity (salinity), pH and chlorophyll a and the bottom SONDE measures depth, water temperature, pH, dissolved oxygen and turbidity. Data is transferred to the PC in the Field's Point WWTF operations room to be viewed on the Narragansett Bay Commission's EMPACT WebSite.

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. The project involves six schools from five communities along the Woonasquatucket River: Providence, North Providence, Johnston, Glocester, and Smithfield. Participating classes range from grades three to five, and there were approximately two hundred students involved. The project has been designed to last for one full school year (2002-2003).

Additionally, the program will provide the opportunity for internship to one area student enrolled in a college teaching program. An education project intern was hired in 2002, and is working with EMDA staff to design and implement the final stages of the project, as well as working with other youth groups and organizations to develop ways to expand 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, biochemical oxygen demand, 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 formally kicked off on October 18, 2002 – National Water Quality Monitoring Day. Students were invited to Waterplace Park in downtown Providence for an introduction to the project, and to hear presentations given by representatives from the United States Environmental Protection Agency (USEPA), Northern Rhode Island Conservation District (NRICD), and the Providence Office of Cultural Affairs. Additionally, Margherita Pryor of USEPA Region 1 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 for lunch at Georgiaville Beach in Smithfield, and then 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.

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 2003, all the required quarterly sampling activities at the Bucklin Point wells were met.

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

Collections begun in 1993 from sanitary 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 WWTFs. During 2003, EMDA staff collected 38 samples in residential sanitary and combined sewers. Samples were collected as 24-hour composites in wet and dry weather conditions.

TABLE 29 summarizes the results for the background sewer sample collections for 2003 and compares them to influent concentrations at the WWTFs. Industrial and commercial sources account for only about 7.8% of total flow into the Bucklin Point WWTF and 5.9% of the total flow at the Fields Point WWTF. 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 were measured above laboratory detection limits. Detection limit values were entered for samples with concentrations at or below the laboratory's detection limits. Median concentration values are used in the data analysis in order to reduce the influence of high values in the data set which proved highly variable. Results of samples taken from both collection districts were used in calculations. Average concentration results are used for the WWTF influent. Results of concentrations are in parts per billion. TABLE 29 summarizes the results.

TABLE 30
Results from 2003 Background Metals Contribution Study (ppb)

	Cd	Cr	Cu	Pb	Ni	Ag	Zn
Background	0.49	5.55	29.25	12.25	6.64	0.65	92.45
FP influent	0.92	8.82	52.73	13.46	41.02	4.51	91.32
BP influent	0.52	46.33	74.04	11.76	43.36	4.79	137.1

These results are an approximation of the impact of non-industrial loading to the Bucklin Point and Field's Point WWTFs. From TABLE 29 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 even exceeds the Field's Point influent concentration. The range of values for the residential zinc was 29 to 878 ppb and a standard deviation of 176. Given the highly variable data, these median value comparisons of wastestream concentrations should be considered approximations. 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 and silver. Background contributions are less than 20% for these metals. Cadmium 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 WWTFs, and to Narragansett Bay. EMDA is working to use flow measurements and data to choose study sites that will 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 the Field's Point and Bucklin Point Wastewater Treatment Facilities are from residential sources that are beyond the control of the NBC regulatory program.

Tributary River Sampling for Fecal Coliform Analysis

River monitoring for fecal coliform analysis became the responsibility of NBC in 1998. It was developed per request of the Interceptor Maintenance (IM) division, as a check for potential problems occurring at any of the sixty-seven combined sewer overflows (CSOs) The Narragansett Bay Commission owns and operates. The nineteen sampling locations are located along five rivers, namely the Woonasquatucket, Providence, West, Blackstone and Moshassuck Rivers. Weekly sampling of these sites has allowed EMDA to promptly notify IM of both dry and wet weather discharges, and has, a number of times, pinpointed overflow and interceptor malfunctioning. One station on each river, except the Providence River, is located upstream of any CSO input. Other stations are in the reach of the river affected by CSO inputs.

The Narragansett Bay Commission is also engaged in a multi-million dollar CSO abatement project. River sampling for background levels of fecal coliform will be one indicator of the net benefits of this project. In 2003, EMDA collected 1325 river samples for fecal coliform analysis; two hundred and forty-two more than the previous year. Sample collections were made in both wet weather and dry weather conditions. EMDA continues to further investigate the probable causes for elevated fecal counts, together with Interceptor Maintenance, through re-sampling and investigating problematic areas.

Laboratory results from the river samples were compared against Rhode Island Water Quality Criteria. The Rhode Island fecal coliform criteria states that Class B and B1 streams are not to exceed a geometric mean of 200 MPN/100ml, and no river is to have more than 20% of the samples greater than 500MPN/100ml. Of the nineteen sample stations, two stations met the criteria: Whipple Bridge, on the Blackstone River, located on Lonsdale Avenue just before the Lincoln line, and Manton Avenue Bridge, a station on the Providence/Johnston line, on the Woonasquatucket River. These stations are the most upstream locations studied on the Blackstone and Woonasquatucket Rivers respectively, above the impact of CSO inputs. The Providence, West and Moshassuck River stations studied had no sites that met water quality criteria. These studies demonstrate the need for improved storm water management by municipalities, and the importance of the combined sewer remediation project underway.

Link to Chapter VIII

VIII. NBC PRETREATMENT PROGRAM GOALS

Link to Chapter VII

Status of 2003 Goals

The 2002 Pretreatment Program Annual Report was submitted to the Rhode Island Department of Environment Management (RIDEM) on March 15, 2003 and defined the goals established for 2003 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 2003 toward meeting these goals and defines the goals established for 2004.

- **2003 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 with the exception of one SIU, Electrolizing, Inc. Electrolizing, Inc., was only inspected once in 2003 since the firm is a participant in the NBC Metal Finishing 2000 Program. This program gives Electrolizing regulatory flexibility from multi-annual inspections since the user is a Tier I Environmental Performer. The Environmental Monitoring Section performed well toward satisfying its self-imposed goal to sample each SIU at least twice in 2003 by sampling each SIU multiple times, with the exception of two firms. One SIU firm, Century Plating International, did not discharge in 2003, one sample was obtained from this firm of wastewater contained in the pretreatment system to ensure the wastewater had not been tampered with. The other firm, Northland Environmental, Inc., experienced problems with its pretreatment system and did not discharge late in 2003. Many significant users were sampled more than twice due to the implementation of a new monitoring procedure. This procedure is 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.

- **2003 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 2003, the Pretreatment staff continued its routine inspection program of commercial and non-significant industrial users. In 2003, the Pretreatment staff conducted 1954 inspections, an increase of 75 over the number conducted in 2002, and inspected approximately 83% of permitted non-significant users. During 2003, Pretreatment Technicians inspected 51.6% 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.

- **2003 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 2003 as 400 wastewater discharge permits were issued in various industrial and commercial categories. This was a 2.7% decrease from the number of permits issued in 2002. 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 2003, as 158 new permits were issued, the majority to non-significant industrial and commercial users. The Pretreatment and Sewer Connection 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 2003 the Pretreatment Section performed expeditious reviews of 362 process and pretreatment system plan submittals. Of these 362 plan submittals, 289 were promptly approved, 80 approved with conditions to be met, nineteen were rejected since NBC requirements were not satisfied and no action was taken on 50 plans since additional information was required for approval. Additional information regarding this is provided in CHAPTER VII.

- **2003 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 and 1999, 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 this survey, the number of industrial parks and mill complexes requiring annual inspections was greatly increased. The 2003 goal was met and greatly surpassed, as 32 of the 53 industrial parks and mill complexes were inspected at least once in 2003, an impressive 60.4% of all facilities. Many mill areas were inspected multiple times during 2003. 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 2003.

- **2003 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. 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 2003, 278 restaurant inspections were conducted, which represents 51.6% 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 requests 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.

- **2003 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 developed a set of Environmental Best Management Practices (EBMPs) for dental offices that focuses on proper management of dental amalgam waste and establishes streamlined wastewater discharge permit conditions/guidelines for these operations.

  Dental offices that adopt these EBMPs will be allowed to eliminate end-of-pipe monitoring requirements provided they certify compliance with EBMP guidelines that include:

  - Installation and proper operation of an ISO certified Amalgam Separator with a 99% or greater amalgam removal efficiency,
  - Development and implementation of mercury spill control procedures,
  - A thorough cleaning of all existing sink traps and drains, to remove accumulated mercury,
  - Proper maintenance and operation of vacuum pump filters,
  - Compliance with specific record keeping requirements,
  - Development and implementation of an employee environmental training program,
  - Installation and proper maintenance of chair-side amalgam traps.

  NBC plans to finalize these EBMPs and distribute them as part of a permitting initiative in early 2004.

  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.

- **2003 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 will be identified on the 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. Throughout 2003, Pretreatment staff tested PDAs to improve efficiency of inspections and completing associated paperwork. Templates for follow-up, restaurant and laundromat inspections were

developed. 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 2004, templates will continue to be developed.

- **2003 Goal:** Reevaluate the NBC Septage Discharge Control Program and repermit all septage haulers as part this 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 398 items reported on manifest forms during 2003. This is an increase from the 165 items verified in 2002. Additional information regarding the NBC Septage Discharge Control Program is provided in CHAPTER VII.

- **2003 Goal:** Complete the reevaluation of the pH discharge limitations and submit a report to RIDEM if pH revisions are needed.

  Accomplishment: EMDA and Pretreatment staff worked throughout 2003 to reevaluate the pH discharge limitations at the two NBC POTWs. A detailed report was written and will be submitted to the DEM as part of a major Pretreatment Program Modification when the NBC Rules and Regulations are revised. This is expected to occur during 2004.

- **2003 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 2003, 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 2004.

- **2003 Goal:** Conduct NBC Intra-Sectional Training to be proactive to Environmental Incidents.

  Accomplishment: During 2003, 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 Bucklin Point influent channel. The boom was deployed as a precaution to prevent oil from a spill entering the treatment plant. Intra-Sectional training will continue to be conducted during 2004. In December 2003 Pretreatment, EMDA, Pollution Prevention and Field's Point Operations staff participated in Emergency Hazardous Response Drill with the Providence Fire Department. Another drill will be conducted during 2004.

- **2003 Goal:** Revise the NBC Enforcement Response Plan (ERP) and submit it to the DEM for approval.

  Accomplishment: The Pretreatment and Legal Sections worked together to revise the Enforcement Response Plan (ERP). It was submitted to the DEM in August 2002. The revises ERP was approved by the DEM in September 2003 and is being fully implemented.

- **2003 Goal:** Provide the HAZWOPER hazardous waste emergency response training to NBC staff to ensure agency compliance with OSHA regulations.

  Accomplishment: During 2003 NBC initiated a 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.

  NBC initiated this training program by coordinating an emergency response drill with the Providence Fire Department on December 1, 2003 at NBC Field's Point Wastewater Treatment Facility. NBC staff observed and some participated in the drill that involved rescuing a victim of a hazardous material release. Continued training events will take place throughout 2004.

- **2003 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, when completed, would 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 2003 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 2003 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.

- **2003 Goal:** Continue work with individual industrial users as part of the CLEAN P2 Program (See program description in CHAPTER VII).

  Accomplishment: During 2003 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.

- **2003 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 with 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.

- **2003 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 our service district, staff time was reallocated in the sewer connection permit section to focus on prompt review and issuance of sewer connection permits. Additional

information regarding the NBC Water Audit Program is provided in CHAPTER VII.

- **2003 Goal:** Environmental Merit Awards Program - Solicit nominations from companies and staff, evaluate all SIU performance data, hold Awards Ceremony.

  Accomplishment: During 2003, the NBC recognized three companies for their extraordinary pollution prevention efforts, with Environmental Merit Awards, and 16 companies received Perfect Compliance Awards for achieving 100% compliance with all NBC regulatory requirements.

- **2003 Goal:** College level pretreatment and pollution prevention class - offer class in Spring 2003.

  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 2003 semester. The course will be offered again in the spring of 2004.

- **2003 Goal:** Complete two Environmental Best Management Practices (EBMPs) (See program description in CHAPTER VII).

  Accomplishment: During calendar year 2003 NBC Pollution Prevention and Pretreatment staff modified and finalized an Environmental Best Management Practices document for the Dental Industry on Management of Amalgam Waste and finalized a draft EBMP for Art Schools and Artists. Additional information regarding EBMPs is provided in CHAPTER VII.

- **2003 Goal:** Follow-up with Environmental Management Systems workshop participants (See program description in CHAPTER VII).

  Accomplishment: During 2003 Pollution Prevention staff attended quarterly 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:

  - Mahr Federal 08/04/03
  - Truex – 08/20/03
  - Spencer Plating – 09/12/03
  - Curtis Plating Company – 11/13/03
  - Tanuary Industries – 12/19/03

- **2003 Goal:** 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: Throughout 2003 NBC Pollution Prevention staff worked with 20 metal finishing companies to collect and report SGP data. These efforts include conducting technical assistance site visits of these facilities, collecting environmental performance and production data elements, compiling and

analyzing collected data, and submitting a report back to the participating companies outlining there progress toward achieving stated goals. Additional information regarding the Strategic Goals Program is provided in CHAPTER VII.

- **2003 Goal**: Workshops - Hold workshop at 2003 Providence Business Expo., hold workshop on EBMP subjects, coordinate meeting regarding the Future of Electroplating in Rhode Island.

  Accomplishment: NBC sponsored a workshop on Environmental Management Systems in May of 2003 and a workshop on TRI Reporting in June of 2003. NBC sponsored a workshop on clean-up activities taking place along and within the Woonasquatucket River within the City of Providence at the 2003 Rhode Island Business Expo.

- **2003 Goal:** Pollution Prevention in Hospitals and Health Care Facilities - send letter to all NBC area hospitals announcing program goals and objectives and conduct pollution prevention site visits of two hospitals.

  Accomplishment: During the summer months of 2003 NBC's Pollution Prevention Program worked with an engineering intern from the University of New Hampshire to conduct on-site environmental technical assistance audits of eight Rhode Island hospitals/health care facilities. Each audit focused attention on multi-media environmental issues, pollution prevention and environmental regulatory compliance and helped to identify issues of importance to hospital environmental, health and safety personnel. Major environmental issues identified during these audits included:

  - Hazardous Waste Management
    - Contingency Plans
    - Satellite Accumulation
    - Labeling
    - Employee Training
  - Universal Waste Management
  - Spill Control Procedures
  - Underground Tank Management
  - EPCRA Compliance

  During the spring and summer months of 2003 letters were sent to all local hospitals within the NBC service district and pollution prevention audits were conducted of eight individual hospitals. NBC will be organizing a half-day pollution prevention/environmental compliance educational workshop for all of Rhode Island's healthcare industry during 2004 to help address these major areas of concern.

- **2003 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: The NBC Environmental Monitoring and Data Analysis (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 386 manholes during 2003, 219 in the Bucklin Point district and 128 in Field's Point and 39 sanitary manholes. The goal of sampling 8 to 10 manholes per week was not met, however, a great improvement was made over the number of manholes sampled in 2002.

- **2003 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 2003, 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 each WWTF influent. 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 2003. EMDA plans to continue sewer sampling in conjunction with flow monitoring in 2004 sampling.

- **2003 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 progress to date includes:

  - implementation of "clean sampling" at the WWTFs;
  - summary of sanitary sewer study;
  - summary of potable water study;
  - derivation of new discharge permit levels based on EPA default metal conversion factors and current water quality criteria;
  - derivation of new discharge permit levels based on NBC preliminary field metal conversion factors and current water quality criteria;

- derivation of local limits based on maximum allowable headworks loading and domestic loading;
- review of metal translator literature;
- implementation of study to monitor the receiving waters for total and dissolved trace metals and nutrients.

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 2003. 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 2003 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 2003.

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 WWTF 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 at the discharge pipe of the Bucklin Point facility for two parameters and in only a limited number of sample taken at low tide. This information has been provided to RIDEM and will be used to remove the Providence and Seekonk Rivers from the 303(d) list of impaired waters and documents the success of NBC treatment facilities and pretreatment program.

- **2003 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 and 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.

- **2003 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. It is useful to understand the impact of discharged effluent to these receiving waters. Another monitoring study of the Ten Mile River will provide information about freshwater inputs to the Seekonk River. Sampling by boat began on the Seekonk and Providence Rivers in September and continued through December. EMDA plans to continue monthly sampling in these three rivers throughout 2004. More detailed information about this project is provided in CHAPTER VII.

Major Program Goals for 2004

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 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	Environmental Best Management Practices (EBMPs) (See program description in Chapter VII)	▪ Continue work on additional Art EBMPs ▪ Complete one new EBMP
	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

Pollution Prevention and Technical Assistance Initiative (continued)	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 companie
	Auto Salvage Yards	▪ Conduct site visits of two auto salvage yards ▪ Develop fact-sheet on environmental issues for auto salvage operations
	Dental Mercury Sources and Control	▪ Finalize Dental EBMP ▪ Hold Workshop regarding EBMP ▪ Assist Dental Community with implementing source control
	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
Monitoring	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 8-10 manholes per week (including surveillance and routine monitoring) ▪ Sample up and down stream of every SIU and Zero Discharge Company at least once.
	Conduct Computer Monitoring of the influent of the Fields Point and Bucklin Point WWTFs 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 WWTFs 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 on the West, Woonasquatucket, Moshassuck and Blackstone Rivers ▪ 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 the Fields Point and Bucklin Point WWTF 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

Monitoring (continued)	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 bases ▪ 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 metals, dissolved metals, nutrients and fecal coliform bacteria
Permitting	Expeditious review and issuance of permits	▪ Response 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
Data Logging and Analysis	Log, review and evaluate industrial, manhole, septage, wastewater treatment facility and other related data to provided 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), if necessary QA/QC "blind" testing
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.
	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	▪ Submit interim reports as required by DEM ▪ Finish metals translator study ▪ Continue river and bay background monitoring
	Remote surveillance manhole monitoring using Telog system	▪ Field test automatic samplers equipped Telog equipment 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	College level pretreatment and pollution prevention class	▪ Offer class in Spring 2004
	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 with Art studios
	Provide the HAZWOPER hazardous waste emergency response training to NBC staff to ensure agency compliance with OSHA regulations.	▪ Conduct in-house training