POLLUTION PREVENTION PLAN NSB KINGS BAY GA

7/1/1995

ABB ENVIRONMENTAL SERVICES, INC

POLLUTION PREVENTION PLAN

NAVAL SUBMARINE BASE
KINGS BAY, GEORGIA

Unit Identification Code: N42237

Contract No. N62467-89-D-0317/043

Prepared by:

ABB Environmental Services, Inc.
2120 Washington Boulevard, Suite 300
Arlington, VA 22204

Prepared for:

Department of the Navy, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29419-9010

Dan Owens, Code 18210, Engineer-in-Charge

July 1995

CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

The Contractor, ABB Environmental Services, Inc., hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0317/043 are complete and accurate and comply with all requirements of this contract.

DATE: July 25, 1995

NAME AND TITLE OF CERTIFYING OFFICIAL: Phylissa S. Miller
Task Order Manager

NAME AND TITLE OF CERTIFYING OFFICIAL: Phylissa S. Miller
Project Technical Lead

(DFAR 252.227-7036)

FOREWORD

The Department of the Navy has made environmental compliance a high priority. The Hazardous Material Control and Management (HMC&M) program implemented by the Navy reflects this high priority by establishing policy, requirements, and guidance for the life-cycle control and total quality management of hazardous materials acquired, used, and disposed of by the Navy. The HMC&M program (contained in Operational Navy Instruction [OPNAVINST] 4110.2) applies to all activities conducted at Naval Submarine Base (NSB) Kings Bay. OPNAVINST 4110.2, which provides a framework for the NSB Kings Bay Pollution Prevention (P2) plan, states that:

> "The Navy shall control and reduce the amount of hazardous material used and hazardous waste generated by up front hazardous material control in acquisition, procurement, supply, and utilization."

This P2 plan will guide the establishment and execution of a continuously successful program at NSB Kings Bay. As the basis for pollution prevention activities at NSB Kings Bay, the P2 plan has several objectives:

- present a clear, concise policy statement for NSB Kings Bay that can be adopted and enforced by the Commanding Officer,
- inventory processes that use hazardous materials or generate hazardous waste at NSB Kings Bay,
- propose a tracking system that will use current and complete authorized use lists (AULs) to identify and control the procurement and utilization of hazardous materials,
- develop a training and incentive program to educate and motivate work center personnel in promoting pollution prevention,
- establish numeric goals for pollution prevention,
- provide the tools and data necessary to establish and refine pollution prevention goals, and
- identify, analyze, and prioritize pollution prevention opportunities specific to NSB Kings Bay.

EXECUTIVE SUMMARY

By December 31, 1999, Federal facilities are expected to reduce by 50 percent the total amount of toxic pollutants released to the environment or transported offsite for treatment or disposal. Toxic pollutants include Emergency Planning and Community Right-to-Know Act compounds, extremely hazardous substances (EHSs), Resource Conservation and Recovery Act (RCRA) wastes, and hazardous air pollutants. To accomplish this goal, a survey of 237 work centers was conducted to determine the amount of hazardous waste being generated at NSB Kings Bay.

This P2 plan contains a "baseline" assessment of the total wastes generated at four tenant commands: TRIDENT Training Facility, TRIDENT Refit Facility, Strategic Weapons Facility Atlantic, and Submarine Base. The baseline established was derived from information provided by work center personnel and represents the best information available at the time. In addition, the P2 plan identifies a set of pollution prevention recommendations that are technically and economically feasible which will propel the installation toward its 50 percent reduction goal.

To estimate the amount of waste generated at NSB Kings Bay, approximately 502 processes were analyzed and the usage of 6,366 materials was quantified. One of the primary requirements of the P2 plan was to identify all of the ozone-depleting substances, EHSs, toxic substances, and carcinogens currently being used on base. This information was collected and resides in the NSB Kings Bay database.

The data collected from visits to 237 work centers formed the basis of a set of recommendations. Sixty-four pollution prevention recommendations have been identified and categorized according to environmental and economic benefit to NSB Kings Bay. These recommendations focus on waste minimization and hazardous material use reduction. Table ES-1 lists the high to moderate impact pollution prevention recommendations and their applicability to each tenant command.

Each pollution prevention recommendation has undergone a thorough analysis to determine its potential for achieving waste reduction. The primary factor used in prioritizing pollution prevention recommendations was the amount of waste reduction achieved. Other factors used to evaluate each recommendation were human health impacts, environmental effects, technical feasibility, total cost analysis, and implementation issues.

Table ES-1
Pollution Prevention Recommendation Summary

Pollution Prevention Plan
Naval Submarine Base
Kings Bay, Georgia

Title	Tenant Command Affected			
	TTF	TRF	SUBASE	SWFLANT
High-Impact Recommendations				
Mechanically dewater lime slurry a with disposal b with beneficial reuse			X	
Substitute high absorbency materials for current absorbent materials			X	
Use drum liners	X	X	X	X
Purchase an aqueous parts washer for Light and Heavy End Maintenance, Building 2007			X	
Use plural component spray equipment		X		
Recycle machine tool coolant		X		
Recycle automotive and diesel engine coolant			X	X
Use a rotary kiln thermal-processing unit to recycle blast media		X	X	
Ultrafiltrate spent water-based machine tool coolant prior to disposal		X		
Concentrate spent water-based machine tool coolant prior to disposal		X		
Use a rotary kiln thermal-processing unit to recover lime from potable water treatment			X	
Sludge composting			X	
Deactivate oxygen breathing apparatus (OBA) canisters	X			
Depressurize aerosol cans	X	X	X	X
Implement epoxy powder coating		X		
Reuse desiccant	X	X		X
Design a customized two-part epoxy paint dispenser		X		
Substitute oil-based paints with latex enamel paints		X		
Convert to vegetable oil machine tool coolant		X		
Utilize electrostatic spray application for enamel paints		X		
Remove paint with carbon dioxide blast media		X	X	
Substitute permanent oil filters for disposable oil filters			X	X
Replace solvent-based vapor degreaser and paint/plastisol strip tank with citrus-based solutions		X		
Use launderable (cloth) rags	X	X	X	X
Moderate-Impact Recommendations				
Substitute toolmaker's dye remover with Simple Green		X	X	X
Use hydraulic fluid recovery stand during hydraulic equipment testing		X		
Substitute existing cutting fluid with Cool Tool-II™	X	X	X	X
Use high-volume low-pressure (HVLP) spray equipment		X		
Eliminate use of R-11 (freon) in Thermal and Compressed Air Plant			X	
Use drum compactors		X	X	X
Convert oil emulsifiers to new nonpersistent oil emulsifiers			X	

See notes at end of table.

Table ES-1 (Continued)
Pollution Prevention Recommendation Summary

Pollution Prevention Plan
Naval Submarine Base
Kings Bay, Georgia

Title	Tenant Command Affected			
	TTF	TRF	SUBASE	SWFLANT
Employ biological controls, or Integrated Pest Management (IPM), to replace aerial pesticide spraying in dredge spoil areas			X	
Consolidate the Thermal and Compressed Air Plant's painting activities with Zone Paint Shop, Building 2010			X	
Segregate paint waste	X	X	X	X
Concentrate oily water			X	
Consolidate liquid waste streams for bulk handling	X	X	X	X
Use alkaline rechargeable batteries	X	X	X	X
Substitute roof repair materials			X	

Notes: TTF = TRIDENT Training Facility
TRF = TRIDENT Refit Facility.
SUBASE = Submarine Base
SWFLANT = Strategic Weapons Facility Atlantic.
X = denotes impact to work center(s) within a tenant command.
OBA = oxygen breathing apparatus.
HVLP = high-volume low-pressure.

In addition, innovative technologies were evaluated based on environmental, technical, and economic factors listed below.

- Pollution prevention
  - volume of waste reduced
  - human health impacts
  - environmental impacts

- Technical feasibility
  - applicability to waste streams
  - engineering and controls
  - compatibility

- Total cost
  - initial investment
  - labor savings and costs
  - operating costs
  - raw material savings and costs

Three areas emerged as high potential for waste reduction: paint operations, general maintenance, and vehicle maintenance. Among the technologies considered were plural component spray equipment, an electrostatic powder coating system, and an ethylene glycol recycling system. In addition, critical fluid technology was reviewed as an emerging technology for future consideration at NSB Kings Bay.

This P2 plan contains the following information:

- a policy statement from the Commanding Officer,
- applicable Federal and State regulations,
- the methodology used for data collection,
- a description of hazardous material usage and current waste generation,
- a discussion of materials management,
- recommendations for a hazardous material tracking system,
- a description of a database for data management,
- a set of 64 pollution prevention recommendations, and
- recommended personnel training and incentive program.

For more detailed information, a comprehensive set of appendices was prepared that describes processes, authorized use lists, and equipment by work center for each tenant command. Appendices also provide information on: relevant directives, regulations, and policies; database-related information; detailed waste minimization recommendations; a training and incentive program; and forms used in developing the P2 plan.

In summary, the P2 plan provides NSB Kings Bay with the basic tools and information to comply with the pollution prevention requirements of Executive Order 12856. By updating the database annually, NSB Kings Bay can measure its progress toward the goal of achieving a 50 percent reduction in waste generation.

TABLE OF CONTENTS

Pollution Prevention Plan
Naval Submarine Base
Kings Bay, Georgia

LIST OF FIGURES

Pollution Prevention Plan
Naval Submarine Base
Kings Bay, Georgia

LIST OF TABLES

GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
ACGIH	American Conference of Governmental Industrial Hygienists
AFB	Air Force Base
APCD	air pollution control device
AUL	authorized use list
BASE	baseline
BOSC	base operating services contractor
BeneSug	beneficial suggestion
CAGE	commercial and government entity
CAS	Chemical Abstract Service
CD-ROM	compact disk-read only memory
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFC	chlorofluorocarbons
CFR	Code of Federal Regulations
CHRIMP	Consolidated Hazardous Material Reutilization and Inventory Management Program
CNET	Commander Naval Education and Training
CNO	Chief of Naval Operations
CO	Commanding Officer
CO_2	carbon dioxide
COMNAVSUP-SYSCOM	Commander Naval Supply Systems Command
COMSUBGRU	Commander submarine group
COMSUBRON	Commander submarine squadron
CTO	contract task order
D-5	D-5 missiles
DLA	Defense Logistics Agency
DOD	Department of Defense
DOSF	Defense Ordnance Supply Facility
°C	degrees Celsius
°F	degrees Fahrenheit
DOT	Department of Transportation
DRE	destruction and removal efficiency
DRMO	Defense Reutilization and Marketing Office
EHS	extremely hazardous substance
EMB	Equipment Maintenance Building
EO	Executive Order
EOD	explosive ordnance disposal
EPCRA	Emergency Planning and Community Right-to-Know Act of 1986
FSC	Federal supply class
FT2	Facilities Team Two
ft^3	cubic feet
GSA	General Services Administration

HAP	hazardous air pollutant
HAZMAT	hazardous materials
HAZMIN	hazardous waste minimization
HDPE	high-density polyethylene
HICS	Hazardous Inventory Control System
HM	hazardous materials
HMC&M	Hazardous Material Control and Management
HMIS	Hazardous Material Information System
Hp	horsepower
HP	homeported submarines
HVAC	heating, ventilation, and air conditioning
HVLP	high-volume low-pressure
HWC	hazardous waste coordinator
Hz	hertz
IARC	International Agency for Research on Cancer
ICCB	Inert Control and Component Building
IDLH	immediately dangerous to life and health
IPA	isopropyl alcohol
IPM	integrated pest management
IRR	internal rate of return
IWTF	Industrial Wastewater Treatment Facility
kW	kilowatt
kWh	kilowatt hour
lb/hr	pound(s) per hour
lbs	pounds
LMSC	Lockheed Missiles & Space Company
LPG	liquified petroleum gas
MAB	Missile Assembly Building
MDI	Mark Dunning Industries
MGD	million gallons per day
MIB	Motor Inspection Building
MIBK	methyl isobutyl ketone
milspec	military specification
MOTKI	U.S. Army Military Ocean Terminal, Kings Bay
MPa	megapascal
MPW	Maintenance Parts Warehouse
MRC	maintenance request card
MSB	Maintenance Support Building
MSDS	material safety data sheet
MWR	Morale, Welfare, and Recreation
NADEP	Naval Aviation Depot
NAS	Naval Air Station
NASA	National Aeronautics and Space Administration
NAVFACENGCOM	Naval Facilities Engineering Command
NAVSEA	Naval Sea Systems Command
NAVSTA	Naval Station

NAVSUP	Naval Supply Systems Command
NAWS	Naval Air Weapons Station
NCEL	Naval Civil Engineering Laboratory
NEESA	Naval Energy and Environmental Support Activity
NFESC	Naval Facilities Engineering Services Command
Nicad	nickel-cadmium
NIIN	national item identification number
No.	number
NOC	Navy Oxygen Clean
NPV	net present value
NSB	Naval Submarine Base
NSN	national stock number
NUWES	Naval Undersea Warfare Center
O&M	operation and maintenance
OBA	oxygen breathing apparatus
O.C.G.A.	Official Code of Georgia Annotated
ODC	ozone-depleting compound
ODS	ozone-depleting substance
OMB	Office of Management and Budget
OPNAVINST	Operational Navy Instruction
OPNAVNOTE	Operational Navy Notice
OSHA	Occupational Safety and Health Administration
P2	pollution prevention
PC	personal computer
PFD	process flow diagram
P.L.	public law
PMS	preventive maintenance system
POA&M	plan of action and milestones
POHC	principal organic hazardous constituent
PPA	Pollution Prevention Act
PPIC	Pollution Prevention Information Clearinghouse
ppm	parts per million
PPR	pollution prevention recommendation
psig	pounds per square inch gauge
QMB	quality management board
RCRA	Resource Conservation and Recovery Act
RED	reduction
RIB	Radiographic Inspection Building
RIF	Refit Industrial Facility
ROICC	Resident Officer in Charge of Construction
SAA	satellite accumulation area
SARA	Superfund Amendments and Reauthorization Act
SECNAV	Secretary of the Navy
SOUTHNAV-FACENGCOM	Southern Division, Naval Facilities Engineering Command

SP	Special Projects
ST	students
SUB	Submarine Base
SUBASE	Submarine Base
SUBASEINST	Submarine Base Instruction
SUBS	submarines
SWF	Strategic Weapons Facility Atlantic
SWFLANT	Strategic Weapons Facility Atlantic
SWSSW	Strategic Weapons System Supply Warehouse
T	transient submarines
TCA	temporary collection area
TCA	1,1,1-trichloroethane
TK	Tomahawk missiles
TP	toxic pollutants
TRF	TRIDENT Refit Facility
TRI	toxic release inventory
TRIREFFAC-INST	TRIDENT Refit Facility Instruction
TRITRAFAC-KBINST	TRIDENT Training Facility Kings Bay Instruction
TSP	trisodium phosphate
TTF	TRIDENT Training Facility
ULV	ultralow volume
U.S.	United States
U.S.C.	United States Code
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound
WCR	waste characterization request
WFWWTP	waterfront wastewater treatment plant
WID	waste information document
WTD	waste transfer document
WTP	water treatment plant
WWTP	wastewater treatment plant
yd^3	cubic yard

1.0 INTRODUCTION

1.1 PURPOSE OF THE POLLUTION PREVENTION PLAN. This Pollution Prevention (P2) plan is designed specifically for Naval Submarine Base (NSB) Kings Bay to supersede the existing Waste Reduction Plan. The purpose of this plan is to:

- present a clear, concise policy statement for NSB Kings Bay that can be adopted and enforced by the Commanding Officer,
- inventory processes at NSB Kings Bay that use hazardous materials or generate hazardous waste (from baseline usage and generation data collected in 1994),
- propose a tracking system that will use current and complete authorized use lists (AULs) to identify and control the procurement and utilization of hazardous materials,
- present a training and incentive program to educate and motivate work center personnel in executing pollution prevention,
- establish numeric goals for pollution prevention,
- provide the tools and data necessary to establish and refine pollution prevention goals, and
- identify, analyze, and prioritize pollution prevention opportunities specific to NSB Kings Bay.

1.2 POLICY STATEMENT FROM COMMANDING OFFICER. The current Commanding Officer (CO) of NSB Kings Bay, Captain Williams, has authorized the following policy statement for pollution prevention.

> "Leading the Navy by developing, implementing, and perfecting the control of hazardous material through substitution, reduction, recycling, and cradle-to-grave tracking."

1.3 DEFINITION OF POLLUTION PREVENTION. Pollution prevention, as defined by the U.S. Environmental Protection Agency (USEPA), means "source reduction and other practices that reduce or eliminate the creation of pollutants through:

- increased efficiency in the use of raw materials, energy, water, or other resources, or
- protection of natural resources by conservation."

The Pollution Prevention Act (PPA) of 1990 defines source reduction as "any practice which:

- reduces the amount of any hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released into the environment (including fugitive emissions) prior to recycling, treatment, or disposal; and

- reduces the hazards to public health and the environment associated with the release of such substances, pollutants, or contaminants."

In general practice, pollution prevention is a dynamic process represented by continuous changes in processes and products which result in waste stream reduction (both in volume and toxicity). The goal is continuous improvement in reducing the generation of waste.

1.4 DIRECTIVES, REGULATIONS, AND POLICIES. Although pollution prevention is relatively new to the environmental arena, several regulations and policies are currently in place. This section summarizes the major Federal and State regulations and policies. Copies of Executive Order (EO) 12856, the Pollution Prevention Act of 1990, and relevant sections from the Georgia Hazardous Waste Reduction Act are provided in Appendix A.

1.4.1 Executive Order 12856 Signed by the President on August 3, 1993, EO 12856 requires Federal facilities to comply with the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986 and the PPA of 1990. Prior to EO 12856, the Navy was required to comply only with the emergency planning and release notification sections of EPCRA; inventory and reporting requirements now apply, as well.

As stated in a December 1993 letter from the Under Secretary of Defense, EO 12856 emphasizes two goals: (1) Federal agencies are directed by the Executive Order to become leaders in providing communities and emergency planners with appropriate information on hazardous substances and toxic chemicals stored at government facilities, and (2) the "Federal government must demonstrate pollution prevention leadership by improving facility management, incorporating environmental principles in acquisition practices, establishing comprehensive pollution prevention plans, and developing innovative technologies" (Department of Defense [DOD], 1993).

The two important pollution prevention-related deadlines imposed on Navy installations by EO 12856 are:

- preparing a P2 plan by December 31, 1995; and

- achieving a reduction in total releases and offsite transfers of toxic chemicals or toxic pollutants by 50 percent by the end of 1999 (using 1994 as the baseline year). Toxic pollutants include EPCRA toxic chemicals, extremely hazardous substances, Resource Conservation and Recovery Act (RCRA) hazardous wastes, and hazardous air pollutants.

1.4.2 Pollution Prevention Act of 1990 The Pollution Prevention Act (P.L. 101-508, November 5, 1990; 104 Statute 1388, 42 U.S.C. 13101) establishes a national policy designating source reduction as the paramount pollution prevention strategy. Pollution that cannot be prevented at the source should be recycled;

if recycling is not feasible, then pollution should be treated in an environmentally safe manner; disposal of or release into the environment should be used only as a last resort. The Act mandates that USEPA establish a source reduction program to collect and disseminate information, provide financial information to States, and implement pollution prevention activities.

1.4.3 Georgia Regulations Navy facilities must comply with their State and local environmental regulations in the development of their pollution prevention plans. The Georgia Hazardous Waste Management Act, Official Code of Georgia Annotated (O.C.G.A.) Section 12-8-60, states that priority in State hazardous waste management programs be given to source reduction. The Act also requires corrective action for releases of hazardous waste, hazardous constituents, and hazardous substances, without regard for when they occurred, and provides incentives for source reduction (Appendix A).

The Act mandates that by March 1, 1992, large quantity hazardous waste generators shall develop hazardous waste reduction plans. These plans must include a written policy for hazardous waste reduction, specific goals for waste reduction, internal analysis of hazardous waste streams, hazardous waste accounting systems, employee awareness programs, and implementation of hazardous waste reduction options. NSB Kings Bay met these requirements by producing the document titled, *Hazardous Waste Reduction Plan for Kings Bay Naval Submarine Base*, dated March 1992 (ABB-Environmental Services, Inc. [ABB-ES]).

Regulations implementing the Act are located in Official Compilation Rules and Regulations of the State of Georgia, Chapter 391-3-11, hazardous waste management. These regulations establish policies, procedures, requirements, and standards for hazardous waste management and reduction.

1.4.4 Department of the Navy Policy It is DOD policy that "pollution be prevented or reduced at the source; pollution that cannot be prevented be recycled in an environmentally safe manner; pollution that cannot be prevented or recycled be treated in an environmentally safe manner; and that disposal or other release into the environment be employed only as a last resort..." (DOD, 1994). In line with this policy statement, the Department of the Navy has written and issued a series of instructions regarding pollution prevention.

- **Future Hazardous Waste Minimization (HAZMIN) Program Resources Ensured.** A memorandum written by the Secretary of the Navy (SECNAV) April 29, 1988, instructed the Chief of Naval Operations (CNO) to ensure that adequate resources be committed to successfully implement a HAZMIN program.

- **HAZMIN Program Established.** Consistent Navy policy on HAZMIN was set on May 18, 1988, in Operational Navy Notice (OPNAVNOTE) 5090 Series 451/8U584639, which established the Navy HAZMIN program and delegated the responsibility of implementation to each shore installation's CO. OPNAVNOTE 5090 also stated that the Navy HAZMIN program "...is not exclusively an environmental program; it must be a cooperative venture of operations, production, public works, supply, safety, health, and environmental personnel at every level of command."

- **Resources Committed to HAZMIN Program.** CNO letter 5090 Series 451/8U58489 of June 10, 1988, complied with the April 29, 1988, SECNAV memorandum and required that adequate resources be provided the base by the COs.

- **HAZMIN Implemented/Long-term Reduction Goal Set.** CNO letter 5090 Series 451/9U584066 followed on March 30, 1989, to implement OPNAVNOTE 5090 and to set a long-term goal of, where cost effective, 100 percent reduction of hazardous waste.

- **HMC&M Established.** June 20, 1989, Operational Navy Instruction (OPNAVINST) 4110.2, "Hazardous Material Control and Management" (HMC&M) established Navy policy, guidance, and requirements for the life-cycle control and management of hazardous material procurement and any resultant hazardous waste generated.

- **Hazardous Waste Minimization Plan Required.** OPNAVINST 5090.1A, "Environmental and Natural Resources Program Manual" dated October 2, 1990, required all Navy facilities to have written a hazardous waste minimization plan if they sign a waste disposal manifest certifying they have a waste reduction plan in place.

- **P2 Plan Required.** OPNAVINST 5090.1B, one of the driving forces behind NSB Kings Bay's P2 plan, mandates that all Navy shore installations prepare a P2 plan by December 1995. OPNAVINST 5090.1B also furnishes policy and procedure for the preparation of P2 plans, including applicable requirements of EO 12856.

- **P2 Plan Guidance Issued.** To assist the activities, CNO issued the Navy Shore Installation Pollution Prevention Planning Guide in October 1994 (Engineering-Science, Inc., 1994). The document provides guidance on developing an installation-level P2 plan and performing process-specific data collection.

1.5 COMPONENTS OF THE P2 PLAN. The P2 plan is divided into nine chapters and nine appendices. The main text presents the methodologies used for data collection, assumptions, summaries of findings, and recommendations. The appendices contain the database user's guide, the training and incentive program, and the data from the work center interviews.

Chapter 1.0 presents the purpose and goals of the P2 plan and the CO's support of and commitment to pollution prevention. Pollution prevention is defined and relevant directives, regulations, and Department of the Navy policies are summarized.

Chapter 2.0 presents the history of NSB Kings Bay and the missions of the three main tenants and the host command. The applicability of pollution prevention requirements to the various commands, activities, and work centers on base is also discussed. Included in this chapter is a discussion of the management and administrative elements of the P2 plan.

Chapter 3.0 gives a brief historical account of how this P2 plan was developed and the basic assumptions made during the development process.

Chapter 4.0 summarizes the types of hazardous materials used on base in the work centers and how hazardous materials are managed. A brief discussion of non-hazardous material management is also presented.

Chapter 5.0 summarizes the waste streams at NSB Kings Bay and how hazardous waste is managed. This chapter presents an analysis of the base's use of waste information documents (WIDs) and subsequent recommendations.

Chapter 6.0 presents recommendations for implementing a material tracking system at NSB Kings Bay.

Chapter 7.0 contains the information necessary for using, updating, and maintaining the database developed for this P2 plan.

Chapter 8.0 summarizes the pollution prevention recommendations developed for this plan. Assumptions used and potential barriers to implementation are discussed.

Chapter 9.0 summarizes a proposed Training and Incentive Program. The full program may be found in Appendix D.

The following appendices are included in the P2 plan:

Appendix A: Directives, Regulations, and Policies
Appendix B: Database-Related Information
Appendix C: Pollution Prevention Recommendations
Appendix D: Training and Incentive Program
Appendix E: Pollution Prevention Plan Forms
Appendix F: TRIDENT Training Facility
Appendix G: TRIDENT Refit Facility
Appendix H: Submarine Base
Appendix I: Strategic Weapons Facility Atlantic

2.0 NAVAL SUBMARINE BASE KINGS BAY

This chapter of the P2 plan discusses, in Section 2.1, the history of NSB Kings Bay, its mission, and the mission of each of the four tenant commands. Section 2.2 summarizes the applicability of pollution prevention requirements to the commands and activities presently located at NSB Kings Bay. Section 2.3 addresses management and administrative issues for NSB Kings Bay personnel in maintaining the P2 plan as a viable, living document that can be used through 1999 per EO 12856.

2.1 DESCRIPTION OF NSB KINGS BAY. NSB Kings Bay is located in the southeast corner of Georgia approximately 8 miles north of the Georgia-Florida border (Figure 2-1). The base covers 16,168 acres and is located in Camden County.

The United States (U.S.) Army began operations at NSB Kings Bay in the early 1950s. The property originally was developed as a military ocean terminal. From its inception until June 30, 1965, the terminal was known as the Kings Bay Army Terminal. The Kings Bay Army Terminal was constructed to meet the Department of the Army's requirements for East Coast port facilities capable of transporting ammunition and other explosives in the event of a national emergency. During this time, the Kings Bay Army Terminal was used for training purposes by the U.S. Army Reserves.

The terminal was placed under the jurisdiction of the newly organized Military Traffic Management and Terminal Service on April 1, 1965, as a result of a major Army reorganization. The terminal became known as the U.S. Army Military Ocean Terminal, Kings Bay (MOTKI) on July 1, 1965. MOTKI was designed to store ammunition or explosives for about 3 months, and was directly subordinate to the Military Ocean Terminal, Southport, North Carolina. Facilities constructed at MOTKI included a 2,000-foot wharf, administration buildings, work shops, utility buildings, and 47 miles of railroad track for transporting explosives. MOTKI had no assigned military personnel and was maintained and operated by 19 U.S. Government Civil Service employees for reserve training operations and contingency purposes from 1965 to 1978. The mission of MOTKI was to plan programs, make military repairs, and provide fire prevention and protection functions for the terminal. Because there was no immediate operational need for this installation, it was placed on inactive status from 1965 until July 1, 1978.

The Department of the Navy selected MOTKI as the East Coast location for its Fleet Ballistic Missile submarine support facility in 1978. On July 1, 1978, the site was established under a developmental status and was named the Naval Submarine Support Base. Construction of a refit facility for one submarine squadron (T-1) began in 1978 in anticipation of 10 Poseidon-class submarines. In 1979, the Navy moved Squadron 16 from Spain to Kings Bay, and the site's official name became the Naval Submarine Base, Kings Bay.

Currently, NSB Kings Bay supports OHIO-class TRIDENT submarines. New facilities completed in the early 1990s, are for crew training, weapons handling and storage, submarine maintenance and repair, personnel support, and housing.

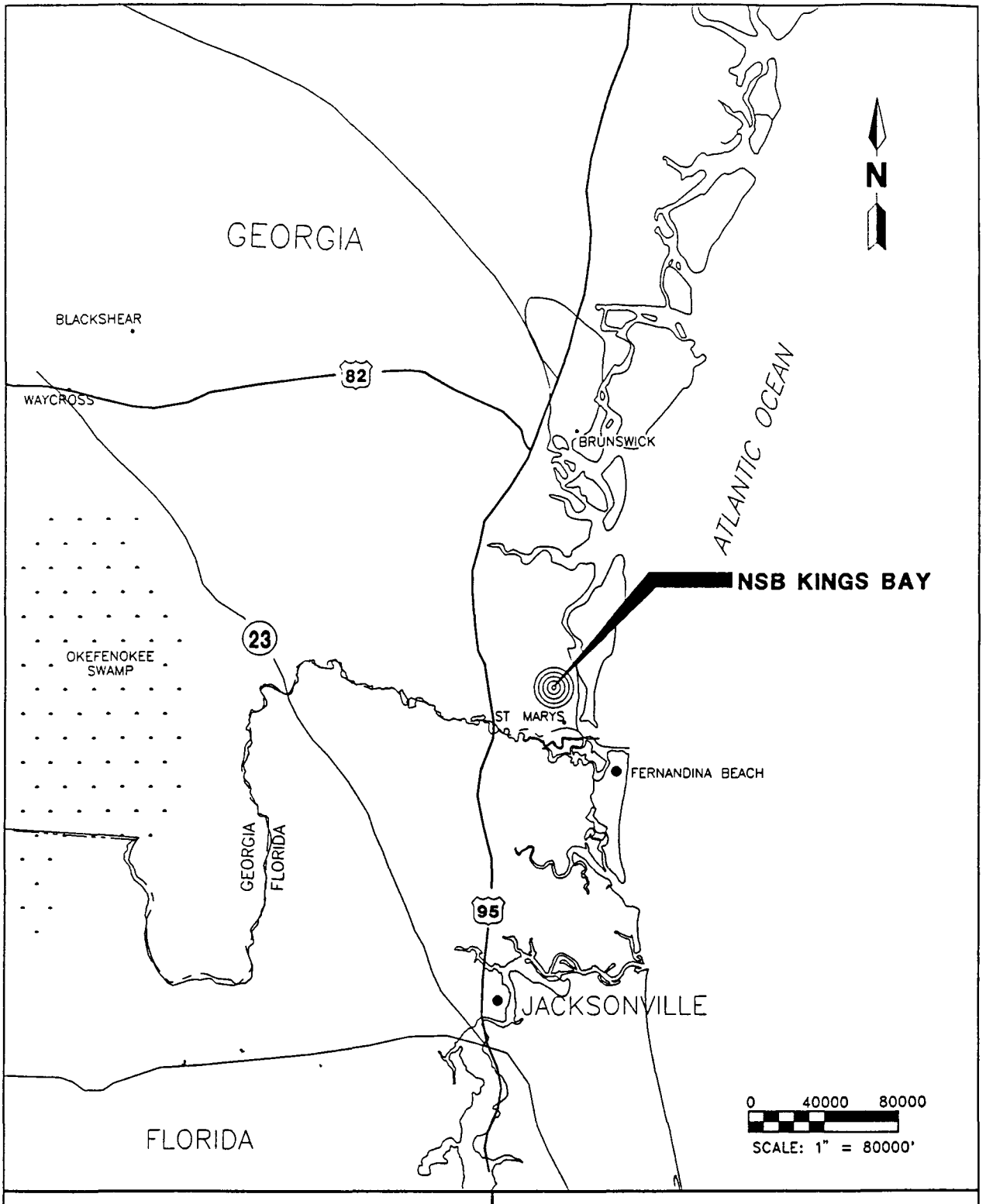


FIGURE 2-1
REGIONAL LOCATION MAP

H:\KINGSBAY\8515-40\LOCATOR\KGP-NP\07\21\95

POLLUTION PREVENTION PLAN

NAVAL SUBMARINE BASE
KINGS BAY, GEORGIA

2.1.1 **Mission** NSB Kings Bay's mission is "to provide support to the Submarine Launched Ballistic Missile System and to maintain and operate facilities for administration and personnel support for operations of the submarine force" (CO, NSB Kings Bay). OHIO-class submarines, Submarine Squadron 20, are homeported at NSB Kings Bay and contain the TRIDENT II (D-5) missile. NSB Kings Bay is currently the only Navy base capable of handling the TRIDENT II missile. All OHIO-class submarines in the Pacific Fleet are equipped with the older TRIDENT I (C-4) missile (CO, NSB Kings Bay).

2.1.2 **Tenants** NSB Kings Bay is populated by several tenants or activities as described in Submarine Base Instruction 5090.1A:

TRIDENT Training Facility (TTF)

TRIDENT Refit Facility (TRF)

Strategic Weapons Facility Atlantic (SWFLANT)

Submarine Base (SUBASE) Dental Department

SUBASE Medical Department

SUBASE Morale, Welfare, and Recreation (MWR)

SUBASE Supply Department

SUBASE Operations Department

Commander, Submarine Group and Squadron (COMSUBGRU and COMSUBRON) 16

COMSUBGRU and COMSUBRON 20

Resident Officer-in-Charge of Construction (ROICC) TRIDENT

Executive Department (Safety and Public Affairs)

Explosive Ordnance Disposal (EOD) Group Two Detachment

Base Operating Services Contractor (BOSC)

Defense Reutilization and Marketing Office (DRMO) (offsite branch of Naval Air Station Jacksonville)

Fleet Technical Support Center Atlantic, Kings Bay Detachment

Navy Supply Center, Charleston Detachment

For the purposes of this P2 plan, the tenants or activities have been divided into four main tenant commands: TTF, TRF, SUBASE, and SWFLANT. When the term "SUBASE" is used, it implies all tenants, commands, and contractors except for TTF, TRF, or SWFLANT. The following sections give a brief discussion of each tenant command's mission.

2.1.2.1 **TRIDENT Training Facility** TTF's mission is to train officer and enlisted personnel in the basic knowledge and skills required to build competence and proficiency in operating and maintaining the TRIDENT submarine and all associated systems; to provide replacement, conversion, advanced, officer, off-crew, and team training to TRIDENT submarine crew members and submarine support personnel in order to increase and maintain knowledge and proficiency in specific skills; and to provide specialized training as directed by higher authority (TRIDENT Training Facility Kings Bay Instruction [TRITRAFACKBINST] 5400.2D).

2.1.2.2 **TRIDENT Refit Facility** TRF's mission is to provide industrial support for incremental overhaul and repair of TRIDENT submarines, for depot-level overhaul of equipment (including routine services normally required by ships alongside), and to perform emergency and emergent voyage repairs to other submarine units (TRIDENT Refit Facility Instruction [TRIREFFACINST] 5450.1b).

2.1.2.3 **Strategic Weapons Facility Atlantic** SWFLANT provides strategic missiles, strategic weapons system supply, and miscellaneous support to the Fleet and other designated activities. To accomplish this, SWFLANT is responsible for processing complete TRIDENT II missiles, missile components, and missile launching and handling equipment. These processing activities include receipt, inspection, storage, assembly, disassembly, modification, maintenance, calibration, repair, testing, certification, checkout, outloading, offloading, surveillance, packaging, and unpackaging operations.

2.1.2.4 **Submarine Base** SUBASE is the "host" command at NSB Kings Bay and is dedicated to the support and operation of the physical facilities that support the submarine-launched ballistic missile system (TTF, TRF, and SWFLANT). In addition, SUBASE provides support to every other command and activity at the base. Activities included under SUBASE are MWR; Medical; Dental; DRMO/BOSC; ROICC; Fleet Technical Support Center Atlantic, Kings Bay Detachment; EOD Group Two Detachment; all work centers staffed by the BOSC; SUBASE Supply; SUBASE Operations; Executive Department; Navy Supply Center, Charleston Detachment; and COMSUBGRU 16 and 20.

2.2 APPLICABILITY. This P2 plan applies to industrial- or training-based work centers at TTF, TRF, SUBASE, and SWFLANT where hazardous materials are used for general maintenance of equipment or are used by work center personnel during normal operating procedures. The P2 plan also applies in work centers where hazardous wastes are generated and managed. Nonindustrial- or nontraining-based work centers such as libraries, office areas, food service areas, and recreational areas (excluding the golf course) are not included in this plan. Pollution prevention requirements do not apply to base housing; however, maintenance-related work centers that perform maintenance at base housing (as well as office, food service, and recreational areas) are subject to P2 plan requirements.

In the interest of Fleet security, COMSUBRON 16 and COMSUBRON 20 Fleet submarine squadrons were not included in the data-gathering effort for the P2 plan. In addition, the Navy Supply Center, Charleston Detachment, and the Executive Department were excluded from this plan because the work centers at these facilities do not use hazardous materials or generate hazardous waste.

2.3 MANAGEMENT AND ADMINISTRATIVE ELEMENTS. This plan is a living document and will be updated on a periodic basis as required by EO 12856. Relevant management and administrative issues concerning this P2 plan are:

- the roles and responsibilities for TTF, TRF, SUBASE, and SWFLANT;
- provisions for updating the P2 plan; and
- provisions for measuring and reporting progress toward the 50 percent reduction goal.

2.3.1 Roles and Responsibilities As host command, SUBASE has ultimate responsibility for managing and administrating the P2 plan. Specifically, Code FE4 in Public Works has responsibility. Individually, the other tenant commands are individually accountable and have designated responsibility for participating in the goals and objectives of the P2 plan as follows:

TTF, Code 024A;
TRF, Code 230; and
SWFLANT, Code SPK-61.

The base has an active quality management board (QMB) that meets monthly to discuss environmental issues facing the base. Members of the HMC&M QMB include the Environmental Program Managers from TTF, TRF, SUBASE, and SWFLANT; representatives of the surface fleet; representatives of the submarine fleet; the CO's office; and a few smaller activities (such as Medical, Dental, Industrial Hygiene, and Safety). The HMC&M QMB has the responsibility to disseminate pertinent information, solve problems, and keep the CO's office informed of new and ongoing requirements.

2.3.2 Provisions for Updating the Plan NSB Kings Bay has made several provisions for updating the P2 plan. SUBASE Code FE4 is the designated owner of the plan and has primary responsibility for maintaining it. The HMC&M QMB's role is to provide comments on the plan and offer direction and assistance to Code FE4.

To assess and document progress toward the goals set forth in EO 12856, the P2 plan will be updated and published annually. Published copies will be made available to Federal, State, and local regulatory authorities.

2.3.3 Provisions for Measuring and Reporting Progress To measure progress and calculate percent reduction, a base unit of measure must be established (i.e., pounds of waste generated per unit processed). The base unit of measure should be some item regularly processed which reflects the operating capacity of the whole base. Since the mission of NSB Kings Bay is to provide support to the submarine fleet and the P2 plan is an aggregate of all the activities performed at the installation (i.e., the tenants do not report individually; instead, they report at the installation level), the number of submarines serviced during a year is an appropriate base unit of measure.

Because NSB Kings Bay is an operational installation, information regarding the number of submarines serviced is restricted from being published in this public document. For this reason, only the calculations will be presented. SUBASE Code FE4 is responsible for performing the calculations and providing this information to the appropriate agency.

1994 Baseline Unit Calculation

(1) $(TP_{NSB,94})/(SUBS_{94}) = BASE_{94}$

where $TP_{NSB,94}$ = the total amount of toxic pollutants generated by all work centers at NSB Kings Bay during 1994, as reported in the toxic release inventory (TRI) report: $TP_{TTF,94} + TP_{TRF,94} + TP_{SUB,94} + TP_{SWF,94} = TP_{NSB,94}$

$SUBS_{94}$ = the sum of all submarines serviced at NSB Kings Bay (i.e., the number of submarines receiving service only from TRF plus the number of submarines receiving service only from SWFLANT plus the number of submarines receiving service from both TRF and SWFLANT) during 1994.

$BASE_{94}$ = the baseline for the installation, based on 1994 data, measured in pounds of waste generated per submarine serviced.

1999 Unit Calculation

(2) $(TP_{NSB,99})/(SUBS_{99}) = BASE_{99}$

where $TP_{NSB,99}$ = the total amount of toxic pollutants generated by all work centers at NSB Kings Bay during 1999, as reported in the TRI report: $TP_{TTF,99} + TP_{TRF,99} + TP_{SUB,99} + TP_{SWF,99} = TP_{NSB,99}$

$SUBS_{99}$ = the sum of all submarines serviced at NSB Kings Bay (i.e., the number of submarines receiving service only from TRF plus the number of submarines receiving service only from SWFLANT plus the number of submarines receiving service from both TRF and SWFLANT) during 1999.

$BASE_{99}$ = the baseline for the installation, based on 1999 data, measured in pounds of waste generated per submarine serviced.

Percent Reduction Calculation

(3) $[1 - (BASE_{99}/BASE_{94})] \times 100 = \%RED_{94-99}$

where $\%RED_{94-99}$ = the percent of reduction ($\%RED_{94-99} > 0$) or increase ($\%RED_{94-99} < 0$) in generation of toxic pollutants achieved for NSB Kings Bay, as measured against the baseline established in 1994.

Operational changes are expected to occur at the base over the next several years. The variables affecting pollution prevention efforts are numerous and complex. Although the gross calculations above (equations 1 - 3) will provide an overall

picture of the effectiveness of implementing pollution prevention recommendations, it may not present a detailed enough picture of the impact of tenant command-specific fluctuations.

Each tenant command should track its own progress towards achieving the 50 percent reduction goal. Individually, the commands could factor in tenant command-specific variables which may affect pollution prevention efforts. The sections below illustrate how the tenants could track their own progress based on metrics specific to their command.

2.3.3.1 **TRIDENT Training Facility** TTF specializes in training; therefore, waste generation is dependent upon the number of students trained. Anticipated changes in scheduled workload at TRF can result in increased numbers of trainees at TTF. The mix of current classes taught may change; however, this is not expected to greatly impact overall waste generation. New programs, such as fire fighting training, will increase waste generation, number of processes performed, and number of students trained.

1994 Baseline Unit Calculation

(4) $(TP_{TTF,94})/(ST_{94}) = TTF_{94}$

where $TP_{TTF,94}$ = the amount of toxic pollutants generated by TTF work centers during 1994, measured in pounds per year, as reported in the annual TRI report.

ST_{94} = the number of students instructed at TTF during 1994, measured in students per year.

TTF_{94} = the baseline for TTF, based on 1994 data, measured in pounds of waste generated per student instructed.

1999 Unit Calculation

(5) $(TP_{TTF,99})/(ST_{99}) = TTF_{99}$

where $TP_{TTF,99}$ = the amount of toxic pollutants generated by TTF work centers during 1999, measured in pounds per year, as reported in the annual TRI report.

ST_{99} = the number of students instructed at TTF during 1999, measured in students per year.

TTF_{99} = the calculation for TTF, based on 1999 data, measured in pounds of waste generated per student instructed.

Percent Reduction Calculation

(6) $[1 - (TTF_{99}/TTF_{94})] \times 100 = TTF_{\%RED}$

where $TTF_{\%RED}$ = the percent of reduction ($TTF_{\%RED} > 0$) or increase ($TTF_{\%RED} < 0$) in generation of toxic pollutants achieved, as measured against the baseline established in 1994.

2.3.3.2 **TRIDENT Refit Facility** TRF's waste generation is dependent on the number of ships (both surface and subsurface) which pull into port and the type of work performed. Up through 1994, TRF only serviced submarines homeported at NSB Kings Bay. These submarines have regularly scheduled maintenance routines.

As base realignment and closure continues for Navy installations, NSB Kings Bay is expected to accept additional responsibilities. For instance, over the next 5 years, TRF expects to start servicing transient (nonhomeported) submarines. Transient submarines will have different maintenance schedules and requirements which will impact waste generation at the command. Hazardous material usage will also increase, as will the number of processes performed.

Year	Homeported Submarines	Transient Submarines
1994	100%	0%
1999	unknown	unknown

To best portray TRF's pollution prevention efforts, processes, hazardous material usage, and waste generation related to transient submarines should be separated in the database so that like base units are compared. In other words, waste generation per homeported submarine in 1994 should be compared to waste generation per homeported submarine in 1999, equation (11), and waste generation per transient submarine for the first full year transient submarines are serviced should be compared to waste generation per transient submarine in 1999, equation (12). Separate accounting is recommended because TRF personnel expect that waste generation from transient submarines will differ significantly from homeported submarines. If, after several years, TRF data suggest that the waste generation ratio for transient submarines is similar to homeported submarines, then the percent reduction calculation simplifies to $[1 - (TRF_{99}/TRF_{94})] \times 100 = TRF_{\%RED}$.

1994 Baseline Unit Calculation

(7) $TP_{TRF,94}/HP_{94} = TRF_{94}$

where $TP_{TRF,94}$ = the amount of toxic pollutants generated by TRF work centers during 1994, measured in pounds per year, as reported in the annual TRI report.

HP_{94} = the number of homeported submarines at TRF during 1994, measured in number of submarines per year.

TRF_{94} = the baseline for TRF, based on 1994 data, measured in pounds of waste generated per submarine homeported.

(8) $TP_{TRF,9?}/T_{9?} = TRF_{9?}$

where $TP_{TRF,9?}$ = the amount of toxic pollutants generated by TRF work centers performing work on transient submarines during the first full year that transient submarines are serviced, measured in pounds per year, as reported in the annual TRI report.

T_{97} = the number of transient submarines at TRF during the first full year that transient submarines are serviced, measured in number of submarines per yea.r

TRF_{97} = the baseline for TRF during the first full year that transient submarines are serviced, measured in pounds of waste generated per transient submarine.

1999 Unit Calculation

(9) $TP_{HP,99}/HP_{99} = TRF_{HP,99}$

where $TP_{HP,99}$ = the amount of toxic pollutants generated by TRF work centers while working on homeported submarines during 1999, measured in pounds per year. ($TP_{HP,99} + TP_{T,99} = TP_{TRF,99}$)

HP_{99} = the number of homeported submarines at TRF during 1999, measured in number of submarines per year.

$TRF_{HP,99}$ = the unit calculation for homeported submarines at TRF, based on 1999 data, measured in pounds of waste generated per homeported submarine.

(10) $TP_{T,99}/T_{99} = TRF_{T,99}$

where $TP_{T,99}$ = the amount of toxic pollutants generated by TRF work centers while working on transient submarines during 1999, measured in pounds per year. ($TP_{HP,99} + TP_{T,99} = TP_{TRF,99}$)

T_{99} = the number of transient submarines at TRF during 1999, measured in number of submarines per year.

$TRF_{T,99}$ = the unit calculation for transient submarines at TRF during 1999, measured in pounds of waste generated per transient submarine.

Percent Reduction Calculation

(11) $[1 - (TRF_{HP,99}/TRF_{HP,94})] \times 100 = TRF_{\%RED,HP}$

where $TRF_{\%RED,HP}$ = the percent of reduction ($TRF_{\%RED,HP} > 0$) or increase ($TRF_{\%RED,HP} < 0$) in generation of toxic pollutants achieved for homeported submarines, as measured against the baseline established in 1994.

(12) $[1 - (TRF_{T,99}/TRF_{T,97})] \times 100 = TRF_{\%RED,T}$

where $TRF_{\%RED,T}$ = the percent reduction ($TRF_{\%RED,T} > 0$) or increase ($TRF_{\%RED,T} < 0$) in generation of toxic pollutants achieved for transient submarines, as measured against the baseline established in the first full year that TRF services transient submarines.

2.3.3.3 **Submarine Base** SUBASE is a diverse tenant command composed of all tenants and activities not otherwise associated with TTF, TRF, or SWFLANT. Determining an appropriate base unit of measurement was not straightforward. In all, approximately 70 percent of SUBASE work centers are dedicated to grounds and facilities maintenance. This implies that even in the absence of submarines pulling into port for servicing, missile processing slowing down or halting, and students not being trained, the majority of SUBASE work centers will continue to operate at normal to near normal capacity (e.g., utilities still need to be provided, the grounds still need to be kept, the buildings still need maintenance, and medical and dental services still need to be provided). On the other hand, increases in activity at one or all of the other tenant commands implies increased capacity. Therefore, the base unit for SUBASE will be the total number of personnel stationed or assigned to NSB Kings Bay, including family members living in base housing.

This assumption is accurate enough given that the base is projected to increase its capacity over the next 5 years (i.e., 1994 could be considered a minimum- or low-capacity year). If, over the next 5 years, NSB Kings Bay shrinks in capacity, then the base unit for SUBASE (personnel stationed at the base) may not be valid. This is because the relationship holds true down to a certain minimal operational level. Unfortunately, that minimum level is not clearly defined. Therefore, if the base experiences shrinkage, then a different base unit for measurement should be chosen.

1994 Baseline Unit Calculation

(13) $(TP_{SUB,94})/(ST_{94}) = SUB_{94}$

where $TP_{SUB,94}$ = the amount of toxic pollutants generated by SUBASE work centers during 1994, measured in pounds per year, as reported in the annual TRI report.

ST_{94} = the number of people stationed at NSB Kings Bay, including family members living in base housing, during 1994, measured in personnel per year.

SUB_{94} = the baseline for SUBASE, based on 1994 data, measured in pounds of waste generated per person stationed at the base.

1999 Unit Calculation

(14) $(TP_{SUB,99})/(ST_{99}) = SUB_{99}$

where $TP_{SUB,99}$ = the amount of toxic pollutants generated by SUBASE work centers during 1999, measured in pounds per year, as reported in the annual TRI report.

ST_{99} = the number of people stationed at NSB Kings Bay, including family members living in base housing, during 1999, measured in personnel per year.

SUB_{99} = the calculation for SUBASE, based on 1999 data, measured in pounds of waste generated per person stationed at the base.

Percent Reduction Calculation

(15) $[1 - (SUB_{99}/SUB_{94})] \times 100 = SUB_{\%RED}$

where $SUB_{\%RED}$ = the percent of reduction ($SUB_{\%RED} > 0$) or increase ($SUB_{\%RED} < 0$) in generation of toxic pollutants achieved, as measured against the baseline established in 1994.

2.3.3.4 **Strategic Weapons Facility Atlantic** Waste generation at SWFLANT is dependent on the number of missiles processed. Through 1994, SWFLANT processed only the D-5 missile.

As base realignment and closure continues for Navy installations, NSB Kings Bay is expected to accept additional responsibilities. For instance, over the next 5 years, SWFLANT expects to start production on Tomahawk missiles in addition to the D-5 missiles. Tomahawk missiles have different assembly, testing, and maintenance schedules and requirements which will impact waste generation at the command. Hazardous material usage will also increase as will the number of processes performed.

Year	D-5 Missiles	Tomahawks
1994	100 percent	0 percent
1999	unknown	unknown

The calculations for SWFLANT are similar to those presented for TRF in Section 2.3.3.2.

1994 Baseline Unit Calculation

(16) $TP_{SWF,94}/D5_{94} = SWF_{94}$

where $TP_{SWF,94}$ = the amount of toxic pollutants generated by SWFLANT work centers during 1994, measured in pounds per year, as reported in the annual TRI report.

$D5_{94}$ = the number of D-5 missiles processed at SWFLANT during 1994, measured in number of missiles per year.

SWF_{94} = the baseline for SWFLANT, based on 1994 data, measured in pounds of waste generated per missile processed.

(17) $TP_{SWF,9?}/TK_{9?} = SWF_{9?}$

where $TP_{SWF,9?}$ = the amount of toxic pollutants generated by SWFLANT work centers performing work on Tomahawk missiles during the first full year that Tomahawk missiles are processed,

measured in pounds per year, as reported in the annual TRI report.

$TK_{9?}$ = the number of Tomahawk missiles at SWFLANT during the first full year that Tomahawk missiles are processed, measured in number of Tomahawks per year.

$SWF_{9?}$ = the baseline for SWFLANT during the first full year that Tomahawk missiles are processed, measured in pounds of waste generated per Tomahawk.

1999 Unit Calculation

(18) $TP_{D5,99}/D5_{99} = SWF_{D5,99}$

where $TP_{D5,99}$ = the amount of toxic pollutants generated by SWFLANT work centers while processing D-5 missiles during 1999, measured in pounds per year. ($TP_{D5,99} + TP_{TK,99} = TP_{SWF,99}$)

$D5_{99}$ = the number of D-5 missiles processed at SWFLANT during 1999, measured in number of submarines per year.

$SWF_{D5,99}$ = the unit calculation for D-5 missiles processed at SWFLANT, based on 1999 data, measured in pounds of waste generated per homeported submarine.

(19) $TP_{TK,99}/TK_{99} = SWF_{TK,99}$

where $TP_{TK,99}$ = the amount of toxic pollutants generated by SWFLANT work centers while processing Tomahawk missiles during 1999, measured in pounds per year. ($TP_{D5,99} + TP_{TK,99} = TP_{SWF,99}$)

TK_{99} = the number of Tomahawk missiles processed at SWFLANT during 1999, measured in number of Tomahawks processed per year.

$SWF_{TK,99}$ = the unit calculation for Tomahawk missiles processed at SWFLANT, based on 1999 data, measured in pounds of waste generated per Tomahawk missile processed.

Percent Reduction Calculation

(20) $[1 - (SWF_{D5,99}/SWF_{D5,94})] \times 100 = SWF_{\%RED,D5}$

where $SWF_{\%RED,D5}$ = the percent of reduction ($SWF_{\%RED,D5} > 0$) or increase ($SWF_{\%RED,D5} < 0$) in generation of toxic pollutants achieved for D-5 missiles, as measured against the baseline established in 1994.

(21) $[1 - (SWF_{TK,99}/SWF_{TK,9?})] \times 100 = SWF_{\%RED,TK}$

where $SWF_{\%RED,TK}$ = the percent of reduction ($SWF_{\%RED,TK} > 0$) or increase ($SWF_{\%RED,TK} < 0$) in generation of toxic pollutants achieved for Tomahawk missiles, as measured against the baseline established in the first full year that SWFLANT processes Tomahawk missiles.

3.0 P2 PLAN DEVELOPMENT

This chapter of the P2 plan presents a brief account of the development of this document. Since the P2 plan is a living document that will be updated on a periodic basis, this chapter will also be dynamic. The details of data gathering and the body data itself will change as the P2 plan changes and evolves to meet future regulatory-specific requirements. Section 3.1 reviews the data-gathering effort, and Section 3.2 discusses the assumptions used in developing this P2 plan.

3.1 SYNOPSIS OF DATA-GATHERING EFFORT. This section describes how the data compiled in the P2 plan were gathered at NSB Kings Bay. The 16-month data-gathering effort began in October 1993 and was completed in January 1995.

3.1.1 Initial Site Visit In October 1993, an initial site visit was conducted at five representative work centers. At each work center, an interview was conducted that followed a questionnaire developed by ABB-ES to conform to the requirements of the regulations and directives discussed in Chapter 1.0. In each interview, processes identified as hazardous material users and/or hazardous waste generators were broken down into generalized unit operations or steps. The quantity of hazardous material used, waste generated, and of unused material disposed of in each step was detailed. Information on work center equipment associated with waste streams was collected. General information on work center operations such as hours of operation and days of operation per year was also noted in the questionnaire.

The five representative work centers were:

- 57B, Rubber and Plastics Shop, TRF;
- Room 4127, Diesel Maintenance Laboratory, TTF;
- Automotive Transportation Shop, SUBASE;
- Small Service Craft, Port Services, SUBASE; and
- Maintenance Support Building (MSB), Paint Shop, SWFLANT.

These work centers were selected by the tenant command Environmental Program Managers. The purpose of this visit was threefold:

(1) to test the effectiveness and completeness of the questionnaire,
(2) to gather more information about NSB Kings Bay, and
(3) to assess the time commitment impact on work center personnel.

After the initial site visit, ABB-ES revised the questionnaire to ensure more efficient data collection. The final questionnaire used to conduct the interviews is shown in Appendix E. It was jointly decided by ABB-ES and the Navy to pre-identify all the processes in each work center prior to the detailed data collection interviews.

3.1.2 Process Identification Interviews ABB-ES and tenant command Environmental Program Managers worked together to identify all work centers that should be included in the P2 plan (see Section 2.2 for discussion on applicability). Ultimately, 237 work centers were identified and entered into the database. The number of work centers per tenant command is:

TTF, 91;
TRF, 66;
SUBASE, 51; and
SWFLANT, 29.

To facilitate more efficient detailed interviews, ABB-ES and tenant command Environmental Program Managers visited each work center and conducted short, informational interviews to determine the processes performed on a regular basis in that particular area.

3.1.3 Detailed Data-Collection Interviews Beginning January 1994, work centers in each tenant command were systematically interviewed by teams of two people from ABB-ES. For interviews with TTF, TRF, and SWFLANT work centers, generally one person associated with the environmental code of the tenant command (but not necessarily associated with the work center) accompanied the ABB-ES interview team. Because SUBASE work centers do not perform classified or confidential operations, ABB-ES personnel were not accompanied during the detailed data-collection interviews.

Each interview team was supplied with a packet of information prior to beginning an interview. This prepared the interview teams and helped streamline the interviews so that work center personnel were not overly diverted from their work. The packet of information contained:

- a copy of the work center's existing AUL,
- a listing of the work center's WIDs and amount of waste disposed of in 1993 under each WID number, and
- a list of the processes identified for that work center during the process identification interviews.

Waste amounts were determined by analyzing all waste transfer documents (WTDs) for 1993. WID information and WTDs were obtained from the BOSC. Section 5.2.5 discusses WTDs.

After the interview, the ABB-ES team copied the notes to a data entry form. The data entry form was then input into a database developed for P2 plan data management purposes.

3.1.4 Data Management ABB-ES developed a database to collect and analyze the large amount of data gathered at NSB Kings Bay and to streamline the generation of certain tables and lists in the tenant command appendices. Development of this database, which is dedicated to the P2 plan, evolved over the 16-month data-gathering period. Information from the database has been used to aid NSB Kings Bay in its EPCRA reporting requirements and could possibly be used for other similar applications. Database information is provided in Chapter 7.0.

3.1.5 Pollution Prevention Recommendation Development Pollution prevention recommendations were developed based on information gathered during the detailed process review and from literature research, and were enhanced by input from NSB Kings Bay work center personnel.

3.2 ASSUMPTIONS AND QUALIFICATIONS. Numerous assumptions were made during the development of this P2 plan. Seven assumptions have had the greatest impact on the development of the P2 plan and are discussed in this section.

1. "Snapshot in time" EO 12856 requires that baseline usage be established using 1994 information. Because of the time it would take to interview every work center and enter the data into the data management system, it was decided that the work centers could only be visited once during the year. It was also decided to "freeze" work center information on the day of the interview. This resulted in work center personnel being asked to estimate 1994 usage based on past usage and projected workload for the remainder of the year. Interview dates, by tenant command, are given in Table 3-1.

Table 3-1
Detailed Data-Collection Interview Dates

Pollution Prevention Plan
Naval Submarine Base
Kings Bay, Georgia

Tenant Command	Interview Dates
TRIDENT Training Facility	January 24 through February 25, 1994
TRIDENT Refit Facility	February 21 through March 25, 1994
Strategic Weapons Facility Atlantic	April 11 through May 6, 1994
Submarine Base	October 18 through November 18, 1994

In summary, this edition of the P2 plan establishes the baseline of hazardous material (HAZMAT) usage and waste generation; therefore, only the information gathered during the data-collection interviews is used. Changes at a work center that have occurred since the interview that have resulted in waste reduction will be credited as such in the first revision of the P2 plan.

2. "Black box theory" for the Fleet During development of this P2 plan, DOD policy was that the Fleet (surface and subsurface) was exempt from the requirements of EO 12856. Therefore, all processes conducted aboard submarines while they are out to sea are not included in this P2 plan. While in port, work performed inside a submarine is not exempt from EO 12856, but is considered classified or confidential. Process flow diagrams (PFDs) for processes performed onboard are represented by a single box showing hazardous materials brought onboard by work center personnel and wastes brought back to shore for proper disposal. No detail is given for the actual operations performed onboard, and thus no recommendations could be provided.

3. Confidentiality versus public document NSB Kings Bay is an operational submarine base dedicated to supporting OHIO-class submarines. Certain operations conducted at this installation are either classified or confidential. In addition, some work centers perform some or all of their operations onboard the Fleet. These processes are also considered classified or confidential. The P2 plan, however, is a public document. To meet the

intent of the regulations while respecting security concerns, these work centers were subjected to the detailed data-collection interview; however, their description, equipment list, process flow diagram, and accounting of materials used and waste streams generated are intentionally not detailed.

4. Empty containers For the purposes of this P2 plan, empty containers were not tracked as a waste stream on the work center level. Although all hazardous materials are containerized and empty containers, which are generated in almost every process step, are disposed of as hazardous waste in satellite accumulation areas, the appearance of this waste stream on PFDs would have cluttered the diagram and drawn attention away from waste streams of greater concern. The annual quantity of empty containers generated by each tenant command can be referenced in the BOSC's annual waste summary report.

5. Process determination Originally, ABB-ES proposed to define processes based on preventive maintenance system (PMS) cards, maintenance request cards (MRCs), and work instructions for each work center. After the initial site visit, this approach was deemed unfeasible due to the overwhelming volume of information; therefore, a different approach was adopted.

   The processes defined in this P2 plan are the procedures outlined by work center personnel during interviews. Work center personnel identified general work procedures in preliminary interviews and in the detailed data-collection interviews. Interview teams used AUL, WID, and WTD information to expand on these procedures and identify new ones.

6. General maintenance A concise PFD for each "general maintenance" activity in a given work center could not be drawn due to the large variety of one-step tasks. Therefore, in the tenant command appendices, PFDs are not provided for work center processes labeled "general maintenance." Material usage and waste generation for general maintenance activities were collected during the detailed data-collection interviews and are provided in the tenant command appendices.

7. The AUL is not a definitive list of hazardous materials used in a work center The base's system for generating AULs is not precise. Because the AULs were imprecise, they were not considered to be the definitive list of hazardous materials used in a work center. Interview teams used the AUL as a reference only. To generate the list of materials documented in the database, interview teams relied more heavily on work center personnel interviews and inspection of supply lockers. Three factors contribute to the imprecision: (a) the Navy supply system, (b) open purchases, and (c) periodic updates.

   (a) Materials are identified on an AUL by brand name and manufacturer. For materials procured through the Navy stock system, identifying approved materials by brand name is inefficient because a work center requisitions a general type of material by National Stock Number (NSN). This material could be manufactured by several different manufacturers. For example, a work center that orders NSN 9150002617899, type-1 penetrating oil, could receive a penetrating oil manufactured by Dri-Slide, Inc., Classic Chemical Co., or 20 other manufacturers. The AUL only shows the latest product received from supply, not all 20 possible products.

(b) Many work centers obtain materials through open purchase. In some work centers (primarily SWFLANT), open purchase items are strictly controlled, while in other work centers (such as SUBASE), these items are not as controlled. Open purchase items may or may not be on the work center's AUL.

(c) AULs are updated periodically. OPNAVINST 4110.2 requires annual updates, and base practice is to update the AUL two to four times per year. This is often not frequent enough to capture all of the materials actually used in a work center.

4.0 MATERIALS

This section of the P2 plan summarizes the types of hazardous materials and regulated constituents regularly used in the work centers. Materials used in 1994 are profiled in Section 4.1, hazardous material procurement and management on base is discussed in Section 4.2, and nonhazardous material management is briefly discussed in Section 4.3.

4.1 1994 MATERIAL USE PROFILE. As will be discussed in Chapter 7.0, when usage data were input into the database, each material was classified according to its function in the process in which it is used. Based on these data, the five most often used classes of materials are:

lubricant (over 153,000 pounds per year),
paint (approximately 21,000 gallons per year),
cleaner (over 18,000 gallons per year),
adhesive (over 16,000 pounds per year), and
sealant (over 7,400 pounds per year).

Other groups of materials used in fewer work centers but in larger quantities are:

lime (approximately 7,156,000 pounds per year),
calcium hydroxide (approximately 208,000 pounds per year),
chlorine (approximately 136,000 pounds per year),
motor fuel (approximately 113,800 gallons per year), and
oil (approximately 62,000 gallons per year).

In total, the tenant commands use 6,366 different materials. TRF uses the greatest number of materials at 3,276, followed by SWFLANT (2,817), SUBASE (2,380), and TTF (680). The numbers in parentheses do not total 6,366 because they reflect the number of different materials used in each tenant command, and many materials are used in more than one tenant command (e.g., 1,1,1-trichloroethane, which is used in every tenant command).

Certain constituents of hazardous materials are of particular interest to the Navy. Through Executive Orders and DOD instructions, the Navy is charged with reducing or eliminating the use of ozone-depleting substances (ODSs), extremely hazardous substances (EHSs), carcinogens, and toxic substances at the installations. These types of constituents are defined below.

4.1.1 Ozone-Depleting Substances Ozone-depleting substances (sometimes referred to as ozone-depleting compounds [ODCs]) are halocarbons and other such halogenated compounds (as the USEPA Administrator determines) that may reasonably be anticipated to contribute to reductions in the concentration of ozone in the stratosphere. These controlled substances are designated by USEPA pursuant to 42 U.S.C. 7671(a) as either:

- Class I (including but not limited to chlorofluorocarbons, halons, carbon tetrachloride, and methyl chloroform) or
- Class II (including but not limited to hydrochlorofluorocarbons) substances.

In the P2 plan database, a hazardous material is designated an ODS if at least one of its constituents is an ODS. The USEPA list of ODSs was compared to all constituents in the database for matches between Chemical Abstract Service (CAS) numbers (not chemical names because many compounds have more than one name).

4.1.2 **Extremely Hazardous Substances** An extremely hazardous substance is any substance listed in either Appendix A or Appendix B of 40 CFR, Part 355. Substances are listed based on their toxicity, reactivity, volatility, dispersability, combustibility, or flammability. A facility must report the presence of a listed substance if the substance exceeds the threshold planning quantities established by the USEPA Administrator.

In the P2 plan database, a hazardous material is designated an EHS if at least one of its constituents is an EHS. The USEPA list of EHSs was compared to all constituents in the database for matches between CAS numbers.

4.1.3 **Carcinogens** For the purposes of the P2 plan, a carcinogen is a chemical agent that is capable of increasing the incidence of malignant tumors (also called neoplasms). On a material safety data sheet (MSDS), three agencies give their opinion as to whether a constituent is a carcinogen. These agencies are International Agency for Research on Cancer (IARC), American Conference of Governmental Industrial Hygienists (ACGIH), and Occupational Safety and Health Administration (OSHA).

It is possible for IARC, ACGIH, and OSHA to draw different conclusions regarding a constituent's ability to cause cancer because each agency uses its own procedures to evaluate the available biological evidence. In the P2 plan database, for manually entered MSDSs, an agent was labelled a carcinogen if one of the three agencies considered a constituent to be carcinogenic and designated it as such on the MSDS.

For MSDSs pulled in from Hazardous Material Information System (HMIS) electronically, the list of carcinogens and their corresponding CAS numbers were compared to all constituents and their respective CAS numbers in the database.

4.1.4 **EPCRA Compounds** EPCRA compounds, formerly referred to as Superfund Amendments and Reauthorization Act (SARA) Title III or Section 313 compounds, are toxic chemicals. A toxic chemical is any chemical or chemicals listed in 40 CFR Part 372.65. A chemical is added to this list if it can be sufficiently established that the chemical is known to cause or can reasonably be anticipated to cause:

- significant adverse acute human health effects at concentration levels that are likely to exist beyond facility site boundaries,
- serious or irreversible chronic health effects, and/or
- significant adverse effects on the environment.

In the P2 plan database, a hazardous material is designated as an EPCRA compound if at least one of its constituents is an EPCRA compound. The USEPA list of EPCRA compounds was compared to constituents in the database for matches between CAS numbers.

ABB-ES was required to review all MSDSs at NSB Kings Bay. Some MSDSs lacked constituent information. If a constituent was listed but no CAS number was

provided, then some effort was expended to find and input the proper CAS number. Therefore, due to the incompleteness of the data, the numbers of ODSs, EHSs, carcinogens, and toxic substances should be regarded as best estimates.

4.2 HAZARDOUS MATERIAL PROCUREMENT AND MANAGEMENT. During 1994, NSB Kings Bay did not procure or manage hazardous materials as a single entity nor did the base manage hazardous materials uniformly among the four tenant commands. For instance, the majority of TTF and TRF work centers are Navy-operated and, therefore, use the Navy procurement and supply system extensively, whereas the majority of SUBASE and SWFLANT work centers are contractor-operated and do not use the Navy supply system. Section 4.2.1 discusses the Navy supply system. Hazardous material management is discussed in Section 4.2.2.

4.2.1 Navy Supply System Due to current government procurement policies, Navy-operated work centers are required to order supplies through Naval Supply Systems Command (NAVSUP). NAVSUP uses the NSN system which classifies materials based on performance as detailed in military specifications (milspecs) (i.e., a milspec may specify a type of paint that is acceptable in certain marine environments).

When a work center orders paint from NAVSUP by NSN, the paint delivered could be one of many possible manufacturers, depending only on the inventory in the supply system. Because NAVSUP's NSN system is strictly performance-based, the constituent mix of an item is highly variable, allowing for varying degrees of toxicity in materials. In 1994 a shipment of lead-based paint, which should no longer be used, was delivered to NSB Kings Bay because it met the performance criteria for the NSN under which the base had ordered. This shipment of paint was disposed of as a hazardous waste.

Historically, Navy and DOD procurement practices have been acceptable modes of operation. However, as discussed in Chapter 3.0, as more emphasis is being placed on the constituents in a particular material, it has become evident that change is needed. EO 12856 specifies that DOD must revamp its procurement system to assist the installations with the 50 percent reduction in release of toxic pollutants to the environment by 1999. In response, the Navy is currently re-assessing its policies to be able to implement constituent-based procurement procedures.

4.2.2 Authorized Use List ALUs are required by OPNAVINST 4110.2. AULs are current inventories of hazardous materials (HM), "chemical substances, or components known or suspected to contain HM" (OPNAVINST 4110.2). At a minimum, AULs are updated annually.

Each tenant command and resident contractor uses AULs to help control and manage the presence and use of hazardous materials. Each tenant command and resident contractor maintains its own AUL(s) in its own format. At this time, NSB Kings Bay does not require a consistent basewide format.

4.3 NONHAZARDOUS MATERIAL MANAGEMENT. Nonhazardous materials are procured, received, and issued to industrial- and training-based work centers in the same manner as hazardous materials. Nonhazardous materials include incidental items such as brushes, rollers, rags, and tape.

5.0 WASTES

This chapter of the P2 plan discusses the types of wastes currently generated at NSB Kings Bay (Section 5.1) and how wastes are accumulated, segregated, and disposed of (Section 5.2). An analysis of the base's WID system is presented in Section 5.3.

5.1 1994 WASTE GENERATION PROFILE. This P2 plan includes both hazardous and nonhazardous waste generation. The database estimates that over 28.8 million pounds of waste are generated annually by the 237 work centers evaluated at NSB Kings Bay. Approximately 98 percent of the waste is nonhazardous, lime-based slurry, and other wastes generated by the wastewater treatment facilities on base. The other 2 percent of the total waste generated (about 560,000 pounds) is collected and managed by the BOSC. Only 41 percent of this waste (about 233,000 pounds of total waste generation) is classified as RCRA hazardous waste.

5.1.1 Hazardous and Nonhazardous Wastes At NSB Kings Bay, both hazardous and nonhazardous solid wastes are generated, accumulated, consolidated, and either treated onsite or consolidated and shipped offsite for disposal. The following definitions provided by SUBASEINST 5090.1A are adopted for this P2 plan. These definitions are used to categorize all solid waste generated at NSB Kings Bay.

> Solid waste is defined as "any solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, agricultural, or community activity which: a) is discarded or is being accumulated, stored, or physically, chemically, or biologically treated prior to being discarded; or b) has served its original intended use and is discarded; or c) is a manufacturing by-product and is sometimes discarded."
>
> Hazardous waste is a term that encompasses solid waste included in lists published by the USEPA in 40 CFR 261. A hazardous waste is a solid waste that exhibits the characteristic of ignitable, corrosive, reactive, or toxic (the characteristic of a waste if the extract from a representative sample of the material contains contaminants at a concentration equal to or greater than the respective value given in 40 CFR 261.24 Table 1) or a waste as specifically identified in 40 CFR 261.
>
> Acutely hazardous waste is any "waste that has been found to be fatal to humans in low doses...or is otherwise capable of causing or significantly contributing to an increase in serious irreversible, or incapacitating reversible, illness." Acutely hazardous wastes are "identified in 40 CFR 261.31 by the Hazard Code 'H' and listed in 40 CFR 261.33(e) as the 'P' list."
>
> Nonhazardous waste refers, for the purposes of this report, to any solid waste that does not meet the definition of a hazardous solid waste.

During the detailed data-collection interviews, the interview teams collected information on hazardous and nonhazardous waste generation in each work center.

During the detailed data-collection interviews, the interview teams collected information on hazardous and nonhazardous waste generation in each work center. The PFDs presented in the tenant command appendices (F, G, H, and I) show the process steps in which wastes are generated. The waste tables in the tenant command appendices quantify the waste streams.

5.2 HAZARDOUS WASTE MANAGEMENT AT NSB KINGS BAY. Hazardous waste management at NSB Kings Bay has evolved to meet the specific needs of the tenant commands. This section summarizes the process of transferring the waste off base once it is generated and presents an overview of the tiered approach to waste management that is necessary at a facility as large as NSB Kings Bay. SUBASEINST 5090.1 series establishes the Hazardous Waste Management Committee and sets forth the policy, procedures, and responsibilities for NSB Kings Bay's Hazardous Waste Management Plan.

5.2.1 Roles and Responsibilities SUBASE Public Works is responsible for the overall management of waste, providing support to all departments, commands, and tenants (all defined as originators) and their associated work centers. Originators identify waste streams, request WIDs, and follow handling instructions specified by Public Works. An example WID is shown on Figure 5-1. Each originator is responsible for the waste management activities of its work centers. Therefore, each originator has a designated person or department (as follows) acting as the hazardous waste coordinator that interfaces with Public Works.

TTF	Code 024A
TRF	Code 230
SWFLANT	Code SPK-61
SUBASE	Code FE4

Each work center or group of work centers designates a Hazardous Waste Coordinator (HWC; often called the Hazardous Materials Coordinator or the HAZMAT Coordinator) who, in addition to performing hazardous material duties, acts as a liaison for waste management activities within the work center(s). Public Works maintains a list of HWCs.

Satellite accumulation areas (SAAs) are located in each work center for the local accumulation of hazardous waste and are run by the work center's HWC. Temporary collection areas (TCAs) are designated by each originator for the temporary storage of hazardous waste and are located throughout the base. For the purposes of data collection, ABB-ES designated work centers differently than NSB Kings Bay. Very large work centers were broken down into smaller, discrete units. Therefore, in the database, it appears that more than one work center uses a single SAA.

5.2.2 Satellite Accumulation Areas An SAA is defined as a "place where waste is generated in the industrial process or the laboratory and where waste must initially accumulate prior to removal to a central area. This point of accumulation is under the control of the operator of the process that is generating the waste" (SUBASEINST 5090.1A).

Every work center at NSB Kings Bay that generates a hazardous waste has access to an SAA. A work center may accumulate wastes in appropriate containers in an SAA until 55 gallons, total, of waste are accumulated. As long as less than 55

WASTE INFORMATION DOCUMENT (WID) as of 06/16/94

Originator Serial _____ WID no. 37-3082 -313

SHOP	CONTACT	CODE	COMMAND	BUILDING	PHONE EXT
ZONE 4,5,TRF	C. FERNALD	DEPT. #34	37 KBNSB	2010	8690

WASTE IDENTIFICATION

Shipping Name: HAZARDOUS WASTE LIQUID, N.O.S. (D007/D008) 9, NA3082, PGIII
Descrip: OIL FILTERS/OIL (SPENT)

Physical State: LIQUID 2 Layer(s) Waste Water: N Dioxin Listed: N

Flammability:Y	Corrosive:N	Toxic:N	Reactive:N	Tissue Accum:N
FlashPt(F)>140	pH N/A			Carcinogen N

Treatment Standards: 40CFR171-179 ERG: YES Guide: 31
CAS#: MIXTURE Generation Codes: IM Rpt Qty: 1

Container: DRUM Ship via: TRUCK

Generation Estimate: 50 G /Month 600 G / Yr

PROCESS DESCRIPTION:
OIL FILTERS CHANGED OUT FOR PREVENTIVE MAINTENANCE. CONTAINS NON HAZARDOUS PETROLEUM DISTILLATES WITH FLASH POINTS GREATER THAN 140 DEGREES F. ANALYSIS ANALYSIS 94-161, 94-162, 94-166, 94-168, 94-169, 94-170, 94-171

CONPONENT	PERCENT	RANGE	PARTS PER MILLION
OIL FILTERS/OIL	100%	50.0	1000000.000 ppm
	0%	50.0	0.000 ppm
	0%		0.000 ppm
	0%		0.000 ppm
	0%		0.000 ppm

Disposal Reason: ___ EXCEEDED SHELF LIFE _X_ SERVED PURPOSE ___ UNUSED
___ Other reason:

CERTIFICATION: I certify the above named materials are the only compounds included in the waste stream described and no other substance is present.

Signature:	code:	date
Tim Thomas	DEPT. #41	7/21/94

FIGURE 5-1

WASTE INFORMATION DOCUMENT

POLLUTION PREVENTION PLAN

NSB KINGS BAY
KINGS BAY, GEORGIA

8510-21 950308WEM

Pg. 2 completed by Public Works, copies to Originator & IWIP if applic.
Waste Class: RCRA
EPA Waste Numbers: D007 D008
Reason for Classification: LEAD > 5 ppm, CHROMIUM > 5.0 ppm
Handling Instructions: PLACE INTO SPECIFIED CONTAINERS.
CONTAINER REQUIREMENTS DOT CNTNR: DRUM PLACCARDS: NONE
WID No. 37-3082 -313
Description: OIL FILTERS/OIL (SPENT)
1348-1 Information:
Item Nomenclature: OIL FILTERS/OIL (SPENT)
DOT Proper Shiping Name: HAZARDOUS WASTE LIQUID, N.O.S. (D007/D008) 9, NA3082, PGIII
UN CLASSIFICATION: TOXIC
UN/NA Number: 3082
Additional Requirements: NONE
Land Ban Material: N
Special Precautions and/or instructions: (Handling lines 6-10 if any) THIS WID REPLACES WID #5002-313 DATED 11/04/91
Signature (for Public Works) 7-21-94

FIGURE 5-1 (CONTINUED)

WASTE INFORMATION DOCUMENT

POLLUTION PREVENTION PLAN

NSB KINGS BAY
KINGS BAY, GEORGIA

8510-21 950308WEM

gallons of waste are present and certain container integrity requirements are met, the SAA is not subject to 90-day storage regulations. Once greater than 55 gallons of hazardous waste or one quart of acutely hazardous waste are accumulated, the container is dated and the waste is transferred to a TCA (or complies with the requirements for TCAs, Section 5.2.3) within 3 days of the date the excess waste began accumulating.

In some cases, more than one SAA is located in a work center. This is allowable as long as the wastes stored in each SAA are from a different process. Detailed requirements for SAAs are found in SUBASEINST 5090.1 series.

5.2.3 **Temporary Collection Areas** TCAs are for the temporary storage of hazardous waste. As of March 1995, two functioning TCAs are on base and both are at TRF (one in Building 4024 and the other in Building 5085). A third TCA, located at Warrior Wharf, it is not currently operational. Prior to the decommissioning of the USS Canopus, submarines arriving in port would off-load their hazardous wastes at the Warrior Wharf TCA. The waste accumulation area at TTF's loading dock area (Building 1065) was originally established as a TCA, but due to the low level of waste generated by this command, the status of the TCA has been changed to an SAA.

Each TCA has a designated TCA coordinator responsible for tracking wastes, inspecting the area, and ensuring safe storage compliance. This coordinator notifies the BOSC when a container of hazardous waste is full or when the container has been in temporary collection for 60 days so that the BOSC can transport the waste to the base storage facility. This signals the need for a WTD, shown on Figure 5-2, which is required to be submitted to the BOSC for each waste destined for the base storage facility (see Section 5.2.6).

5.2.4 **Waste Identification** HWCs are responsible for submitting the information used to create a WID. Much of this information is provided on the MSDS for the raw material used to generate a waste. Based on the results from laboratory tests performed to identify the waste's characteristics, Public Works returns a copy of the WID to the originator outlining specific waste management practices.

As long as the characteristics of the waste do not change, one WID may apply to several containers of that waste, even if generated over an extended period. WIDs are submitted for sludges, process wastes, materials that have served their intended purposes, materials that have exceeded their shelf lives (see Section 5.2.8), or materials that are no longer needed at the facility or work center.

In cases where a waste is generated for the first time or the waste cannot be identified, the HWC or the originator submits a Waste Characterization Request (WCR) form to Public Works. A WCR includes as much information as possible about the waste to help Public Works identify the waste in question. Public Works may, upon receipt of a WCR,

- conduct a literature search to determine the chemical composition and associated hazards of the waste, and
- determine the appropriate sampling method and the analyses to be performed (a sample may be taken and sent to a laboratory to define the waste characteristics), and/or

SUBASEINST 5090.1A

WASTE TRANSFER DOCUMENT

(SEE INSTRUCTIONS ON REVERSE)

1 ORIGINATOR INFORMATION

a WASTE COORDINATOR	b PHONE	c DATE

2 WASTE IDENTIFICATION

a WASTE DESCRIPTION	
b WID NUMBER	c EPA WASTE NUMBER

3 CONTAINER IDENTIFICATION

a CONTAINER IDENTIFICATION	b CONTAINER SIZE	c QUALITY (PW USE ONLY)
(1)		
(2)		
(3)		
(4)		
(5)		
(6)		
(7)		
(8)		
(9)		
(10)		

4 Reviewed by Worksite Coordinator, ready for transfer to temporary collection area*

a SIGNATURE	b PRINT NAME.	c DATE

5 Reviewed by Waste Coordinator, approved for transportation to Public Works*

a SIGNATURE	b PRINT NAME.	c DATE

6 Reviewed and accepted by Public Works*

a SIGNATURE	b PRINT NAME	c DATE

7

* The person designated to sign for the information above verifies, based on personal observation, certified records or direct reports from Watchstanders, and certifies by signature that the information is correct in accordance with the specified requirements on the Waste Information Document.

SUBASE KINGS BAY 5090/8 (5-89)

FIGURE 5-2

WASTE TRANSFER DOCUMENT

POLLUTION PREVENTION PLAN

NSB KINGS BAY
KINGS BAY, GEORGIA

8510-21 950308WEM

SUBASEINST 5090 1A

WASTE TRANSFER DOCUMENT INSTRUCTIONS

1. ORIGINATOR INFORMATION: self-explanatory

2 WASTE IDENTIFICATION:

   a. Waste Description — as shown on waste material label

   b. WID Number — as shown on waste material label

   c. EPA Waste Number — as shown on hazardous waste label or N/A if not applicable (not a hazardous waste)

3. CONTAINER IDENTIFICATION:

   a. Drum ID No. — as shown on waste material label

   b. Container Size — Indicate size of container (i.e., 55 gal, 85 gal, 5 gal)

   c. Quantity — In pounds (Public Works use only)

4 CERTIFIED SIGNATURE — Must be signed by Worksite Coordinator

5. CERTIFIED SIGNATURE — Must be signed by Waste Coordinator

6 ACCEPTANCE SIGNATURE — Must be signed by Public Works as certification that the material has been received.

7 CERTIFICATION INFORMATION

SUBASE KINGS BAY 5090/8 (5-89)

FIGURE 5-2 (CONTINUED)

WASTE TRANSFER DOCUMENT

POLLUTION PREVENTION PLAN

NSB KINGS BAY
KINGS BAY, GEORGIA

- supply adequate data so that the appropriate handling method of the waste can be evaluated.

After the WCR is returned from the lab, Public Works produces a WID. It is the HWC's responsibility to keep current its WID information in Public Works' files. Originators submit amended WIDs when the mixture or physical form of a waste stream changes significantly.

5.2.5 **Waste Transfer** Waste transfer on base is initiated by the HWC by calling the BOSC for a pickup. The BOSC has 48 hours to respond to the call. When BOSC personnel pickup the waste, the HWC signs a WTD. A WTD is functionally equivalent to a hazardous waste manifest between the originator and the BOSC. After pickup, the waste is transported to either a TCA or the base storage facility. From the base storage facility, waste is shipped offsite for ultimate treatment and disposal.

5.2.6 **Base Storage Facility** The BOSC operates the base storage facility for DRMO. The base storage facility is the centralized collection point for all regulated wastes that leave the base for treatment or disposal. At the base storage facility, an attempt is made to consolidate similar waste streams from the same tenant command. Waste streams are consolidated by WID number.

5.2.7 **Disposal Costs** Hauling and disposal are currently contracted to Law Engineering, Inc. Every waste generated at NSB Kings Bay is a line item negotiated fee. Representative costs to the BOSC for the most frequent hazardous wastes requiring offsite disposal are:

cutting fluid	$0.66 per pound,
antifreeze	$0.301 per pound,
regulated paint debris	$2.43 per pound, and
used oil filters	$0.66 per pound.

Waste hauling and disposal costs assigned to each tenant command (TTF, TRF, SWFLANT, and SUBASE) are calculated by the BOSC as a fixed percentage of the total cost of disposal. The fixed percentage is each tenant command's percentage of the total pounds of waste hauled and disposed of. In effect, each tenant command is charged an average cost per pound of waste regardless of the type of waste stream generated. Costs are not allocated by waste stream by work center. Therefore, if a work center generates a waste stream that is extremely expensive to treat or dispose of, then that work center or tenant command is not billed for that extra expense. No incentives exist for work centers or tenant commands to minimize or eliminate expensive waste streams.

5.2.8 **Unused Material Disposal** Unused materials are disposed of by work centers in their SAAs for one of the following reasons:

- the material has exceeded its shelf life (with or without shelf life extensions) and is, therefore, unusable for its original purpose according to the milspec (highest percentage of occurrences) (Chapter 6.0 discusses how this class of materials may be reused for other work on base);

- damage to the material's container has prevented further use (exterior rusting or punctures); or

- the received item is not the material ordered and HAZMART (the base re-use center) will not accept it for reuse.

In many cases, materials exceed their shelf life because the smallest quantity of issue is far greater than the needs of the work center.

In another common situation, a material issued to a work center in anticipation of work has not been used because the work was delayed or cancelled. In some cases, materials are delivered from supply either close to or past the shelf life date.

5.2.9 HAZMART NSB Kings Bay established HAZMART, a centralized collection and distribution center for issued hazardous materials. HAZMART is a reuse center for unused and partially used hazardous material that a work center no longer needs but that the supply system will not take back. HAZMART began operations during 1994 and was set up independently of Supply. It is modeled after the Naval Air Weapons Station (NAWS) Point Mugu system. It allows materials to be redistributed on base to work centers that have a need for a specific material. This reduces the amount of hazardous materials ordered from Supply and, ultimately, the amount of unused or partially used materials disposed of.

5.2.10 Industrial Wastewater Treatment Facility The base Industrial Wastewater Treatment Facility (IWTF) is a pretreatment facility that uses three main processes to treat industrial wastewater from the work centers. These processes (oily waste process, batch flow process, and continuous flow process) are detailed in the SUBASE tenant command appendix. Wastes are received daily from TTF, TRF, SUBASE, and SWFLANT. Wastes generated from the waterfront (such as drydock washdown water and bilge water from submarines) are pumped directly to the continuous flow and oil waste treatment processes, respectively. Wastes transported in bulk containers or 55-gallon drums are pumped out and fed into the appropriate treatment process. Types of wastes treated in the batch flow process include acids, caustics, mixed acids and metals, and hydrazine and launch tube waste. Most of the batch-treated waste is transported in containers to the IWTF waste storage area or directly to a treatment unit.

5.2.11 Other Waste Management Silver from photographic processes is the only waste stream treated at the generation site in a work center. Previous to 1994, two other waste streams, machine tool coolant and spent solvent, had been targeted for onsite recovery.

5.2.11.1 **Silver Recovery** Silver recovery is conducted at three locations on base. Liquid streams containing silver are filtered, and the resulting filtrate is discharged to the Wastewater Treatment Plant (WWTP). Recovered silver is sold on the open market.

5.2.11.2 **Machine Tool Coolant Recovery** Recovery of machine tool coolant was identified in SUBASEINST 5090.1A as an activity in which the base will engage to reduce waste. To date, this has not been implemented at NSB Kings Bay. Pollution Prevention Recommendation (PPR) Number 9, as detailed in Appendix C, outlines implementation of this activity, identifies potential vendors, and projects annual cost savings once recovery is implemented.

5.2.11.3 **Solvent Recovery** Solvent recovery systems are installed at the IWTF; however, none have been used since installation. To make the recovery stills operational, substantial renovation of the equipment and fire suppression system is required.

5.3 WASTE IDENTIFICATION DOCUMENT ANALYSIS. ABB-ES was requested to analyze the existing WID system used at NSB Kings Bay. Information obtained from the BOSC, who is responsible for implementing the WID system, was used in this analysis. The BOSC generates new WIDs and maintains established WIDs. ABB-ES obtained basewide WID information and generated WID use lists for each work center. During the detailed data-collection interviews, work center personnel were asked which WIDs were active. This analysis is for 1994 and is based on information provided by the BOSC and information gathered from the interviews.

5.3.1 Review of Existing WID System WID numbers are specific to waste streams and tenant commands. The first two numbers indicate the originating tenant command. The next four numbers represent the waste "group" and the last three numbers are the waste "stream." The BOSC has developed 21 groups and over 275 streams. Table 5-1 provides examples of the 9-digit code.

Table 5-1
Examples of the Waste Identification Document (WID) Number

Pollution Prevention Plan
Naval Submarine Base
Kings Bay, Georgia

Tenant Command		Group		Stream	
37-xxxx-xxx	SUBASE	xx-1263-xxx	Paint waste and thinner waste	xx-xxxx-054	Paint and listed solvents (MIBK)
66-xxxx-xxx	TRF	xx-1993-xxx	Petroleum derivatives	xx-xxxx-211	Acetone rags
33-xxxx-xxx	SWFLANT			xx-xxxx-564	Fixer containing silver (used)
01-xxxx-xxx	TTF			xx-xxxx-875	(Nicad) battery

Notes: SUBASE = Submarine Base.
MIBK = methyl isobutyl ketone.
TRF = TRIDENT Refit Facility.
SWFLANT = Strategic Weapons Facility Atlantic.
TTF = TRIDENT Training Facility.
Nicad = nickel-cadmium.

During the detailed data-collection interviews, work center personnel demonstrated differing levels of understanding of the WID system. In most cases, HMCs demonstrated an understanding of their own and their work center's roles in the WID system. In very few cases were wastes disposed of in an SAA where work center personnel did not know the WID number. One example is Radiographic Inspection Building (RIB) at SWFLANT. Work center personnel dispose of spent fixer and used iron particles in their SAA, but no WID number is associated with either waste stream.

Some work centers, for example SUBASE EOD, do not maintain their own SAA. In these instances, work center personnel call the BOSC to pick up hazardous waste as soon as it is generated. At EOD, work center personnel were not responsible for knowing the WID numbers of the wastes nor did they know what became of the waste stream once the BOSC removed the waste from their work center.

A WID tracks to the originating tenant command and work center but does not provide waste generation information. To reliably track waste generation, the corresponding WTD must be consulted.

A WTD is WID-specific and tracks to an individual waste coordinator. Two problems arise with tracking waste generation back to a waste coordinator: (1) waste coordinators change frequently (sometimes twice per year), and (2) some waste coordinators have responsibility for more than one work center. Therefore, although the system is able to identify and document waste streams at the work center level, it is unable to track the amount of waste being generated in the work centers.

5.3.2 Testing Recommendations for Questionable WIDs An analysis of the WID system used by NSB Kings Bay and developed by the BOSC was conducted. ABB-ES personnel compared the waste streams generated by the work centers and found that similar waste streams were being disposed of under appropriate WID numbers. In addition, the USEPA waste identification codes (D005, F001, etc.), by which waste streams are classified on the WIDs, were also evaluated. If a WID assigned a questionable waste code to a waste stream, then the RCRA/Superfund Hotline in Arlington, Virginia, was consulted. In all cases, the waste code was found to be correct.

A recommendation to the BOSC in reference to WID data management is first to upgrade their computer system and then begin tracking WID and WTD information electronically. This need will become increasingly important as the base implements an electronic hazardous material and waste tracking system.

5.4 SOLID WASTE ISSUES. NSB Kings Bay has contracted with Mark Dunning Industries (MDI) for domestic trash management for the entire base, including base housing. MDI collects garbage and disposes of it in the Camden County municipal landfill. Most of the problems MDI encounters are associated with residents' neglect in segregating their wastes prior to disposal. Certain types of wastes, when found, must be removed from the domestic trash waste stream prior to MDI landfilling the waste.

Although base industrial areas have specific requirements for waste segregation, base housing does not, and segregating these wastes from housing's domestic trash is increasingly time-consuming. MDI reported that scrap metal, used oil, batteries, and tires are found most often. Approximately 200 pounds per month of scrap metal are mixed with domestic trash including tool blades, tire rims, wash tubs, bearings, shafts, and scrap pieces. MDI personnel also have to rinse scrap metal prior to recycling. When used oil is found in the dumpsters, MDI personnel are required to take the used oil to Building 2007, MDI's body shop, and drain it into a drum for containment prior to disposing of the domestic trash in the landfill. Tires are removed and stored.

6.0 TRACKING SYSTEM RECOMMENDATIONS

One of the goals of the waste minimization effort is to evaluate the present hazardous material tracking system at NSB Kings Bay (Section 6.1) and make recommendations for improvement (Section 6.3). In Section 6.2, applicable Navy policy is presented to justify the recommendations.

6.1 CURRENT TRACKING SYSTEM. During the work center interview phase of this project, the material and waste tracking system at NSB Kings Bay was found to be a collection of separate systems managed within each of the four main tenant commands. TRF Supply, Building 4027, and SWFLANT's Strategic Weapons System Supply Warehouse (SWSSW) were the primary supply points for the base and served as warehouses for material needed by all tenant commands. Once items were delivered, material tracking was initiated in the tenant commands in several different manners. For example, TTF's Environmental Program Manager's office controls hazardous material tracking by using some of the capabilities of the Hazardous Inventory Control System (HICS, a Navy-developed DOD software package for tracking an installations' hazardous material activity) and HMIS (a CD-ROM database of MSDSs). In SUBASE's tracking system, however, each contractor had its own supply system while Navy-operated tenants and activities obtained their hazardous materials through TRF Supply. The SUBASE contractors also obtained many hazardous materials through open purchase, and these materials were not reliably tracked.

In late 1994, the base began conversion to a centralized material tracking system. Two factors which encouraged this action were:

- **Open Purchase** Open purchase items could not be tracked. In theory, work centers can not obtain hazardous materials not on their AUL. In practice, however, this was not always the case, primarily because AULs were not updated frequently enough to meet the needs of the work being performed.

- **Lack of Consistency (in tracking methods)** As discussed above, each tenant command on base employed different methods of tracking materials. This lack of consistency in systems did not facilitate effective basewide tracking or promote efficient basewide reporting.

6.2 NAVY POLICY. Chapter 3 of OPNAVINST 5090.1B refers to using the Consolidated Hazardous Material Reutilization and Inventory Management Program (CHRIMP) to implement life-cycle hazardous material control and management at all Naval installations. Commander Naval Supply Systems Command (COMNAVSUPSYSCOM) is directed to:

> "...provide Navy guidance for shore activities and commands on implementing CHRIMP."

It is also stated that commanders and commanding officers of shore activities shall:

> "...establish and implement procedures to control, track, and reduce the variety and quantities of hazardous material in use, in storage or

stock, or disposed of as hazardous waste. Include in those procedures centralized HMC&M operations per the Navy CHRIMP manual."

First developed in 1991 at NAWS Point Mugu, California, the CHRIMP's latest version was released in February 1995. This program incorporates centralized hazardous material management and bases its material receipt, tracking, and accounting capabilities on the specially designed software package HICS v. 4.0.

6.3 RECOMMENDATION. In light of the current Navy policy discussed in Section 6.2 and ongoing efforts of the base to convert to a controlled, centralized hazardous material tracking system, it is recommended that NSB Kings Bay use the Navy-developed CHRIMP for life-cycle hazardous material control and management.

Using CHRIMP will:

- promote the necessary tracking of open purchase items because these items are already bar-coded;
- ensure a consistent, reliable, basewide tracking system; and
- align NSB Kings Bay's tracking practices with those found in current Navy policy.

The HICS software package has, among many other capabilities, the ability to track using bar-code technology. Bar coding is a well-developed system, is commercially available, and has the capacity to grow with the needs of the base. NSB Kings Bay should begin using bar coding as soon as possible.

7.0 DATABASE

This chapter of the P2 plan provides an introduction to the database that was developed to manage all data gathered during detailed interviews. Section 7.1 summarizes general database information, and Section 7.2 reviews the data entry system. A user's guide for the data entry system is provided in Appendix B.

7.1 DATABASE OVERVIEW. Although the statement of work for this P2 plan did not require the construction of a database, review of the data summary requirements, estimates of the volume of data to be generated, and the complexity of the required reports indicated that the most efficient way to process these data would be to enter the information into a database.

7.1.1 Reporting Requirements and Data Constraints The NSB Kings Bay database system was designed to facilitate data entry, track information, and generate supporting data reports. The reporting requirements, as defined by the statement of work, are as follows:

Reporting Requirements:

- A table is required with "Process Materials" for each process, which shall include the material type, part number or Federal stock number, quantity used, MSDS identifier, and a method of identifying carcinogens, ODSs, and EHSs. The contractor will be required to identify the above substances from the MSDSs. AULs will be developed from these Process Materials tables, using a format to be provided by NSB Kings Bay.

- WID numbers shall be added for all wastes leaving each process; the final disposal location for each waste shall be added; and solid waste as well as hazardous waste shall be included.

- A description and the quantity of production units for each process, as well as a description of any equipment used in the process that could affect waste generation or material usage, shall be added.

- A summary table for each major command or tenant organization shall be added. The table shall have one line for each work center with the number of processes performed, the number of hazardous materials used, the number of waste streams generated, and the number of SAAs present. The bottom line of the table shall summarize all of the above line items.

Data Constraints:

- Data in the NSB Kings Bay database represent a "snapshot" of information available at the time personnel at each work center were interviewed (Table 3-1). Changes to the processes, materials, or wastes that may have occurred after interviews were conducted are not reflected in the data.

7.1.2 Data Gathering and Data Entry Process A methodology was developed for interviewing personnel at each work center at NSB Kings Bay to determine the processes performed. Standard forms were created to capture the results of the

interviews. Wherever possible, conventions were developed to improve data gathering and to simplify data entry.

After the initial field test, the interview forms were used to develop data entry screens and a data structure that could accommodate the types of information being gathered. The system design is flexible enough to allow changes and additions to the data structure without major programming revisions. As long as the structure relations (see 7.2.1, Database Structure) are not changed, the data entry screens and data fields can be modified to accommodate changing information requests and reporting requirements without programming changes.

Data quality assurance for gathering and entering the information incorporated three types of data checks and aids, which are described below.

- Data conventions were established for data collection to improve the quantity of the data gathered and simplify the data entry process (e.g., standard abbreviations were developed, including notations for equipment use and rating).

- To speed data entry and ensure consistent spelling, the data entry operator was provided with a series of reference pop-up lists containing standard responses to questions (e.g., a list of manufacturers for reported materials). These pop-up lists can be updated as additional information becomes available.

- The data were reviewed to ensure data entry correctness and consistency with the process flow diagrams.

Detailed discussions on the database structure and data entry methodology are provided in Section 7.2.

7.1.3 Data Organization in the Database The data in the NSB Kings Bay database can be categorized into levels as follows:

- general information on each tenant command and work center,
- each process within each work center,
- each step within each process,
- materials used in each step,
- wastes generated in each step, and
- constituent information on all identified materials.

Specific information of the fields in each of the data groups is given in the data dictionary.

7.1.4 Constituent Information One of the primary requirements of the P2 Plan was to identify all of the ODSs, EHSs, toxic substances, and carcinogens currently being used on base. Information on the materials being used in each process was gathered during the detailed data-collection interviews. Wherever possible, specific manufacturer information, NSNs, and MSDS numbers were gathered from the work centers. Where this level of detail was not available, information on the generic material type was retrieved.

Information on materials, manufacturers, and identification numbers was then used to retrieve constituent information from HMIS which contains MSDSs on thousands

of materials. HMIS is a DOD-owned, double disk, compact disk, read only memory (CD-ROM) MSDS database maintained by Defense Logistics Agency (DLA). The quality of the information gathered at NSB Kings Bay directly affected the accuracy of data retrieved from the HMIS system. If an MSDS number or exact manufacturer and material trade name was available, the exact MSDS was retrieved. In other cases, the group of materials or the closest available match was used.

MSDS quality among manufacturers is highly variable. For instance, manufacturers are not required to report constituents that comprise less than one percent of a material and, occasionally, manufacturers claim "proprietary information" for constituents. Therefore, information from an MSDS is not necessarily complete.

In cases where MSDS information was available in electronic form (e.g., HMIS) and in paper form, the information in the electronic version was used in the database.

Constituent information from HMIS was used to determine the hazard levels of those materials, which refer to the ODS/EHS/toxic substance categories. Constituent information for approximately 95 percent of the materials used at NSB Kings Bay was available from HMIS. For approximately 5 percent of the materials, information was not available from HMIS. In these cases, manufacturers were contacted directly, and the constituent information was manually entered into the database.

The method for retrieving information from HMIS is discussed in Appendix B.

7.1.5 Available Capabilities The NSB Kings Bay database has been designed to accommodate the pollution prevention reporting requirements as presented in 7.1.1. Report writing functions have been built in to generate WordPerfect™ Version 5.1 compatible reports. Available reports include:

- data summary by tenant command,
- materials by tenant command, work center, and process,
- wastes by tenant command, work center, and process,
- equipment by tenant command and work center, and
- authorized use lists.

7.2 THE DATA ENTRY SYSTEM. The NSB Kings Bay data entry system was designed to mirror the standard forms used during the work center interviews. Each data entry screen corresponds to one page of a form (included in Appendix B).

The User Guide in Appendix B provides detailed instructions on how to use the data entry system while the following section discusses how the system is organized.

7.2.1 Database Structure For ease of data entry and programming, data gathered during the detailed interview were organized into "levels": the "top" or broadest level being the tenant command, and the "bottom" or most specific level being the constituent of a material. The levels of information from top to bottom are as follows:

- Tenant command
- Work center; Building
- Process; Equipment; Disposed of unused material
- Process step
- Generic material type
- Generic materials; Wastes
- Specific materials
- Constituents

The data in each item listed here are contained in separate, smaller databases.

The database **SCRN.DBF** drives the data entry system and controls screen appearance. If this database is corrupted, the data entry system will not work.

Due to a tenant command's unique prefix, the system is capable of manipulating information from multiple tenant commands. Tenant command-specific data have been divided by tenant command to simplify and speed data entry and reporting.

7.2.2 **Data Dictionary** For specific information on the fields in the database, refer to the NSB Kings Bay Data Dictionary included in Appendix B.

7.2.3 **System Requirements** The database is written in Clipper™. It also utilizes WPClip™ to generate reports and Grumpfish Libraries to enhance its user-friendliness.

The minimum configuration for running the program is a 386 personal computer (PC) with 4 megabytes of memory. The amount of disk space required for each tenant command and installation instructions are given in the Users Guide in Appendix B.

The database was designed to be used on a stand-alone PC, and will not support a multiuser environment.

7.2.4 **Database Assumptions and System Definitions** To avoid possible confusion, this section documents decisions or assumptions that were made during database design and data entry.

- Design assumptions: The database was intended to manage data for the existing tenant commands. General information for the tenant commands has been written into the system (e.g., work center prefixes for wastes). It was assumed that this information would not change.

- Constituent information assumptions: Where MSDS information was available in electronic form (e.g., HMIS) and in paper form, the electronic version was used in the database.

  The Navy stock system uses NSNs to identify products. Assignment of an NSN to a product is performance-based; therefore, the formulation of a particular item used in a work center may vary. The variance in formulation was accounted for by including all HMIS constituent information from all manufacturers for each item ordered by NSN.

- Report assumptions: Reports were generated in WordPerfect as requested by the base.

Two columns in the Tenant Command Summary tables, found in the beginning of Appendices F, G, H, and I, report information in the following manner:

SAA count: The SAA count is the number of SAAs a work center uses. Other waste disposal avenues (e.g., evaporation or bulk trash) are present in other reports, but that information is not reflected in this field.

Number of ODSs, EHSs, toxic substances, carcinogens: If any constituent of a material falls under one of these categories, the entire material is classified in that category. For example, a material that contains benzene, a carcinogen, would be classified as a carcinogen. Materials may belong to multiple categories. The summary number reflects unique materials and manufacturers, because manufacturers use different ingredients. A material may be used in multiple shops.

7.2.5 **Upkeep and Maintenance** An installation guide has been included with the disks. The data were captured as a "snapshot" of the base. ABB-ES is not responsible for data or system support.

8.0 POLLUTION PREVENTION RECOMMENDATIONS

Per Executive Order 12856, Federal facilities are expected to reduce by 50 percent total releases and offsite transfers of toxic chemicals or toxic pollutants by December 31, 1999. Toxic pollutants include EPCRA compounds, EHSs, RCRA wastes, and hazardous air pollutants (HAPs). The P2 plan is more comprehensive in that it estimates the amount of hazardous and nonhazardous waste generated at NSB Kings Bay and contains a set of recommendations for reducing waste generation. The P2 plan contains a baseline assessment that estimates approximately 28.8 million pounds of waste are generated annually. Approximately 233,000 pounds are RCRA hazardous waste that is handled by the BOSC.

Chapter 8.0 is organized in five sections as listed below.

Section 8.1	Summary
Section 8.2	Pollution Prevention Recommendation Analysis
Section 8.3	Development of Pollution Prevention Recommendations
Section 8.4	Potential Barriers to Implementation
Section 8.5	Innovative Technologies

8.1 SUMMARY. A purpose of the P2 plan is to establish a baseline against which the 50 percent reduction goal is measured. The baseline assessment estimates the amount of waste generated over a defined period of time. It represents a "snapshot" of waste generation information. This P2 plan estimated waste generation during the period of January to December 1994.

Work center personnel provided estimates of the volume of wastes generated in various processes. Their estimates were used in calculating annual waste-generation data and have formed the basis for the recommendations presented in this report. It should be noted that the detailed data contained in Appendices F, G, H, and I are estimates based on best information available.

In addition, a thorough analysis of the 237 work centers was conducted including: preparing PFDs, evaluating material usage, and estimating waste volumes. PFDs illustrate the various processes that generate waste streams. Approximately 324 PFDs were produced and are included in Appendices F, G, H, and I. It should be noted that processes are dynamic, and the PFDs contained in this P2 plan were valid for the period presented in Table 3-1. Changes to processes taking place after the data-collection interviews at specific tenant commands may not be reflected in the diagrams contained in Appendices F, G, H, and I.

Recommendations were developed based on their potential to prevent pollution or reduce waste generation. Cost was considered for economic analysis but was not a deciding factor; therefore, several recommendations included in this P2 plan never pay back. Some of the high- and moderate-impact recommendations show an increase in waste generation. These recommendations are included because they decrease or eliminate the disposal and offsite transfer of a toxic chemical or toxic pollutant, per the requirements of EO 12856. This is usually accomplished by product substitution where the new product is nontoxic and nonhazardous, rendering the resulting waste stream nonhazardous, but more is generated.

Each of the 64 pollution prevention recommendations (PPRs) have been ranked in one of five groups: ongoing initiatives, high-impact recommendations, moderate-impact recommendations, future recommendations, and strategic initiatives.

- Ongoing initiatives refer to pollution prevention activities that were in progress while ABB-ES was collecting data for the baseline assessment. It is likely that these activities have already reduced waste generation to some extent. Had these activities not occurred, the baseline assessment would probably have been higher than the amount calculated in this report. Table 8-1 lists the ongoing initiatives at NSB Kings Bay.

- High- and moderate-impact recommendations represent activities with the greatest potential to reduce the generation of hazardous waste or the use of toxic substances (refer to Table 8-2). All of the processes identified during the detailed data-collection interviews were analyzed.

  The feasibility of implementing each activity was evaluated against five factors:

  - human health impacts,
  - environmental impacts,
  - technical feasibility,
  - total cost analysis, and
  - implementation issues.

- Future recommendations cannot be implemented now because either the technology is not sufficiently developed or the waste stream is not yet generated on base. These initiatives are summarized in Table 8-3.

- Strategic initiatives are recommendations which target current management practices. These initiatives represent activities that require basewide or Navy-wide coordination. It is believed that implementing these types of recommendations will significantly reduce the amount of hazardous waste requiring treatment and disposal. Examples of strategic initiatives are: segregation of demolition and disaster debris, increased use of HAZMART, consolidation of wastes across tenant commands, and supply request training. Strategic initiatives are discussed in Table 8-4.

8.2 POLLUTION PREVENTION RECOMMENDATION ANALYSIS. Each PPR has undergone a thorough analysis to determine its potential for achieving waste reduction. This section discusses the five factors used to analyze each recommendation.

Human health evaluation represents a qualitative analysis of the PPR with respect to its impact on human health. The analysis considers the types of constituents in the current hazardous material versus the constituents in the recommended material (for example, substitution of a carcinogen with an EHS). Once the constituency has been evaluated, then exposure and changes in exposure likelihood are assessed.

Environmental evaluation analyzes the environmental impacts of each PPR. This analysis considers the types of constituents of the current hazardous materials versus the constituents in the recommended materials and resultant

Table 8-1
Ongoing Initiatives

Pollution Prevention Plan
Naval Submarine Base
Kings Bay, Georgia

Pollution Prevention Recommendation	Description
Convert coal-fired boilers to natural gas-fired boilers (PPR Number 31)	The Thermal and Compressed Air Plant produces approximately 728,000 pounds of fly and bottom ash per year from operation of coal-fired boilers. NSB Kings Bay has initiated conversion to cleaner technology, even though the base is not in a nonattainment area for air pollutants.
Institute ultralow volume (ULV) pesticide spraying (PPR Number 53)	Golf course personnel have implemented ultralow volume spraying techniques to minimize pesticide usage and optimize coverage.
Convert to biodegradable cleaning solvents (PPR Number 28)	Biodegradable cleaning solutions should replace petroleum-based cleaning products and alcohols. This would reduce human exposure to hazardous chemicals and eliminate the disposal of environmentally persistent chemicals. In the past year, TRF has experimented with a biodegradable solvent, Simple Green, and had favorable results.
Eliminate high-volatile organic compound (VOC), chromate- and lead-containing paints (PPR Number 55)	TRF is actively identifying and discontinuing the use of paints with high levels of VOCs and paints that contain chromates and lead.
Substitute solvent-free varnish for xylene-based product (PPR Number 56)	The xylene-based, flammable varnish Isonel is being phased out at TRF while the solvent-free Isolite 862M is being phased in.
Replace Freon 113 use in oxygen cleaning activities (PPR Number 57)	The cleaning of the parts, lines, and gauges associated with oxygen breathing systems has historically involved Freon 113 because the chemical leaves no residue, evaporating completely. Freon 113 has now been replaced with trisodium phosphate and Navy Oxygen Clean (NOC) solvent (a silicated alkaline cleaner) at TRF shops in which oxygen systems are cleaned.
Use Safety-Kleen parts washers (PPR Number 58)	Safety-Kleen parts washers are used in many shops across the base to clean greasy parts. Safety-Kleen fluid is contained and reused in each unit and is periodically changed and disposed of offsite by company representatives. These washers eliminate the use and disposal of solvent cleaners that would have been used to accomplish the same cleaning tasks.
Install barrier covers at drydock sandblasting area (PPR Number 59)	Covers have been installed through TRF around sandblast areas in the drydock to contain blowing sand and blast debris such as paint chips.
Recycle metal chips (PPR Number 60)	TRF is procuring metal bins with covers for containerizing metal chips and excluding rainwater. This prevents the generation of an additional waste stream in the form of contaminated water.
Control hazardous material through AUL management (PPR Number 61)	Through the use of authorized use lists, the base issues hazardous materials only to authorized users and places controls through higher-level approval.
Replace waterfall paint booths with dry booths (PPR Number 62)	Both TRF and SWFLANT have replaced water curtain paint booths with dry, filtered booths to eliminate the production of contaminated wastewater.
Eliminate chromate-containing grease with chromate-free substitute (PPR Number 63)	Greases containing chromate compounds have been replaced at TRF shops with a chromate-free substitute.
Substitute less hazardous cleaners for 1,1,1-trichloroethane (PPR Number 64)	SWFLANT is currently using Buckeye Blue and Bioact 113 as substitutes for 1,1,1-trichloroethane-based cleaners and is actively investigating other less-hazardous substitutes.

Notes: PPR = pollution prevention recommendation.
TRF = TRIDENT Refit Facility.
SWFLANT = Strategic Weapons Facility Atlantic.
NSB = Naval Submarine Base.

Table 8-2
Pollution Prevention Recommendations

Pollution Prevention Plan
Naval Submarine Base
Kings Bay, Georgia

Title	PPR Number	Numeric Reduction Goal (percent)	Potential Waste Reduction (pounds)	Human Health Impact	Environmental Impact	Cost Impact	Tenant Command Affected			
							TTF	TRF	SUBASE	SWFLANT
HIGH-IMPACT RECOMMENDATIONS										
Mechanically dewater lime slurry	13								X	
a. with disposal		37.5	4,500,000	0	0	High				
b. with beneficial reuse		100	12,000,000	0	+	High				
Substitute high-absorbency materials for current absorbent materials	18	30.4	20,500	0	+	Low			X	
Use drum liners	41	79.4	20,930	0	+	Low	X	X	X	X
Purchase an aqueous parts washer for Light and Heavy End Maintenance, Building 2007	54	96 5	15,460	0	+	Low			X	
Use plural component spray equipment	3	80	11,269	+	+	Low		X		
Recycle machine tool coolant	9	90	15,691	0	+	Med		X		
Recycle automotive and diesel engine coolant	8	98.6	9,251	0	+	Low			X	X
Use a rotary kiln thermal-processing unit to recycle blast media	25	100	1,412,000	0	+	High		X	X	
Ultrafiltrate spent water-based machine tool coolant prior to disposal	44	90	15,691	0	+	Low		X		
Concentrate spent water-based machine tool coolant prior to disposal	47	90	15,691	0	+	Low		X		
Use a rotary kiln thermal-processing unit to recover lime from potable water treatment	21	90	10,800,000	0	+	High			X	
Sludge composting	24	100	1,460,000	+	+	Low			X	
Deactivate OBA canisters	27	96.9	40,677	0	+	Medium	X			
Depressurize aerosol cans	17	77.9	6,521	0	+	Low	X	X	X	X
Implement epoxy powder coating	15	87 2	4,100	+	+	Low		X		

See notes at end of table

Table 8-2 (Continued)
Pollution Prevention Recommendations

Pollution Prevention Plan
Naval Submarine Base
Kings Bay, Georgia

Title	PPR Number	Numeric Reduction Goal (percent)	Potential Waste Reduction (pounds)	Human Health Impact	Environmental Impact	Cost Impact	Tenant Command Affected			
							TTF	TRF	SUBASE	SWFLANT
Reuse desiccant	34	90	19,200	0	+	Low	X	X		X
Design a customized two-part epoxy paint dispenser	30	71	2,244	+	+	Low		X		
Substitute oil-based paints with latex enamel paints	2	5.8	2,000	+	+	Low		X		
Convert to vegetable oil machine tool coolant	36	100	17,434	+	+	Low		X		
Utilize electrostatic spray application for enamel paints	29	80	1,132	+	+	Low		X		
Remove paint with carbon dioxide blast media	12	60	864,000	0	+	High		X	X	
Substitute permanent oil filters for disposable oil filters	7	100	11,496	0	+	High			X	X
Replace solvent-based vapor degreaser and paint/plastisol strip tank with citrus-based solutions	38	64	3,360	+	+	Low		X		
Use launderable (cloth) rags	46	96	9,155	0	+	Low	X	X	X	X
MODERATE-IMPACT RECOMMENDATIONS										
Substitute toolmaker's dye remover with Simple Green	4	0	-4,270	+	-	Low		X	X	X
Use hydraulic fluid recovery stand during hydraulic equipment testing	19	82	653	0	+	Low		X		
Substitute existing cutting fluid with Cool Tool-II™	6	100	950	+	+	Low	X	X	X	X
Use HVLP spray equipment	11	50	300	+	+	Low		X		

See notes at end of table

Table 8-2 (Continued)
Pollution Prevention Recommendations

Pollution Prevention Plan
Naval Submarine Base
Kings Bay, Georgia

Title	PPR Number	Numeric Reduction Goal (percent)	Potential Waste Reduction (pounds)	Human Health Impact	Environmental Impact	Cost Impact	Tenant Command Affected			
							TTF	TRF	SUBASE	SWFLANT
Eliminate use of R-11 (freon) in Thermal and Compressed Air Plant	40	0	0	+	+	High			X	
Use drum compactors	23	0	0	0	0	Medium		X	X	X
Convert oil emulsifiers to new non-persistent oil emulsifiers	26	0	0	0	0	Low			X	
Employ biological controls, or Integrated Pest Management (IPM), to replace aerial pesticide spraying in dredge spoil areas	37	0	0	+	+	Low			X	
Consolidate the Thermal and Compressed Air Plant's painting activities with Zone Paint Shop, Building 2010	39	NA	NA	+	+	NA			X	
Segregate paint waste	42	0	0	0	0	Low	X	X	X	X
Concentrate oily water	45	0	0	0	0	Low			X	
Consolidate liquid waste streams for bulk handling	50	4.5	4,180	0	0	Low	X	X	X	X
Use alkaline rechargeable batteries	51	64	1,262	0	+	Low	X	X	X	X
Substitute roof repair materials	52	0	0	+	+	Low			X	

Notes: PPR = pollution prevention recommendation.
% = percent.
TTF = TRIDENT Training Facility.
TRF = TRIDENT Refit Facility.
SUBASE = Submarine Base.
SWFLANT = Strategic Weapons Facility Atlantic.
OBA = oxygen breathing apparatus
HVLP = high-volume low-pressure

SYMBOLS.

+ = positive impact to human health or the environment
0 = no impact to human health or the environment.
- = negative impact to human health or the environment
X = denotes impact to work center(s) within a tenant command
Low = initial capital expense is less than $50,000.
Medium = initial capital expense is between $50,000 and $100,000
High = initial capital expense is greater than $100,000.
NA = not applicable

Table 8-3
Future Pollution Prevention Recommendations

Pollution Prevention Plan
Naval Submarine Base
Kings Bay, Georgia

Title	Reason
Destruction of Navy hazardous wastes by supercritical water oxidation (PPR Number 33)	Supercritical water oxidation is a feasible technology to treat organic waste streams, but the volume of organic wastes generated by NSB Kings Bay is not large enough to economically justify a treatment plant for the base A joint venture to consolidate waste streams between the bases in the Jacksonville area would make this technology a viable solution for managing wastes
Convert to supercritical carbon dioxide cleaning (PPR Number 1)	The technology is not well tested Supercritical carbon dioxide would be substituted for Freon 113, which is currently used to clean critical onboard systems. The two systems where this technology may be beneficial are cleaning the oxygen system and cleaning the hydraulic reservoirs associated with the missiles.
Use a thermal destruction system for post-run torpedo maintenance waste (PPR Number 10)	The technology treats a waste stream not yet generated at NSB Kings Bay. The cleaning of post-run torpedoes is presently done Navy-wide by immersing a torpedo in a bath of mineral spirits and preservative. The bath then becomes contaminated with cyanide-bearing waste. Thermal treatment would regenerate the bath for reuse, eliminating the current one-time use and disposal method. This technology should be implemented if NSB Kings Bay begins post-run torpedo maintenance.
Recover Mare Island epoxy coating system solvent (PPR Number 14)	At this time, recovery of solvent would not be possible with a distillation unit because the still bottoms would consist primarily of epoxy paint that would set up. The dried epoxy would ruin the heat transfer mechanism and cause problems with cleaning the unit As technology improves, this option should be re-examined.
Treat bilge and tank cleaning solution (PPR Number 16)	Recovery of bilge tank cleaning and derusting solution (which would contain triethanolamine and citric acid) should be implemented when the base begins to clean bilge tanks. The recoverable solution is used primarily on aged tanks or bilges that require derusting in addition to cleaning. Submarines stationed at NSB Kings Bay are relatively new to the Fleet and do not require this type of cleaning yet.
Replace petroleum-based corrosion preventative compounds (PPR Number 20)	Many pieces of equipment used in the industrial work centers have uncoated milled steel work surfaces At the present time, work center personnel use rags to apply oil to these surfaces to control corrosion The PPR is to use a product that would have superior wear characteristics or be environmentally inert No such product has been identified, to date; however, the base may want to investigate further.
Convert vehicle fleet to natural gas (PPR Number 32)	The Navy is presently making this conversion on bases located in nonattainment areas (NSB Kings Bay is not in a nonattainment area). The Clean Air Act requires the Navy to take steps to reduce air emissions in nonattainment areas. This is an expensive process, and it is estimated to cost NSB Kings Bay in excess of $6 million to implement. The base may opt to investigate phasing in alternative fuel vehicles.

Notes: PPR = pollution prevention recommendation.

Table 8-4
Strategic Initiatives

Pollution Prevention Plan
Naval Submarine Base
Kings Bay, Georgia

Title	Discussion
Centralize supply issue points (PPR Number 5)	This PPR is intended to minimize stockpiling of hazardous materials in work centers by creating local storage and issue centers for hazardous materials. Minimization of stockpiled materials reduces the likelihood that material will exceed its shelf life and have to be disposed of prior to use. This idea was prompted by a recurring comment received from work center environmental coordinators.
Institute demolition and disaster debris segregation plan (PPR Number 22)	Currently, NSB Kings Bay disposes of construction and disaster debris in bulk at the Camden County municipal landfill The base should create and implement a plan to segregate waste and store it until an offbase recycler can remove it Types of construction and disaster debris that can be recycled include wood, steel, aluminum, HVAC components, and copper wire.
Improve the use of HAZMART on base (PPR Number 35)	HAZMART, the hazardous materials reutilization center, is a facility where work centers can send unwanted materials or can requisition materials HAZMART's coverage extends not only to NSB Kings Bay, but to numerous bases along the east coast. If a work center requisitions a material that is not in HAZMART's inventory, then HAZMART can check with other installations to see if the material is available. HAZMART personnel estimate that approximately $1,000,-000 were saved in procurement and disposal costs in 1994 Only 20 work centers at NSB Kings Bay used HAZMART's services in 1994.
Introduce just-in-time techniques to Lockheed's planner department (PPR Number 43)	Work performed by LMSC work centers in SWFLANT are scheduled by an offsite planning department. Planners do not take into account existing stock at the base when ordering supplies. LMSC's planning department should be re-structured to optimize the planning and scheduling function.
Consolidate like wastes from all tenant commands (PPR Number 48)	Consolidation of like wastes occurs only within each tenant command. To further reduce the cost of disposal, like wastes should be consolidated across tenant commands. This would reduce the number of drums used at the storage and transfer facility. In turn, the cost of disposal, which is based on weight, and the cost of purchasing additional drums would decrease Implementation would require the BOSC to change its billing practices to reflect (1) actual weight disposed of from each tenant command, and (2) actual price per pound per waste stream.
Order materials through the Navy Stock System using CAGE and part number (PPR Number 49)	In the Navy stock system, materials are ordered by NSN The exact material received is dependent on what is currently in stock. Frequently, a work center is issued a material that is not preferred by work center personnel for performance or constituent content reasons. As a result, the material is either not used and discarded as hazardous waste, or it is used, but results in productivity loss. Work center personnel can order the exact material desired if, in addition to NSN, the CAGE number and Part Number Indicator is included. Implementation of this PPR requires a change in the requisition form.

Notes PPR = pollution prevention recommendation.
NSB = Naval Submarine Base.
HVAC = heating, ventilation, and air conditioning.
LMSC = Lockheed Missiles and Space Company.
SWFLANT = Strategic Weapons Facility Atlantic.
BOSC = base operating services contractor.
NSN = National Stock System.
CAGE = commercial and government entity.
DOD = Department of Defense.

generated waste streams. A qualitative assessment of the impacts to the environment are described for each PPR. In addition, the potential for mismanagement was also evaluated for some PPRs.

Technical analysis evaluates the technical feasibility of modifying a process, substituting a product, or altering a product. To assess the technical feasibility of each PPR, ABB-ES personnel visited specific work centers to discuss the practical feasibility of each recommendation with work center personnel and, later, with equipment manufacturers. During work center visits, physical measurements were taken and utility requirements (i.e., location of hook-ups or the availability of natural gas, water, electricity, and the supply of carbon dioxide) were noted to evaluate the feasibility for the PPR. Also, the volume of waste generated by each process and work center was considered, and a calculation was performed to determine whether enough waste was being generated to justify the proposed technology.

Total cost analysis employs the USEPA software, P2/Finance (USEPA 1994) to perform a cost analysis for each PPR. P2/Finance has USEPA's approval and was selected to perform the cost analysis at NSB Kings Bay because it contains the elements required by a total cost accounting system (i.e., baseline or operating costs, capital costs, revenue, and cash flow).

Baseline costs estimate the costs associated with current operating procedures. The elements included in the baseline costs for this P2 plan are: direct labor, utilities, raw material costs, and waste management. Secondary costs such as regulatory compliance costs, permitting, and regulatory reporting (e.g., EPCRA) are estimated where appropriate. Future liability costs have been excluded from this P2 plan. In excluding liability costs from the baseline cost estimate, the cost-benefit analysis may underestimate the benefits that could be achieved by various PPRs.

Output from P2/Finance includes simple payback calculation, net present value (NPV), internal rate of return (IRR), and a 15-year cash flow summary. The financial analysis for each PPR is contained in Appendix C. Because P2/Finance was designed for commercial uses, several assumptions were made to make the cost calculations meaningful for a Federal facility. These assumptions are detailed in Table 8-5.

Implementation issues identify factors that impact the ability to implement each PPR. A plan of action and milestones (POA&M) illustrates the schedule for PPR implementation and the party responsible for completing each milestone.

8.3 DEVELOPMENT OF POLLUTION PREVENTION RECOMMENDATIONS. The PPRs contained in the P2 plan are the outgrowth of detailed analyses of various processes and waste streams and in-depth interviews with NSB Kings Bay work center personnel. The steps used in developing the 64 PPRs are listed below.

Step 1: Analyze data collected during visits to various work centers to identify waste-reduction opportunities.

Step 2: Review human health factors that could be impacted (positively or negatively) by changing products or processes.

Step 3: Assess environmental factors that could be impacted (positively or negatively) by changing products, processes, or waste handling practices.

Step 4: Evaluate the technical feasibility of process changes or product substitution to reduce the amount of waste generated.

Step 5: Estimate the amount of waste reduced, assuming a recommendation is implemented.

Step 6: Calculate the total cost to implement each recommendation, comparing the operating cost of the current process to the operating and capital costs of the PPR.

Step 7: Prioritize the various PPRs based on the estimated amount of waste reduction.

In addition, research was conducted through the Pollution Prevention Information Clearinghouse (PPIC), the Pollution Prevention and Toxics Division of the U.S. Environmental Protection Agency, and an intensive search of technical bulletins.

Work center personnel made significant contributions to the development of the recommendations. The most notable contribution was by Mr. Chuck Hiott, 31F, TRF, who suggested building a hydraulic fluid recovery cart (PPR Number 19).

8.4 POTENTIAL BARRIERS TO IMPLEMENTATION. Barriers to implementation of PPRs often involve economic and organizational obstacles that can change, inhibit, and halt pollution prevention efforts. After a review of many successful pollution prevention programs, it was determined that their success resulted from removal of economic and organizational obstacles. Some of the more common barriers to implementing a pollution prevention program are:

- capital required to purchase equipment,
- cost of implementation (training, retrofitting, etc.),
- impact on output (downtime of production lines),
- incompatibility with existing supply and procurement procedures,
- resistance to changing existing policies and procedures,
- reluctance to use new products (e.g., cutting fluid substitutes),
- failure to consider the long-term cost of "doing business as usual" (e.g., long-term environmental and human health costs), and
- decentralized decision making and lack of commitment.

In addition to the barriers listed above, the absence of an incentive program can be a significant obstacle to the successful implementation of a pollution prevention program. Because the base tracks waste generation at the base level

Table 8-5
P2/Finance Assumptions by Line Item

Pollution Prevention Plan
Naval Submarine Base
Kings Bay, Georgia

Line Item Input for P2/Finance	Assumption	Reason
Sales tax	NSB Kings Bay does not pay State of Georgia sales tax	NSB Kings Bay is a Federal facility and, as such, is not required to pay State sales tax.
Waste management costs (pretreatment, onsite handling, storage, and treatment, hauling, insurance, and disposal)	Costs allocated by DRMO back to the tenant commands include all waste management line item costs	The BOSC proportions costs by disposal and storage. Disposal costs are the actual, aggregated costs of manifesting and hauling waste offbase. Storage costs are divided between TCA storage and Part B storage Storage costs include pretreatment, onsite handling, storage, treatment, and insurance.
Direct labor cost	The direct labor cost for NSB Kings Bay hourly employees is $15.00 per hour Twenty dollars per hour is used for salaried employees.	Tenant command Environmental Program Managers were asked to furnish a direct labor cost to be used in the recommendations. Fifteen dollars per hour was the amount given to ABB-ES Individual contractor labor rates were not provided (neither loaded nor unloaded).
Insurance	Insurance costs are zero.	NSB Kings Bay is a Federal facility; therefore, it is not required to carry insurance at the installation level at this time. It is under the umbrella of the Federal government.
Revenues - sale of product	Revenues on sales of product are zero.	NSB Kings Bay is not selling anything.
Equity, percentage	All projects are 100 percent financed with equity.	As a Federal facility, NSB Kings Bay is not able to obtain debt financing; therefore, all financing is provided by annual funds.
Debt, percentage	No project is financed with debt.	As a Federal facility, NSB Kings Bay is funded year-to-year. Debt financing is not available.
Operating period, years	The operating period of a recommendation is 15 years.	Unless otherwise indicated by vendors, a 15-year operating period is assumed to be acceptable
Income tax rate, percentage	Income tax rate is zero.	As a Federal facility, the installation is not Federally taxed.
Escalation rate, percentage	Escalation (inflation) rate is 5 percent per year.	Inflation cannot be predicted; therefore, 5 percent is used as a conservative estimate.

See notes at end of table.

Table 8-5 (Continued)
P2/Finance Assumptions By Line Item

Pollution Prevention Plan
Naval Submarine Base
Kings Bay, Georgia

Line Item Input for P2/Finance	Assumption	Reason
Cost of Capital, percentage (Discount Rate)	Cost of capital is 7 percent	The Office of Management and Budget (OMB) determines the cost of capital for Federal facilities. Currently, the rate is 7 percent. This rate is meant to be an average rate useful over several years.
Overhead, percentage of Total Labor	Overhead as a percent of Total Labor is included in the labor burden percentage.	NSB Kings Bay combined overhead and labor burden to derive the 1.24 multiplier.
Labor Burden, percentage of Total Labor.	Labor burden as a percent of total labor is 24 percent.	The 1.24 multiplier was supplied by NSB Kings Bay and includes fringe.

Notes. NSB = Naval Submarine Base
DRMO = Defense Reutilization and Marketing Office.
BOSC = base operating services contractor.
TCA = temporary collection area.
NSB = Naval Submarine Base.
OMB = Office of Management and Budget
ABB-ES = ABB Environmental Services, Inc.

rather than at the tenant command or work center level, there is limited incentive for individual work centers to reduce or eliminate waste. Recognizing work centers that are leaders in waste reduction efforts is an effective way to provide incentives.

Finally, DOD has begun to use financial measures such as "return on investment" as a way to prioritize environmental initiatives. Few investments have the potential to yield cumulative returns similar to those identified in the 64 PPRs presented in this P2 plan.

8.5 INNOVATIVE TECHNOLOGIES. In Executive Order 12856, DOD has encouraged the use of innovative technologies that are cost effective and environmentally beneficial. Four technologies were selected based on the following environmental, technical, and economic factors.

- **Pollution prevention**
  - volume of waste reduced
  - human health impacts
  - environmental impacts
- **Technical feasibility**
  - applicability to waste streams
  - engineering and controls
  - compatibility
- **Total costs**
  - initial investment
  - labor savings and costs
  - operating costs
  - raw material savings and costs

Each of the following technologies meets the environmental, technical, and economic factors listed above and can lead to pollution prevention at the various tenant commands.

Plural component spray equipment represents a new advance from conventional paint application methods. The result is an 80 percent reduction in the amount of waste generated annually. The internal rate of return is approximately 102 percent.

A pesticide reduction program significantly reduces (with potential to eliminate) the use of pesticides to control mosquitos and other insects. This technology uses the integrated pest management (IPM) concept employing repellent and beneficial plants as well as biological control organisms to eliminate adult insects and destroy larvae. The result is a 2,000-gallon (100 percent) reduction in the use of pesticides at the base's dredge spoil areas. IPM can also be successfully employed over the entire base.

Electrostatic powder coating systems offer an alternative to liquid, solvent-based coatings that result in significantly less emissions of volatile organic compounds and hazardous air pollutants. This innovative process will reduce energy consumption and hazardous waste generation. The result is an 80 percent reduction in waste volume.

Ethylene glycol recycling represents an innovative way to reuse and recycle the ethylene glycol in antifreeze. Using "Kleer-Flo Recycler" technology removes particulates and restores anticorrosion additives.

Critical fluid technology has been identified as a promising solvent alternative to chlorofluorocarbons (CFCs) for a variety of precision-cleaning applications, primarily because of its low operating cost, low toxicity, non-flammability, and environmental acceptability. Bench scale studies have been completed and further testing is ongoing to determine its acceptance for cleaning precision machined parts and small electrical devices. This technology is emerging and should be re-assessed in the future.

Much of the work performed by TTF, TRF, SUBASE, and SWFLANT involves maintenance and repair of equipment and vehicles. Consequently, the P2 plan focuses on innovative technologies that address maintenance and repair processes that span the four tenant commands. After evaluating 502 processes at 237 work centers, three areas emerged as high potential for reducing waste generation: paint operations, pest control, and vehicle maintenance. These are areas where innovative technologies can lead to significant improvement in pollution prevention.

Additional information on emerging and innovative technologies can be obtained from the U.S. Environmental Protection Agency Risk Reduction Engineering Laboratory in Cincinnati, Ohio.

9.0 TRAINING AND INCENTIVE PROGRAM

9.1 TRAINING PROGRAM. Pollution prevention standards, including the American Society for Testing and Materials Draft Standard E50.03.1, OPNAVINST 5090.1B, and the Navy Shore Installation Pollution Prevention Planning Guide (Engineering Science, 1994), recommend that pollution prevention plans include training and incentive programs that are implemented concurrently.

Training is required to ensure that all levels of personnel expected to contribute to the successful execution of the P2 plan are made familiar with Navy and other Federal and local requirements. The expected outcome of the training program is an increase in active participation in the pollution prevention program as well as increased environmental awareness.

As part of the development of the pollution prevention training program for NSB Kings Bay, a preliminary needs assessment was conducted. Training course content, target audience, and training implementation were assessed. ABB-ES personnel evaluated established course materials and interviewed TTF and TRF course instructors and students to discover the content of environmental or hazardous materials management training courses currently taught at NSB Kings Bay, whether the courses were successful, and what additional training was needed.

Currently, the Hazardous Material Worker class is taught to NSB Kings Bay hazardous waste coordinators, who are then expected to train their staff on hazardous waste handling skills. The 8-hour course, which is offered rather than the OSHA 40-hour training, contains sections on hazardous waste properties, health and environmental effects, personal safety, hazardous waste identification, hazardous waste minimization, hazardous waste handling, contingency planning, and small spill response.

The major insights gained from the preliminary needs assessment are summarized below.

- The Hazardous Material Worker class covers a large amount of material in eight hours. Although students would like more time in the classroom, instructors recommend that a training course run no longer than eight hours.
- All employees, especially employees who handle hazardous waste, should receive pollution prevention training, not just hazardous waste coordinators.
- Course instructors should be well-trained and familiar with the course material.
- Students find practical examples helpful.
- Students feel that practical pollution prevention information covered in the course would be reinforced by take-home materials such as personal workbooks or posters that could be displayed in the shops. Students feel that take-home materials are useful for future reference and guidance.

Based on the preliminary needs assessment, ABB-ES personnel concluded that, as opposed to revising the existing Hazardous Material Worker class, a new course specific to pollution prevention needs to be developed to fulfill the objectives of the P2 plan. The Hazardous Material Worker class covers hazardous waste minimization, but this is only a subset of pollution prevention. In addition, hazardous waste minimization is one of eight sections covered in eight hours, which suggests that the instructors would only be able to present broad concepts.

This new pollution prevention course, which was developed concurrently with the P2 plan and the incentive program, is described below.

9.1.1 Profile of Target Audience The course is designed for presentation to small groups (10 to 20 people). The primary audience will be work center personnel who handle hazardous materials. The secondary audience will be non-technical work center personnel who may not handle hazardous materials but need to be aware of the pollution prevention program.

Participants should have successfully completed the hazard communication course specific to their tenant command prior to this training and should be able to identify hazardous waste.

9.1.2 Schedule The course is divided into six sections (see Appendix D) presented consecutively. The course is expected to require approximately three hours, including videotape modules and completion of a course evaluation form by the participants.

9.1.3 Format The course consists of classroom presentation, videotape presentation, and group discussion. Appendix D contains the training course materials.

Attachment I contains the instructor's workbook with lesson plans.

Attachment II contains the overhead presentation materials.

Attachment III contains the participant's workbook.

Attachment IV contains the video script.

Attachment V contains a description of the pollution prevention incentive program.

Attachment VI contains an 8 1/2-by-11-inch version of the straight edge that will be provided to participants.

A video script was prepared to augment the training program. Development of the script into videotape is the responsibility of NSB Kings Bay. As currently scripted, the videotape presentation is divided into three modules and parallels the organization of the instruction presented in the lesson plans. Each module is designed to be 5 to 7 minutes long and uses voice-over narration with supporting visuals. The purpose of the videotape modules is to stimulate interest in pollution prevention, provide factual information specific to NSB Kings Bay, and motivate active participation in the pollution prevention program.

9.1.4 **Instructors** Success of the training program is directly related to the skill of the instructors and their familiarity with the training material. Instructors should have a solid background in hazardous waste regulations, Navy standards and regulations, and the NSB Kings Bay P2 plan. Instructors should be curriculum development experts and have professional certification through the Navy or some other accredited institution.

9.1.5 **Evaluation** The instructor will ask participants to complete a short course evaluation form at the completion of the presentation. Results of these forms will be valuable for future course modifications or improvements. The course evaluation form is included in the participant's workbook (Attachment III to Appendix D).

9.1.6 **Implementation** Implementation of the training program should be the responsibility of TTF because of the qualified pool of instructors. Funding and approval for this training should be sought from Commander Naval Education and Training (CNET). If this is pursued, the content of the training program has been approved; however, the format of the training program may have to be revised to meet Navy training guidelines.

9.2 **INCENTIVE PROGRAM**. Individual or group incentive programs are useful in cultivating employees' awareness of the importance of the pollution prevention program and their role in the program.

To develop the incentive program, existing incentive programs were evaluated and a questionnaire was distributed to NSB Kings Bay personnel from a variety of work centers. Responses to the questionnaire are summarized below.

- About half of the respondents were aware of incentive programs at NSB Kings Bay.
- Respondents who were aware of incentive programs named or described the Beneficial Suggestion (BeneSug) program.
- Respondents ranked cash rewards the highest when asked to rank potential rewards by how well they would motivate the respondent to submit a suggestion. A letter of commendation in the personnel file and a certificate of award tied for second place, and public recognition was ranked the lowest. Other rewards suggested by respondents were tax-free cash rewards, free meals, and time-off with pay.
- Respondents ranked the importance of parts of an incentive program as follows:

  1. good communication of the program to potential participants,
  2. suitable rewards,
  3. ease of participation (e.g., simple forms),
  4. recognition of all participants,
  5. clear program goals, and
  6. encouragement to participate by supervisors.

Although NSB Kings Bay already has an Incentive Awards and Beneficial Suggestion Program (SUBASEINST 12451.3), a pollution prevention-specific incentive program is necessary for the reasons discussed below.

The Beneficial Suggestion Program solicits suggestions for ways the Navy can save money. Individuals who submit suggestions that result in tangible benefits to the Navy are rewarded with a percentage of the savings. This program provides the following definition of "suggestion."

> A suggestion proposes a way of improving procedures, products, services, etc. It may suggest a change in the way things are done and propose a new method or a new application of an old idea. Merely pointing out a difficulty or shortcoming without providing an answer is not a suggestion. Neither is a proposal in routine maintenance or everyday functions, such as repairing floor tile, keeping aisles clear, replacing light bulbs, ordering supplies, etc. A suggestion is an idea submitted in writing by one or more eligible persons (civilian or military) intended to achieve one or more of the following:
>
> - simplify or improve operations;
> - save time required to accomplish a task;
> - speed up production;
> - increase output and enhance productivity;
> - improve working conditions, procedures, operating methods or equipment, plant layouts and organizations;
> - save material and property;
> - save manpower or money;
> - promote health;
> - increase safety; or
> - improve morale through desirable and feasible personnel services that increase productivity.

Although certain components of the definition of suggestion would apply to pollution prevention (e.g., save material, promote health, and increase safety), an incentive program that solicits suggestions specifically geared toward preventing pollution will encourage eligible personnel to think about ways that they can be part of the solution.

In addition, under the Beneficial Suggestion Program, personnel are only rewarded for suggestions that are implemented and result in tangible benefits. The nature of pollution prevention requires everyone's attention and dedication; a program that awards all suggestions (given that they meet the criteria) will encourage more people to think about ways that they can contribute.

For NSB Kings Bay to receive the full benefits of the incentive program, it must be well communicated to potential participants. The incentive program will be described in the Pollution Prevention Training Program (Appendix D).

Successes of the Pollution Prevention Program should be communicated to base personnel. Methods might include tracking waste reduction with a public display (e.g., a thermometer on a billboard at the main base entrance) or a well publicized basewide celebration in 1999.

REFERENCES

ABB Environmental Services, Inc. (ABB-ES), 1992, Hazardous Waste Reduction Plan for Kings Bay Naval Submarine Base: prepared for Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), Charleston, South Carolina, March.

American Institute for Pollution Prevention, 1993, *A Primer For Financial Analysis of Pollution Prevention Projects*, with the assistance of James R. Aldrich, Department of Civil and Environmental Engineering, University of Cincinnati, Cincinnati, Ohio: published by Risk Reduction Engineering Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, Cincinnati, Ohio, EPA/600/R-93/059, April.

Commanding Officer (CO), (no date), Naval Submarine Base (NSB) Kings Bay. Orientation booklet, *Welcome to Naval Submarine Base, Kings Bay, Georgia*.

Department of Defense (DOD), 1993, Executive Order 12856 Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements: Memorandum from the Under Secretary of Defense John M. Deutch to Secretaries of the Military Departments, Under Secretary of Defense (Policy); Assistant Secretaries of Defense, Director, Defense Research and Engineering; Comptroller; General Counsel; Director, Defense Procurement; Inspector General; Assistants to the Secretary of Defense; and Directors of the Defense Agencies, December.

DOD, 1994, Implementing Guidance for Executive Order 12856: Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements, Attachment II: Memorandum from the Office of the Under Secretary of Defense Sherri Wasserman Goodman (Environmental Security) to Assistant Secretary of the Army (Installation Logistics & Environment), Assistant Secretary of the Navy (Installations and Environment), Assistant Secretary of the Air Force (Manpower/Reserve Affairs, Installations and Environment), and Directors, Defense Agencies, February.

Engineering-Science, Inc., 1994, Navy Shore Installation Pollution Prevention Planning Guide: Office of the Chief of Naval Operations, Fairfax, Virginia, October.

McHugh, R.T., 1990, "The Economics of Waste Minimization," in Freeman, *Hazardous Waste Minimization*: McGraw-Hill.

U.S. Environmental Protection Agency (USEPA), 1994, P2/Finance User's Manual, Pollution Prevention Financial Analysis and Cost Evaluation System for Lotus 1-2-3™ for DOS, Version 3.4a: USEPA, Pollution Prevention and Toxic Substances, EPA 742-B-94-003, January.

APPENDIX A

DIRECTIVES, REGULATIONS, AND POLICIES

GEORGIA HAZARDOUS WASTE MANAGEMENT ACT, OFFICIAL CODE OF GEORGIA ANNOTATED, SECTION 12-8-60, P. 653 (1992 AND SUPP. 1993)

which may be deemed relevant, under such conditions as the director may prescribe:

(18) To maintain an inventory of hazardous wastes within the state, including such information as location, identity, quantity, method of storage, rate of accumulation, disposal practices, and any other information which the director may deem necessary to administer and enforce this article;

(19) To exclude from regulation under this article the solid waste at any particular generating facility if it is determined that such solid waste does not pose a danger to human health or the environment;

(20) To establish hazardous waste management standards for the state, provided that they are in all cases not less stringent than those standards provided by the federal act;

(21) To take all necessary steps to ensure that the administration of this article is consistent with and equivalent to the provisions of the federal act and any standards, rules, or regulations promulgated thereunder toward the end that the State of Georgia shall have maximum control over hazardous waste management practices in this state; and

(22) To exercise all incidental powers necessary to carry out the purposes of this article.

(b) The powers and duties described in subsection (a) of this Code section may be exercised and performed by the director through such duly authorized agents and employees as he deems necessary and proper. (Ga. L. 1979, p. 1127, § 6; Ga. L. 1988, p. 727, § 3; Ga. L. 1992, p. 2234, § 5.)

Cross references. — Permits for disposal of radioactive wastes, § 31-13-7.

Editor's notes. — Ga. L. 1992, p. 2234, § 5, effective July 1, 1992, reenacted this Code section without change.

RESEARCH REFERENCES

Am. Jur. 2d. — 1 Am. Jur. 2d, Administrative Law, §§ 69-186. 63A Am. Jur. 2d, Public Officers and Employees, § 298 et seq.

C.J.S. — 67 C.J.S., Officers and Public Employees, §§ 190-210. 73 C.J.S., Public Administrative Law and Procedure, § 49 et seq.

12-8-65.1. Hazardous waste reduction plans; specific performance goals; biennial progress reports; rules and regulations.

(a) By not later than March 1, 1992, large quantity hazardous waste generators shall develop hazardous waste reduction plans and submit such plans to the director. At a minimum, the plans shall include:

(1) A written policy articulating upper management and corporate support for the generator's hazardous waste reduction plan and a commitment to implement plan goals;

(2) The scope and objectives of the plan, including the evaluation of technologies, procedures, and personnel training programs to ensure unnecessary hazardous waste is not generated and specific goals for hazardous waste reduction, based on what is technically and economically practical;

(3) Internal analysis of hazardous waste streams, with periodic hazardous waste reduction assessments, to review individual processes or facilities and other activities where hazardous waste may be generated and identify opportunities to reduce or eliminate hazardous waste generation. Such assessments shall evaluate data on the types, amount, and hazardous constituents of hazardous waste generated, where and why that hazardous waste was generated within the production process or other operations, and potential hazardous waste reduction and recycling techniques applicable to those hazardous wastes;

(4) Hazardous waste accounting systems that identify hazardous waste management costs and factor in liability, compliance, and oversight costs to the extent technically and economically practical;

(5) Employee awareness and training programs to involve employees in hazardous waste reduction planning and implementation to the maximum extent feasible;

(6) Institutionalization of the plan to ensure an ongoing effort as demonstrated by incorporation of the plan into management practice and procedures; and

(7) Implementation of technically and economically practical hazardous waste reduction options, including a plan for implementation.

(b) As part of each hazardous waste reduction plan developed under subsection (a) of this Code section, each large quantity hazardous waste generator shall establish specific performance goals for the reduction of hazardous waste. Wherever technically and economically practical, the specific performance goals established under this subsection shall be expressed in numeric terms. If the establishment of numeric performance goals is not practical, the performance goals shall include a clearly stated list of objectives designed to lead to the establishment of numeric goals as soon as practical. Each large quantity hazardous waste generator shall explain the rationale for each performance goal. The rationale for a particular performance goal shall address any impediments to hazardous waste reduction, including but not limited to the following:

(1) The availability of technically practical hazardous waste reduction methods, including any anticipated changes in the future;

(2) Previously implemented reductions of hazardous waste; and

(3) The economic practicability of available hazardous waste reduction methods, including any anticipated changes in the future.

(c) Examples of situations where hazardous waste reduction may not be economically practical as provided for in paragraph (3) of subsection (b) of this Code section include but are not limited to:

(1) For valid reasons of priority, a particular company may choose first to address other more serious hazardous waste reduction concerns;

(2) Necessary steps to reduce hazardous waste are likely to have significant adverse impacts on product quality; or

(3) Legal or existing contractual obligations interfere with the necessary steps that would lead to hazardous waste reduction.

(d) All large quantity hazardous waste generators shall complete biennially a hazardous waste reduction progress report. A biennial progress report shall:

(1) Analyze and quantify progress made, if any, in hazardous waste reduction, relative to each performance goal established under subsection (b) of this Code section; and

(2) Set forth amendments to the hazardous waste reduction plan and explain the need for the amendments.

(e) The board may adopt and promulgate such rules and regulations as may be necessary to further define and implement the provisions of this Code section and Code Section 12-8-65.2, provided such rules and regulations are supplemental to and not in conflict with this Code section and Code Section 12-8-65.2. (Code 1981, § 12-8-65.1, enacted by Ga. L. 1990, p. 1427, § 2; Ga. L. 1992, p. 2234, § 5.)

Effective date. — This Code section became effective July 1, 1990.

Code Commission notes. — Pursuant to § 28-9-5, in 1990, ". Such" was substituted for "; such" in the middle of paragraph (3) of subsection (a), and a comma was deleted following "programs" in paragraph (5) of subsection (a).

Editor's notes. — Ga. L. 1992, p. 2234, § 5, effective July 1, 1992, reenacted this Code section without change.

12-8-65.2. Updating plans and reports; technical assistance; information available to public.

(a) All large quantity hazardous waste generators shall complete and submit to the director a hazardous waste reduction plan on or before March 1, 1992. The plans shall be updated and progress reported on a biennial basis thereafter. The first updated biennial report shall be due

RESEARCH REFERENCES

Am. Jur. 2d. — 21 Am. Jur. 2d, Criminal Law, §§ 14, 576, 577, 599-601.
C.J.S. — 22 C.J.S., Criminal Law, §§ 19, 21, 34-39. 22B C.J.S., Criminal Law, § 2002.

12-8-83. Use of material mixed with dioxin or other hazardous waste for dust suppression or road treatment prohibited.

The use of waste or used oil or other material which is contaminated or mixed with dioxin or any other hazardous waste as defined in this article, other than a waste identified as a hazardous waste solely on the basis of ignitibility, for dust suppression or road treatment is prohibited. (Code 1981, § 12-8-83, enacted by Ga. L. 1985, p. 266, § 11; Ga. L. 1992, p. 2234, § 5.)

The 1992 amendment, effective July 1, 1992, substituted "ignitibility" for "ignitability".

PART 2

HAZARDOUS SITE RESPONSE

Effective date. — This part became effective July 1, 1992.

12-8-90. Short title.

This part shall be known and may be cited as the "Georgia Hazardous Site Response Act." (Code 1981, § 12-8-90, enacted by Ga. L. 1992, p. 2234, § 5.)

12-8-91. Declaration of policy and legislative intent.

(a) It is declared to be the public policy of the State of Georgia, in furtherance of its responsibility to protect the public health, safety, and well-being of its citizens and to protect and enhance the quality of its environment, to require corrective action for releases of hazardous wastes, hazardous constituents, and hazardous substances, without regard to when such releases may have occurred, into the environment that may pose a threat to human health or the environment and to provide incentives for the reduction of the amount of hazardous wastes generated or managed in the state. Additionally, the purpose of this part is to reduce the generation of hazardous wastes in this state and to encourage hazardous waste generators, prior to considering landfill disposal, to consider the following measures in descending order of preference:

(1) Reduce the amount of wastes generated through improvement in industrial processes;

(2) Isolate hazardous materials from mixtures in which they occur;

(3) Reuse and recycle wastes in accordance with state and federal requirements;

(4) Transfer wastes through clearing-houses so that they may be recycled in industrial processes;

(5) Detoxify or neutralize wastes into less harmful substances or destroy such wastes; and

(6) Store hazardous waste residues in aboveground facilities using encapsulation and monitoring.

(b) The General Assembly declares its intent to fund the execution of the public policy set forth in subsection (a) of this Code section by and through the division with the fees established and collected by the division pursuant to subsection (e) of Code Section 12-2-2, subsection (e) of Code Section 12-8-39, subsection (d) of Code Section 12-8-68, and Code Section 12-8-95.1. The General Assembly further declares its intent to ensure that the funding provided by fees on hazardous waste management activities and by owners and operators of solid waste disposal facilities pursuant to those Code sections and through the collection of civil penalties will not be diverted for any purpose other than the administration of this article by the division, the prevention of pollution, including reduction of hazardous wastes generated, and the effectuation of corrective action at sites that may threaten human health or the environment where hazardous wastes, hazardous constituents, or hazardous substances have been disposed of or released. Appropriation of funds to the department for inclusion in the hazardous waste trust fund continued in existence by subsection (a) of Code Section 12-8-95 shall be deemed consistent with this declaration of legislative intent. (Code 1981, § 12-8-91, enacted by Ga. L. 1992, p. 2234, § 5.)

12-8-92. Definitions.

Unless otherwise defined in this part, the definition of all terms included in Code Section 12-8-62 shall be applicable to this part. As used in this part, the term:

(1) "Corrective action contractor" means any person contracting with the division to perform any activities authorized to be paid from the hazardous waste trust fund.

(2) "Environment" means:

(A) The navigable waters, the waters of the contiguous zone, and the ocean waters of which the natural resources are under the exclu-

12-8-110. Venue and jurisdiction.

Any action to protect or enforce any rights under this article and any action brought against the authority shall be brought in the Superior Court of Fulton County; and such court shall have exclusive, original jurisdiction of such actions. (Ga. L. 1981, p. 462, § 6.)

12-8-111. Legal services by Attorney General.

The Attorney General shall provide legal services for the authority, and in connection therewith, Code Sections 45-15-13 through 45-15-16 shall be fully applicable. (Ga. L. 1981, p. 462, § 11.)

12-8-112. Supplemental nature of article.

This article shall be deemed to provide an additional and alternative method for the doing of things authorized thereby and shall be regarded as supplemental and additional to powers conferred by the Constitution and laws of Georgia and shall not be regarded as in derogation of any powers existing as of March 23, 1981. (Ga. L. 1981, p. 462, § 12.)

12-8-112.1. State policy.

It is the policy of the State of Georgia that priority in state hazardous waste management programs be given to source reduction. The authority shall plan and develop programs and activities to encourage and facilitate source reduction efforts. The authority is authorized to charge for the use of its facilities and its services so as to further this policy. (Code 1981, § 12-8-112.1, enacted by Ga. L. 1988, p. 1934, § 3; Ga. L. 1990, p. 1983, § 2; Ga. L. 1991, p. 1740, § 6.)

The 1990 amendment, effective April 16, 1990, divided the former single sentence so as to constitute the present first - and third sentences, added the second sentence, and made related stylistic changes.

The 1991 amendment, effective April 22, 1991, rewrote this Code section.

12-8-112.2. Assignment of authority to Office of Planning and Budget.

The authority is assigned to the Office of Planning and Budget for administrative purposes. The Office of Planning and Budget is authorized to provide such staff and other administrative services as may be needed by the authority. (Code 1981, § 12-8-112.2, enacted by Ga. L. 1988, p. 1934, § 3.)

POLLUTION PREVENTION ACT OF 1990, TITLE 42, UNITED STATES CODE ANNOTATED, SECTION 13101, U.S. GPO 1994

SUBCHAPTER VI—TREATMENT FOR JUVENILE OFFENDERS WHO ARE VICTIMS OF CHILD ABUSE OR NEGLECT [REPEALED]

§§ 13051 to 13055. Repealed. Pub.L. 102–586, § 2(i)(2), Nov. 4, 1992, 106 Stat. 5015

HISTORICAL AND STATUTORY NOTES

Section 13051, Pub.L. 101–647, Title II, § 251, Nov. 29, 1990, 104 Stat. 4814, authorized grants for treatment of juvenile offenders who were victims of child abuse and neglect.

Section 13052, Pub.L. 101–647, Title II, § 252, Nov. 29, 1990, 104 Stat. 4815, subjected administration of this subchapter to requirements of sections 5665a, 5673 and 5676 of this title.

Section 13053, Pub.L. 101–647, Title II, § 253, Nov. 29, 1990, 104 Stat. 4815, related to priorities in awarding of grants.

Section 13054, Pub.L. 101–647, Title II, § 254, Nov. 29, 1990, 104 Stat. 4815, authorized appropriations for grant program.

Section 13055, Pub.L. 101–647, Title II, § 255, Nov. 29, 1990, 104 Stat. 4815, defined terms for this subchapter.

Effective Date of Repeal

Section 2(1), (2) of Pub.L. 102–586 provided in part that repeal of sections 13051 to 13055 of this title was to take effect Sept. 30, 1993.

CHAPTER 133—POLLUTION PREVENTION

§ 13101. Findings and policy

(a) Findings

The Congress finds that:

(1) The United States of America annually produces millions of tons of pollution and spends tens of billions of dollars per year controlling this pollution.

(2) There are significant opportunities for industry to reduce or prevent pollution at the source through cost-effective changes in production, operation, and raw materials use. Such changes offer industry substantial savings in reduced raw material, pollution control, and liability costs as well as help protect the environment and reduce risks to worker health and safety.

(3) The opportunities for source reduction are often not realized because existing regulations, and the industrial resources they require for compliance, focus upon treatment and disposal, rather than source reduction; existing regulations do not emphasize multi-media management of pollution; and businesses need information and technical assistance to overcome institutional barriers to the adoption of source reduction practices.

(4) Source reduction is fundamentally different and more desirable than waste management and pollution control. The Environmental Protection Agency needs to address the historical lack of attention to source reduction.

(5) As a first step in preventing pollution through source reduction, the Environmental Protection Agency must establish a source reduction program which collects and disseminates information, provides financial assistance to States, and implements the other activities provided for in this chapter

(b) Policy

The Congress hereby declares it to be the national policy of the United States that pollution should be prevented or reduced at the source whenever feasible; pollution that cannot be prevented should be recycled in an environmentally safe manner, whenever feasible; pollution that cannot be prevented or recycled should be treated in an environmentally safe manner whenever feasible; and disposal or other release into the environment should be employed only as a last resort and should be conducted in an environmentally safe manner.

(Pub.L. 101–508, Title VI, § 6602, Nov. 5, 1990, 104 Stat. 1388–321.)

HISTORICAL AND STATUTORY NOTES

References in Text

This chapter, referred to in subsec. (a)(5), was in the original "this subtitle", meaning subtitle F (§§ 6501, 6601–6610) of title VI of Pub.L. 101–508, which is classified generally to this chapter. For complete classification of subtitle F to the Code, see Short Title note set out under this section and Tables.

Short Title

Section 6601 of Pub.L. 101–508 provided that: "This subtitle [subtitle F (§§ 6501, 6601–6610) of title VI of Pub.L. 101–508, enacting this chapter and section 4370c of this title] may be cited as the 'Pollution Prevention Act of 1990'."

Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements

For provisions requiring that all necessary actions be taken for the prevention of pollution with respect to the activities and facilities of each Federal agency, and for ensuring each such agency's compliance with pollution prevention and emergency planning and community right-to-know provisions established pursuant to all implementing regulations issued pursuant to chapters 116[section 11001 et seq.] and 133[section 13101 et seq.] of this title, and additional provisions for implementation, agency coordination, compliance, exemptions, etc., see Ex. Ord. No. 12856, Aug. 3, 1993, 58 F.R. 41981, set out as a note under section 11001 of this title.

Legislative History

For legislative history and purpose of Pub.L. 101–508 see 1990 U.S.Code Cong. and Adm. News, p. 2017.

LAW REVIEW COMMENTARIES

From elephants to mice: The development of EBMUD's program to control small source wastewater discharges. Raoul Stewardson, 20 Ecology L.Q. 441 (1993).

§ 13102. Definitions

For purposes of this chapter—

(1) The term "Administrator" means the Administrator of the Environmental Protection Agency.

(2) The term "Agency" means the Environmental Protection Agency.

(3) The term "toxic chemical" means any substance on the list described in section 11023(c) of this title.

(4) The term "release" has the same meaning as provided by section 11049(8) of this title.

(5)(A) The term "source reduction" means any practice which—

(i) reduces the amount of any hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released into the environment (including fugitive emissions) prior to recycling, treatment, or disposal; and

(ii) reduces the hazards to public health and the environment associated with the release of such substances, pollutants, or contaminants.

The term includes equipment or technology modifications, process or procedure modifications, reformulation or redesign of products, substitution of raw materials, and improvements in housekeeping, maintenance, training, or inventory control.

(B) The term "source reduction" does not include any practice which alters the physical, chemical, or biological characteristics or the volume of a hazardous substance, pollutant, or contaminant through a process or activity which itself is not integral to and necessary for the production of a product or the providing of a service.

(6) The term "multi-media" means water, air, and land.

(7) The term "SIC codes" refers to the 2-digit code numbers used for classification of economic activity in the Standard Industrial Classification Manual.

(Pub.L. 101-508, Title VI, § 6603, Nov. 5, 1990, 104 Stat. 1388-321.)

HISTORICAL AND STATUTORY NOTES

References in Text

This chapter, referred to in provision preceding par. (1), was in the original "this subtitle", meaning subtitle F (§§ 6501, 6601-6610) of title VI of Pub.L. 101-508, which is classified generally to this chapter. For complete classification of subtitle F to the Code, see Short Title note set out under section 13101 of this title and Tables.

Legislative History

For legislative history and purpose of Pub.L. 101-508, see 1990 U.S.Code Cong. and Adm. News, p. 2017.

LAW REVIEW COMMENTARIES

From elephants to mice: The development of EBMUD's program to control small source wastewater discharges. Raoul Stewardson, 20 Ecology L.Q. 441 (1993).

§ 13103. EPA Activities

(a) Authorities

The Administrator shall establish in the Agency an office to carry out the functions of the Administrator under this chapter. The office shall be independent of the Agency's single-medium program offices but shall have the authority to review and advise such offices on their activities to promote a multi-media approach to source reduction. The office shall be under the direction of such officer of the Agency as the Administrator shall designate.

(b) Functions

The Administrator shall develop and implement a strategy to promote source reduction. As part of the strategy, the Administrator shall—

(1) establish standard methods of measurement of source reduction;

(2) ensure that the Agency considers the effect of its existing and proposed programs on source reduction efforts and shall review regulations of the Agency prior and subsequent to their proposal to determine their effect on source reduction;

(3) coordinate source reduction activities in each Agency Office [1] and coordinate with appropriate offices to promote source reduction practices in other Federal agencies, and generic research and development on techniques and processes which have broad applicability;

(4) develop improved methods of coordinating, streamlining and assuring public access to data collected under Federal environmental statutes;

(5) facilitate the adoption of source reduction techniques by businesses. This strategy shall include the use of the Source Reduction Clearinghouse and State matching grants provided in this chapter to foster the exchange of information regarding source reduction techniques, the dissemination of such information to businesses, and the provision of technical assistance to businesses. The strategy shall also consider the capabilities of various businesses to make use of source reduction techniques;

(6) identify, where appropriate, measurable goals which reflect the policy of this chapter, the tasks necessary to achieve the goals, dates at which the principal tasks are to be accomplished, required resources, organizational responsibilities, and the means by which progress in meeting the goals will be measured;

(8) [2] establish an advisory panel of technical experts comprised of representatives from industry, the States, and public interest groups, to advise the Administrator on ways to improve collection and dissemination of data;

(9) establish a training program on source reduction opportunities, including workshops and guidance documents, for State and Federal permit issuance, enforcement, and inspection officials working within all agency program offices [3]

(10) identify and make recommendations to Congress to eliminate barriers to source reduction including the use of incentives and disincentives;

(11) identify opportunities to use Federal procurement to encourage source reduction;

(12) develop, test and disseminate model source reduction auditing procedures designed to highlight source reduction opportunities; and

(13) establish an annual award program to recognize a company or companies which operate outstanding or innovative source reduction programs.

(Pub.L. 101–508, Title VI, § 6604, Nov. 5, 1990, 104 Stat. 1388–322.)

[1] So in original. Probably should not be capitalized.

[2] So in original. Subsec. (b) enacted without a par. (7).

[3] So in original. The period probably should be a semicolon.

HISTORICAL AND STATUTORY NOTES

References in Text

This chapter, referred to in subsecs. (a) and (b)(5), (6), was in the original "this subtitle", meaning subtitle F (§§ 6501, 6601–6610) of title VI of Pub.L. 101–508, which is classified generally to this chapter. For complete classification of subtitle F to the Code, see Short Title note set out under section 13101 of this title and tables.

Legislative History

For legislative history and purpose of Pub.L. 101–508, see 1990 U.S.Code Cong. and Adm. News, p. 2017.

§ 13104. Grants to States for State technical assistance programs

(a) General authority

The Administrator shall make matching grants to States for programs to promote the use of source reduction techniques by businesses.

(b) Criteria

When evaluating the requests for grants under this section, the Administrator shall consider, among other things, whether the proposed State program would accomplish the following:

(1) Make specific technical assistance available to businesses seeking information about source reduction opportunities, including funding for experts to provide onsite technical advice to business [1] seeking assistance and to assist in the development of source reduction plans.

(2) Target assistance to businesses for whom lack of information is an impediment to source reduction.

(3) Provide training in source reduction techniques. Such training may be provided through local engineering schools or any other appropriate means.

(c) Matching funds

Federal funds used in any State program under this section shall provide no more than 50 per centum of the funds made available to a State in each year of that State's participation in the program.

(d) Effectiveness

The Administrator shall establish appropriate means for measuring the effectiveness of the State grants made under this section in promoting the use of source reduction techniques by businesses.

(e) Information

States receiving grants under this section shall make information generated under the grants available to the Administrator.

(Pub.L. 101–508, Title VI, § 6605, Nov. 5, 1990, 104 Stat. 1388– 23.)

[1] So in original. Probably should be "businesses".

HISTORICAL AND STATUTORY NOTES

Legislative History

For legislative history and purpose of Pub.L. 101–508, see 1990 U.S.Code Cong. and Adm. News, p. 2017.

§ 13105. Source Reduction Clearinghouse

(a) Authority

The Administrator shall establish a Source Reduction Clearinghouse to compile information including a computer data base which contains information on management, technical, and operational approaches to source reduction. The Administrator shall use the clearinghouse to—

(1) serve as a center for source reduction technology transfer;

(2) mount active outreach and education programs by the States to further the adoption of source reduction technologies; and

(3) collect and compile information reported by States receiving grants under section 13104 of this title on the operation and success of State source reduction programs.

(b) Public availability

The Administrator shall make available to the public such information on source reduction as is gathered pursuant to this chapter and such other pertinent information and analysis regarding source reduction as may be available to the Administrator. The data base shall permit entry and retrieval of information to any person.

(Pub.L. 101–508, Title VI, § 6606, Nov. 5, 1990, 104 Stat. 1388–324.)

HISTORICAL AND STATUTORY NOTES

References in Text

This chapter, referred to in subsec. (b), was in the original "this subtitle", meaning subtitle F (§§ 6501, 6601–6610) of title VI of Pub.L. 101–508, which is classified generally to this chapter. For complete classification of this Act to the Code, see Short Title note set out under section 13101 of this title and Tables.

Legislative History

For legislative history and purpose of Pub.L. 101–508, see 1990 U.S.Code Cong. and Adm. News, p. 2017.

§ 13106. Source reduction and recycling data collection

(a) Reporting requirements

Each owner or operator of a facility required to file an annual toxic chemical release form under section 11023 of this title for any toxic chemical shall include with each such annual filing a toxic chemical source reduction and recycling report for the preceeding [1] calendar year. The toxic chemical source reduction and recycling report shall cover each toxic chemical required to be reported in the annual toxic chemical release form filed by the owner or operator under section 11023(c) of this title. This section shall take effect with the annual report filed under section 11023 of this title for the first full calendar year beginning after November 5, 1990.

(b) Items included in report

The toxic chemical source reduction and recycling report required under subsection (a) of this section shall set forth each of the following on a facility-by-facility basis for each toxic chemical:

(1) The quantity of the chemical entering any waste stream (or otherwise released into the environment) prior to recycling, treatment, or disposal during the calendar year for which the report is filed and the percentage change from the previous year. The quantity reported shall not include any amount reported under paragraph (7). When actual measurements of the quantity of a toxic chemical entering the waste streams are not readily available, reasonable estimates should be made based on best engineering judgment.

(2) The amount of the chemical from the facility which is recycled (at the facility or elsewhere) during such calendar year, the percentage change from the previous year, and the process of recycling used.

(3) The source reduction practices used with respect to that chemical during such year at the facility. Such practices shall be reported in accordance with the following categories unless the Administrator finds other categories to be more appropriate:

(A) Equipment, technology, process, or procedure modifications.

(B) Reformulation or redesign of products.

(C) Substitution of raw materials.

(D) Improvement in management, training, inventory control, materials handling, or other general operational phases of industrial facilities.

(4) The amount expected to be reported under paragraph [2] (1) and (2) for the two calendar years immediately following the calendar year for which the report is filed. Such amount shall be expressed as a percentage change from the amount reported in paragraphs (1) and (2).

(5) A ratio of production in the reporting year to production in the previous year. The ratio should be calculated to most closely reflect all activities involving the toxic chemical. In specific industrial classifications subject to this section, where a feedstock or some variable other than production is the primary influence on waste characteristics or volumes, the report may provide an index based on that primary variable for each toxic chemical. The Administrator is encouraged to develop production indexes to accommodate individual industries for use on a voluntary basis.

(6) The techniques which were used to identify source reduction opportunities. Techniques listed should include, but are not limited to, employee recommendations, external and internal audits, participative team management, and material balance audits. Each type of source reduction listed under paragraph (3) should be associated with the techniques or multiples of techniques used to identify the source reduction technique.

(7) The amount of any toxic chemical released into the environment which resulted from a catastrophic event, remedial action, or other one-time event, and is not associated with production processes during the reporting year.

(8) The amount of the chemical from the facility which is treated (at the facility or elsewhere) during such calendar year and the percentage change from the previous year. For the first year of reporting under this subsection, comparison with the previous year is required only to the extent such information is available.

(c) SARA Provisions

The provisions of sections 11042, 11045(c), and 11046 of this title shall apply to the reporting requirements of this section in the same manner as to the reports required under section 11023 of this title. The Administrator may modify the form required for purposes of reporting information under section 11023 of this title to the extent he deems necessary to include the additional information required under this section.

(d) Additional optional information

Any person filing a report under this section for any year may include with the report additional information regarding source reduction, recycling, and other pollution control techniques in earlier years.

(e) Availability of data

Subject to section 11042 of this title, the Administrator shall make data collected under this section publicly available in the same manner as the data collected under section 11023 of this title.

(Pub.L. 101–508, Title VI, § 6607, Nov. 5, 1990, 104 Stat. 1388–324.)

[1] So in original. Probably should be "preceding".

[2] So in original. Probably should be "paragraphs".

HISTORICAL AND STATUTORY NOTES

References in Text

SARA, referred to in the heading of subsec. (c), means the Superfund Amendments and Reauthorization Act of 1986, Pub.L. 99–499, Oct. 17, 1986, 100 Stat. 1613, as amended. For complete classification of this Act to the Code, see Short Title of 1986 Amendment note set out under section 9601 of this title.

Legislative History

For legislative history and purpose of Pub.L. 101–508, see 1990 U.S.Code Cong. and Adm. News, p. 2017.

§ 13107. EPA Report

(a) Biennial reports

The Administrator shall provide Congress with a report within eighteen months after November 5, 1990, and biennially thereafter, containing a detailed description of the actions taken to implement the strategy to promote source reduction developed under section 13103(b) of this title and of the results of such actions. The report shall include an assessment of the effectiveness of the clearinghouse and grant program established under this chapter in promoting the goals of the strategy, and shall evaluate data gaps and data duplication with respect to data collected under Federal environmental statutes.

(b) Subsequent reports

Each biennial report submitted under subsection (a) of this title after the first report shall contain each of the following:

(1) An analysis of the data collected under section 13106 of this title on an industry-by-industry basis for not less than five SIC codes or other categories as the Administrator deems appropriate. The analysis shall begin with those SIC codes or other categories of facilities which generate the largest quantities of toxic chemical waste. The analysis shall include an evaluation of trends in source reduction by industry, firm size, production, or other useful means. Each such subsequent report shall cover five SIC codes or other categories which were not covered in a prior report until all SIC codes or other categories have been covered.

(2) An analysis of the usefulness and validity of the data collected under section 13106 of this title for measuring trends in source reduction and the adoption of source reduction by business.

(3) Identification of regulatory and nonregulatory barriers to source reduction, and of opportunities for using existing regulatory programs, and incentives and disincentives to promote and assist source reduction.

(4) Identification of industries and pollutants that require priority assistance in multi-media source reduction [1]

(5) Recommendations as to incentives needed to encourage investment and research and development in source reduction.

(6) Identification of opportunities and development of priorities for research and development in source reduction methods and techniques.

(7) An evaluation of the cost and technical feasibility, by industry and processes, of source reduction opportunities and current activities and an identification of any industries for which there are significant barriers to source reduction with an analysis of the basis of this identification.

(8) An evaluation of methods of coordinating, streamlining, and improving public access to data collected under Federal environmental statutes.

(9) An evaluation of data gaps and data duplication with respect to data collected under Federal environmental statutes.

In the report following the first biennial report provided for under this subsection, paragraphs (3) through (9) may be included at the discretion of the Administrator.

(Pub.L. 101–508, Title VI, § 6608, Nov. 5, 1990, 104 Stat. 1388–326.)

[1] So in original. Probably should be followed by a period.

HISTORICAL AND STATUTORY NOTES

References in Text

Section 13103(b) of this title, referred to in subsec. (a), was in the original "section 4(b)" and was translated as reading "section 6604(b)", meaning section 6604(b) of Pub.L. 101–508, because Pub.L. 101–508 has no section 4 but section 6604(b) of Pub.L. 101–508 relates to development of a strategy to promote source reduction

This chapter, referred to in subsec. (a), was in the original "this subtitle", meaning subtitle F (§§ 6501, 6601–6610) of title VI of Pub.L. 101–508, which is classified generally to this chapter. For complete of subtitle F to the Code, see Short Title note set out under section 13101 of this title and Tables.

Codification

In subsec. (a), section 13103(b) of this title was in the original "section 4(b)" and was translated as reading "section 6604(b)", meaning section 6604(b) of Pub.L. 101–508, as the probable intent of Congress, because Pub.L. 101–508 has no

section 4 but section 6604(b) of Pub L. 101–508 relates to development of a strategy to promote source reduction.

Legislative History

For legislative history and purpose of Pub L. 101–508, see 1990 U.S.Code Cong. and Adm. News, p. 2017

§ 13108. Savings provisions

(a) Nothing in this chapter shall be construed to modify or interfere with the implementation of title III of the Superfund Amendments and Reauthorization Act of 1986 [42 U.S.C.A. § 11001 et seq.].

(b) Nothing contained in this chapter shall be construed, interpreted or applied to supplant, displace, preempt or otherwise diminish the responsibilities and liabilities under other State or Federal law, whether statutory or common.

(Pub.L. 101–508, Title VI, § 6609, Nov 5, 1990, 104 Stat. 1388–327.)

HISTORICAL AND STATUTORY NOTES

References in Text

This chapter, referred to in text, was in the original "this subtitle", meaning subtitle F (§§ 6501, 6601–6610) of title VI of Pub.L. 101–508, which is classified generally to this chapter. For complete classification of this Act to the Code, see Short Title note set out under section 13101 of this title and Tables.

Title III of the Superfund Amendments and Reauthorization Act of 1986, referred to in subsec. (a), is Title III (section 300 et seq.) of Pub.L. 99–499, Oct. 17, 1986, 100 Stat. 1728, known as the Emergency Planning and Community Right–To–Know Act of 1986, which is classified principally to chapter 116 (section 11001 et seq.) of this title. For complete classification of the Emergency Planning and Community Right–To–Know Act of 1986 to the Code, see Short Title note set out under section 11001 of this title and Tables.

Legislative History

For legislative history and purpose of Pub.L. 101–647, see 1990 U.S.Code Cong. and Adm. News, p. 2017.

§ 13109. Authorization of appropriations

There is authorized to be appropriated to the administrator $8,000,000 for each of the fiscal years 1991, 1992 and 1993 for functions carried out under this chapter (other than State Grants [1]), and $8,000,000 for each of the fiscal years 1991, 1992 and 1993, for grant programs to states issued pursuant to section 13104 of this title.

(Pub.L. 101–508, Title VI, § 6610, Nov. 5, 1990, 104 Stat. 1388–327.)

[1] So in original. Probably should not be capitalized.

HISTORICAL AND STATUTORY NOTES

References in Text

This chapter, referred to in text, was in the original "this subtitle", meaning subtitle F (§§6501, 6601–6610) of title VI of Pub.L. 101–508, which is classified generally to this chapter. For complete of subtitle F to the Code, see Short Title note set out under section 13101 of this title and Tables.

Legislative History

For legislative history and purpose of Pub.L. 101–508, see 1990 U.S.Code Cong. and Adm. News, p. 2017.

CHAPTER 134—ENERGY POLICY

EXECUTIVE ORDER 12856, TITLE 3, CODE OF FEDERAL REGULATIONS, 1993,
P. 616 (U.S. GOVERNMENT PRINTING OFFICE 1993)

Executive Order 12856 of August 3, 1993

Federal Compliance With Right-to-Know Laws and Pollution Prevention Requirements

WHEREAS, the Emerge .cy Planning and Community Right-to-Know Act of 1986 (42 U.S.C. 11001–11050) (EPCRA) established programs to provide the public with important information on the hazardous and toxic chemicals in their communities, and established emergency planning and notification requirements to protect the public in the event of a release of extremely hazardous substances;

WHEREAS, the Federal Government should be a good neighbor to local communities by becoming a leader in providing information to the public concerning toxic and hazardous chemicals and extremely hazardous substances at Federal facilities, and in planning for and preventing harm to the public through the planned or unplanned releases of chemicals;

WHEREAS, the Pollution Prevention Act of 1990 (42 U.S.C. 13101–13109) (PPA) established that it is the national policy of the United States that, whenever feasible, pollution should be prevented or reduced at the source; that pollution that cannot be prevented should be recycled in an environmentally safe manner; that pollution that cannot be prevented or recycled should be treated in an environmentally safe manner; and that disposal or other release into the environment should be employed only as a last resort and should be conducted in an environmentally safe manner;

WHEREAS, the PPA required the Administrator of the Environmental Protection Agency (EPA) to promote source reduction practices in other agencies;

WHEREAS, the Federal Government should become a leader in the field of pollution prevention through the management of its facilities, its acquisition practices, and in supporting the development of innovative pollution prevention programs and technologies;

WHEREAS, the environmental, energy, and economic benefits of energy and water use reductions are very significant; the scope of innovative pollution prevention programs must be broad to adequately address the highest-risk environmental problems and to take full advantage of technological opportunities in sectors other than industrial manufacturing; the Energy Policy Act of 1992 (Public Law 102–486 of October 24, 1992) requires the Secretary of Energy to work with other Federal agencies to significantly reduce the use of energy and reduce the related environmental impacts by promoting use of energy efficiency and renewable energy technologies; and

WHEREAS, as the largest single consumer in the Nation, the Federal Government has the opportunity to realize significant economic as well as environmental benefits of pollution prevention;

AND IN ORDER TO:

Ensure that all Federal agencies conduct their facility management and acquisition activities so that, to the maximum extent practicable, the quantity of toxic chemicals entering any wastestream, including any releases to the environment, is reduced as expeditiously as possible through source reduction; that waste that is generated is recycled to the maximum extent prac-

ticable; and that any wastes remaining are stored, treated or disposed of in a manner protective of public health and the environment;

Require Federal agencies to report in a public manner toxic chemicals entering any wastestream from their facilities, including any releases to the environment, and to improve local emergency planning, response, and accident notification; and

Help encourage markets for clean technologies and safe alternatives to extremely hazardous substances or toxic chemicals through revisions to specifications and standards, the acquisition and procurement process, and the testing of innovative pollution prevention technologies at Federal facilities or in acquisitions;

NOW THEREFORE, by the authority vested in me as President by the Constitution and the laws of the United States of America, including the EPCRA, the PPA, and section 301 of title 5, United States Code, it is hereby ordered as follows:

Section 1. *Applicability.*

1–101. As delineated below, the head of each Federal agency is responsible for ensuring that all necessary actions are taken for the prevention of pollution with respect to that agency's activities and facilities, and for ensuring that agency's compliance with pollution prevention and emergency planning and community right-to-know provisions established pursuant to all implementing regulations issued pursuant to EPCRA and PPA.

1–102. Except as otherwise noted, this order is applicable to all Federal agencies that either own or operate a "facility" as that term is defined in section 329(4) of EPCRA, if such facility meets the threshold requirements set forth in EPCRA for compliance as modified by section 3–304(b) of this order ("covered facilities"). Except as provided in section 1–103 and section 1–104 below, each Federal agency must apply all of the provisions of this order to each of its covered facilities, including those facilities which are subject, independent of this order, to the provisions of EPCRA and PPA (*e.g.*, certain Government-owned/contractor-operated facilities (GOCO's), for chemicals meeting EPCRA thresholds). This order does not apply to Federal agency facilities outside the customs territory of the United States, such as United States diplomatic and consular missions abroad.

1–103. Nothing in this order alters the obligations which GOCO's and Government corporation facilities have under EPCRA and PPA independent of this order or subjects such facilities to EPCRA or PPA if they are otherwise excluded. However, consistent with section 1–104 below, each Federal agency shall include the releases and transfers from all such facilities when meeting all of the Federal agency's responsibilities under this order.

1–104. To facilitate compliance with this order, each Federal agency shall provide, in all future contracts between the agency and its relevant contractors, for the contractor to supply to the Federal agency all information the Federal agency deems necessary for it to comply with this order. In addition, to the extent that compliance with this order is made more difficult due to lack of information from existing contractors, Federal agencies shall take practical steps to obtain the information needed to comply with this order from such contractors.

Sec. 2–2. *Definitions.*

2–201. All definitions found in EPCRA and PPA and implementing regulations are incorporated in this order by reference, with the following exception: for the purposes of this order, the term "person", as defined in section 329(7) of EPCRA, also includes Federal agencies.

2–202. *Federal agency* means an Executive agency, as defined in 5 U.S.C. 105. For the purpose of this order, military departments, as defined in 5 U.S.C. 102, are covered under the auspices of the Department of Defense.

2–203. *Pollution Prevention* means "source reduction," as defined in the PPA, and other practices that reduce or eliminate the creation of pollutants through: (a) increased efficiency in the use of raw materials, energy, water, or other resources; or (b) protection of natural resources by conservation.

2–204. *GOCO* means a Government-owned/contractor-operated facility which is owned by the Federal Government but all or portions of which are operated by private contractors.

2–205. *Administrator* means the Administrator of the EPA.

2–206. *Toxic Chemical* means a substance on the list described in section 313(c) of EPCRA.

2–207. *Toxic Pollutants.* For the purposes of section 3–302(a) of this order, the term "toxic pollutants" shall include, but is not necessarily limited to, those chemicals at a Federal facility subject to the provisions of section 313 of EPCRA as of December 1, 1993. Federal agencies also may choose to include releases and transfers of other chemicals, such as "extremely hazardous chemicals" as defined in section 329(3) of EPCRA, hazardous wastes as defined under the Resource Conservation and Recovery Act of 1976 (42 U.S.C. 6901–6986) (RCRA), or hazardous air pollutants under the Clean Air Act Amendments (42 U.S.C. 7403–7626); however, for the purposes of establishing the agency's baseline under 3–302(c), such "other chemicals" are in addition to (not instead of) the section 313 chemicals. The term "toxic pollutants" does not include hazardous waste subject to remedial action generated prior to the date of this order.

Sec. 3–3. *Implementation.*

3–301. *Federal Agency Strategy.* Within 12 months of the date of this order, the head of each Federal agency must develop a written pollution prevention strategy to achieve the requirements specified in sections 3–302 through 3–305 of this order for that agency. A copy thereof shall be provided to the Administrator. Federal agencies are encouraged to involve the public in developing the required strategies under this order and in monitoring their subsequent progress in meeting the requirements of this order. The strategy shall include, but shall not be limited to, the following elements:

(a) A pollution prevention policy statement, developed by each Federal agency, designating principal responsibilities for development, implementation, and evaluation of the strategy. The statement shall reflect the Federal agency's commitment to incorporate pollution prevention through source reduction in facility management and acquisition, and it shall identify an individual responsible for coordinating the Federal agency's efforts in this area.

(b) A commitment to utilize pollution prevention through source reduction, where practicable, as the primary means of achieving and maintaining

compliance with all applicable Federal, State, and local environmental requirements.

3–302. *Toxic Chemical Reduction Goals.* (a) The head of each Federal agency subject to this order shall ensure that the agency develops voluntary goals to reduce the agency's total releases of toxic chemicals to the environment and off-site transfers of such toxic chemicals for treatment and disposal from facilities covered by this order by 50 percent by December 31, 1999. To the maximum extent practicable, such reductions shall be achieved by implementation of source reduction practices.

(b) The baseline for measuring reductions for purposes of achieving the 50 percent reduction goal for each Federal agency shall be the first year in which releases of toxic chemicals to the environment and off-site transfers of such chemicals for treatment and disposal are publicly reported. The baseline amount as to which the 50 percent reduction goal applies shall be the aggregate amount of toxic chemicals reported in the baseline year for all of that Federal agency's facilities meeting the threshold applicability requirements set forth in section 1–102 of this order. In no event shall the baseline be later than the 1994 reporting year.

(c) Alternatively, a Federal agency may choose to achieve a 50 percent reduction goal for toxic pollutants. In such event, the Federal agency shall delineate the scope of its reduction program in the written pollution prevention strategy that is required by section 3–301 of this order. The baseline for measuring reductions for purposes of achieving the 50 percent reduction requirement for each Federal agency shall be the first year in which releases of toxic pollutants to the environment and off-site transfers of such chemicals for treatment and disposal are publicly reported for each of that Federal agency's facilities encompassed by section 3–301. In no event shall the baseline year be later than the 1994 reporting year. The baseline amount as to which the 50 percent reduction goal applies shall be the aggregate amount of toxic pollutants reported by the agency in the baseline year. For any toxic pollutants included by the agency in determining its baseline under this section, in addition to toxic chemicals under EPCRA, the agency shall report on such toxic pollutants annually under the provisions of section 3–304 of this order, if practicable, or through an agency report that is made available to the public.

(d) The head of each Federal agency shall ensure that each of its covered facilities develops a written pollution prevention plan no later than the end of 1995, which sets forth the facility's contribution to the goal established in section 3–302(a) of this order. Federal agencies shall conduct assessments of their facilities as necessary to ensure development of such plans and of the facilities' pollution prevention programs.

3–303. *Acquisition and Procurement Goals.* (a) Each Federal agency shall establish a plan and goals for eliminating or reducing the unnecessary acquisition by that agency of products containing extremely hazardous substances or toxic chemicals. Similarly, each Federal agency shall establish a plan and goal for voluntarily reducing its own manufacturing, processing, and use of extremely hazardous substances and toxic chemicals. Priorities shall be developed by Federal agencies, in coordination with EPA, for implementing this section.

(b) Within 24 months of the date of this order, the Department of Defense (DOD) and the General Services Administration (GSA), and other agencies,

as appropriate, shall review their agency's standardized documents, including specifications and standards, and identify opportunities to eliminate or reduce the use by their agency of extremely hazardous substances and toxic chemicals, consistent with the safety and reliability requirements of their agency mission. The EPA shall assist agencies in meeting the requirements of this section, including identifying substitutes and setting priorities for these reviews. By 1999, DOD, GSA and other affected agencies shall make all appropriate revisions to these specifications and standards.

(c) Any revisions to the Federal Acquisition Regulation (FAR) necessary to implement this order shall be made within 24 months of the date of this order.

(d) Federal agencies are encouraged to develop and test innovative pollution prevention technologies at their facilities in order to encourage the development of strong markets for such technologies. Partnerships should be encouraged between industry, Federal agencies, Government laboratories, academia, and others to assess and deploy innovative environmental technologies for domestic use and for markets abroad.

3–304. *Toxics Release Inventory/Pollution Prevention Act Reporting.* (a) The head of each Federal agency shall comply with the provisions set forth in section 313 of EPCRA, section 6607 of PPA, all implementing regulations, and future amendments to these authorities, in light of applicable guidance as provided by EPA.

(b) The head of each Federal agency shall comply with these provisions without regard to the Standard Industrial Classification (SIC) delineations that apply to the Federal agency's facilities, and such reports shall be for all releases, transfers, and wastes at such Federal agency's facility without regard to the SIC code of the activity leading to the release, transfer, or waste. All other existing statutory or regulatory limitations or exemptions on the application of EPCRA section 313 shall apply to the reporting requirements set forth in section 3–304(a) of this order.

(c) The first year of compliance shall be no later than for the 1994 calendar year, with reports due on or before July 1, 1995.

3–305. *Emergency Planning and Community Right-to-Know Reporting Responsibilities.* The head of each Federal agency shall comply with the provisions set forth in sections 301 through 312 of EPCRA, all implementing regulations, and future amendments to these authorities, in light of any applicable guidance as provided by EPA. Effective dates for compliance shall be: (a) With respect to the provisions of section 302 of EPCRA, emergency planning notification shall be made no later than 7 months after the date of this order.

(b) With respect to the provisions of section 303 of EPCRA, all information necessary for the applicable Local Emergency Planning Committee (LEPC's) to prepare or revise local Emergency Response Plans shall be provided no later than 1 year after the date of this order.

(c) To the extent that a facility is required to maintain Material Safety Data Sheets under any provisions of law or Executive order, information required under section 311 of EPCRA shall be submitted no later than 1 year after the date of this order, and the first year of compliance with section 312 shall be no later than the 1994 calendar year, with reports due on or before March 1, 1995.

(d) The provisions of section 304 of EPCRA shall be effective beginning January 1, 1994.

(e) These compliance dates are not intended to delay implementation of earlier timetables already agreed to by Federal agencies and are inapplicable to the extent they interfere with those timetables.

Sec. 4–4. *Agency Coordination.*

4–401. By February 1, 1994, the Administrator shall convene an Interagency Task Force composed of the Administrator, the Secretaries of Commerce, Defense, and Energy, the Administrator of General Services, the Administrator of the Office of Procurement Policy in the Office of Management and Budget, and such other agency officials as deemed appropriate based upon lists of potential participants submitted to the Administrator pursuant to this section by the agency head. Each agency head may designate other senior agency officials to act in his/her stead, where appropriate. The Task Force will assist the agency heads in the implementation of the activities required under this order.

4–402. Federal agencies subject to the requirements of this order shall submit annual progress reports to the Administrator beginning on October 1, 1995. These reports shall include a description of the progress that the agency has made in complying with all aspects of this order, including the pollution reductions requirements. This reporting requirement shall expire after the report due on October 1, 2001.

4–403. *Technical Advice.* Upon request and to the extent practicable, the Administrator shall provide technical advice and assistance to Federal agencies in order to foster full compliance with this order. In addition, to the extent practicable, all Federal agencies subject to this order shall provide technical assistance, if requested, to LEPC's in their development of emergency response plans and in fulfillment of their community right-to-know and risk reduction responsibilities.

4–404. Federal agencies shall place high priority on obtaining funding and resources needed for implementing all aspects of this order, including the pollution prevention strategies, plans, and assessments required by this order, by identifying, requesting, and allocating funds through line-item or direct funding requests. Federal agencies shall make such requests as required in the Federal Agency Pollution Prevention and Abatement Planning Process and through agency budget requests as outlined in Office of Management and Budget (OMB) Circulars A–106 and A–11, respectively. Federal agencies should apply, to the maximum extent practicable, a life cycle analysis and total cost accounting principles to all projects needed to meet the requirements of this order.

4–405. *Federal Government Environmental Challenge Program.* The Administrator shall establish a "Federal Government Environmental Challenge Program" to recognize outstanding environmental management performance in Federal agencies and facilities. The program shall consist of two components that challenge Federal agencies; (a) to agree to a code of environmental principles to be developed by EPA, in cooperation with other agencies, that emphasizes pollution prevention, sustainable development and state-of-the-art environmental management programs, and (b) to submit applications to EPA for individual Federal agency facilities for recognition as "Model Installations." The program shall also include a means for rec-

ognizing individual Federal employees who demonstrate outstanding leadership in pollution prevention.

Sec. 5–5. *Compliance.*

5–501. By December 31, 1993, the head of each Federal agency shall provide the Administrator with a preliminary list of facilities that potentially meet the requirements for reporting under the threshold provisions of EPCRA, PPA, and this order.

5–502. The head of each Federal agency is responsible for ensuring that such agency take all necessary actions to prevent pollution in accordance with this order, and for that agency's compliance with the provisions of EPCRA and PPA. Compliance with EPCRA and PPA means compliance with the same substantive, procedural, and other statutory and regulatory requirements that would apply to a private person. Nothing in this order shall be construed as making the provisions of sections 325 and 326 of EPCRA applicable to any Federal agency or facility, except to the extent that such Federal agency or facility would independently be subject to such provisions. EPA shall consult with Federal agencies, if requested, to determine the applicability of this order to particular agency facilities.

5–503. Each Federal agency subject to this order shall conduct internal reviews and audits, and take such other steps, as may be necessary to monitor compliance with sections 3–304 and 3–305 of this order.

5–504. The Administrator, in consultation with the heads of Federal agencies, may conduct such reviews and inspections as may be necessary to monitor compliance with sections 3–304 and 3–305 of this order. Except as excluded under section 6–601 of this order, all Federal agencies are encouraged to cooperate fully with the efforts of the Administrator to ensure compliance with sections 3–304 and 3–305 of this order.

5–505. Federal agencies are further encouraged to comply with all state and local right-to-know and pollution prevention requirements to the extent that compliance with such laws and requirements is not otherwise already mandated.

5–506. Whenever the Administrator notifies a Federal agency that it is not in compliance with an applicable provision of this order, the Federal agency shall achieve compliance as promptly as is practicable.

5–507. The EPA shall report annually to the President on Federal agency compliance with the provisions of section 3–304 of this order.

5–508. To the extent permitted by law and unless such documentation is withheld pursuant to section 6–601 of this order, the public shall be afforded ready access to all strategies, plans, and reports required to be prepared by Federal agencies under this order by the agency preparing the strategy, plan, or report. When the reports are submitted to EPA, EPA shall compile the strategies, plans, and reports and make them publicly available as well. Federal agencies are encouraged to provide such strategies, plans, and reports to the State and local authorities where their facilities are located for an additional point of access to the public.

Sec. 6–6. *Exemption.*

6–601. In the interest of national security, the head of a Federal agency may request from the President an exemption from complying with the pro-

visions of any or all aspects of this order for particular Federal agency facilities, provided that the procedures set forth in section 120(j)(1) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (42 U.S.C. 9620(j)(1)), are followed. To the maximum extent practicable, and without compromising national security, all Federal agencies shall strive to comply with the purposes, goals, and implementation steps set forth in this order.

Sec. 7–7. *General Provisions.*

7–701. Nothing in this order shall create any right or benefit, substantive or procedural, enforceable by a party against the United States, its agencies or instrumentalities, its officers or employees, or any other person.

WILLIAM J. CLINTON

THE WHITE HOUSE,
August 3, 1993.

Editorial note: For the President's statement on this order, see the *Weekly Compilation of Presidential Documents* (vol. 29, p. 1561).

Executive Order 12857 of August 4, 1993

Budget Control

By the authority vested in me as President of the United States by the Constitution and the laws of the United States of America, including section 1105 of title 31, United States Code, it is hereby ordered as follows:

Section 1. *Purpose.* The purpose of this order is to create a mechanism to monitor total costs of direct spending programs, and, in the event that actual or projected costs exceed targeted levels, to require that the budget address adjustments in direct spending.

Sec. 2. *Establishment of Direct Spending Targets.*

(a) *In General.* The initial direct spending targets for each of fiscal years 1994 through 1997 shall equal total outlays for all direct spending except net interest and deposit insurance as determined by the Director of the Office of Management and Budget (Director) under subsection (b).

(b) *Initial Report by Director.* (1) Not later than 30 days after the date of enactment of the Omnibus Budget Reconciliation Act of 1993 (OBRA), the Director shall submit a report to the Congress setting forth projected direct spending targets for each of fiscal years 1994 through 1997.

(2) The Director's projections shall be based on legislation enacted as of 5 days before the report is submitted under paragraph (1). To the extent feasible, the Director shall use the same economic and technical assumptions used in preparing the concurrent resolution on the budget for fiscal year 1994 (H.Con.Res. 64).

(c) *Adjustments.* Direct spending targets shall be subsequently adjusted by the Director under Section 6.

Sec. 3. *Annual Review of Direct Spending and Receipts by President.* As part of each budget submitted under section 1105(a) of title 31, United

APPENDIX B

DATABASE-RELATED INFORMATION

NSB KINGS BAY POLLUTION PREVENTION DATABASE USER GUIDE

ABOUT THE DATABASE SYSTEM

Overview

The Naval Submarine Base (NSB) Kings Bay Pollution Prevention database contains data on the work centers, processes, materials and wastes at NSB Kings Bay as it was used to produce the NSB Kings Bay Pollution Prevention Plan. This user guide is intended to allow a user to generate the data reports or to update the data contained in the database, if desired.

Data from the tenant commands, TRIDENT Refit Facility (TRF), TRIDENT Training Facility (TTF), Submarine Base (SUBASE), and Strategic Weapons Facility Atlantic (SWFLANT) have been divided into four separate databases. Each tenant command will need to be installed separately.

Disclaimer

The NSB Kings Bay database was developed by ABB Environmental Services, Inc. (ABB-ES) to internally manage the data collected during development of the pollution prevention (P2) plan and was never intended to be delivered as part of the P2 plan. Delivery of this database to NSB Kings Bay is beyond ABB-ES's original scope of work. Although ABB-ES will be unable to provide further support (e.g., maintenance, updates, revisions, changes, etc.) for the database under the current contract task order (CTO), this comprehensive user guide was prepared to assist Kings Bay personnel in using and updating information contained in the database as delivered. ABB-ES will not be responsible for changes made to the data or problems with the system that occur as a result of changes to the data or database system after its delivery under Contract #N062467-89-D-0317, CTO No. 043.

Installation

Each tenant command has been shipped on a separate disk. The space requirements for a tenant command are given on the installation disk.

To install the system, create a directory named PPP_xxx, where xxx is the three-letter abbreviation for that tenant command.

This code:	For this tenant command:
TRF	TRIDENT Refit Facility
TTF	TRIDENT Training Facility
SWF	Strategic Weapons Facility Atlantic
SUB	Submarine Base

Change to the directory that you just created and type:

A:INSTALL

The system will be installed in the current directory.

User Guide Organization

The system has been designed to present a consistent user interface during the various stages of data entry. This user guide will give instruction on menus and commands for each level of data entry, as follows:

- Initial Screens
- Tenant Command Level
  - Work Center Level
  - Process Level
  - Process Step Level
  - Materials and Wastes Level
- Queries
- Batch Reports

USING THE DATABASE SYSTEM

System Startup

Access the directory where the desired tenant command information has been installed. For example, type "cd c:\PPP_TRF". To start the database, type the appropriate three-letter code for the tenant command (see installation).

An introduction screen will be displayed while the system initializes. The user will be asked if the database should be indexed. Reindex the database if changes or deletions were made, or if a corruption error has occurred.

Helpful Background Information

This section contains general background information. For specific systems instructions go to B-6.

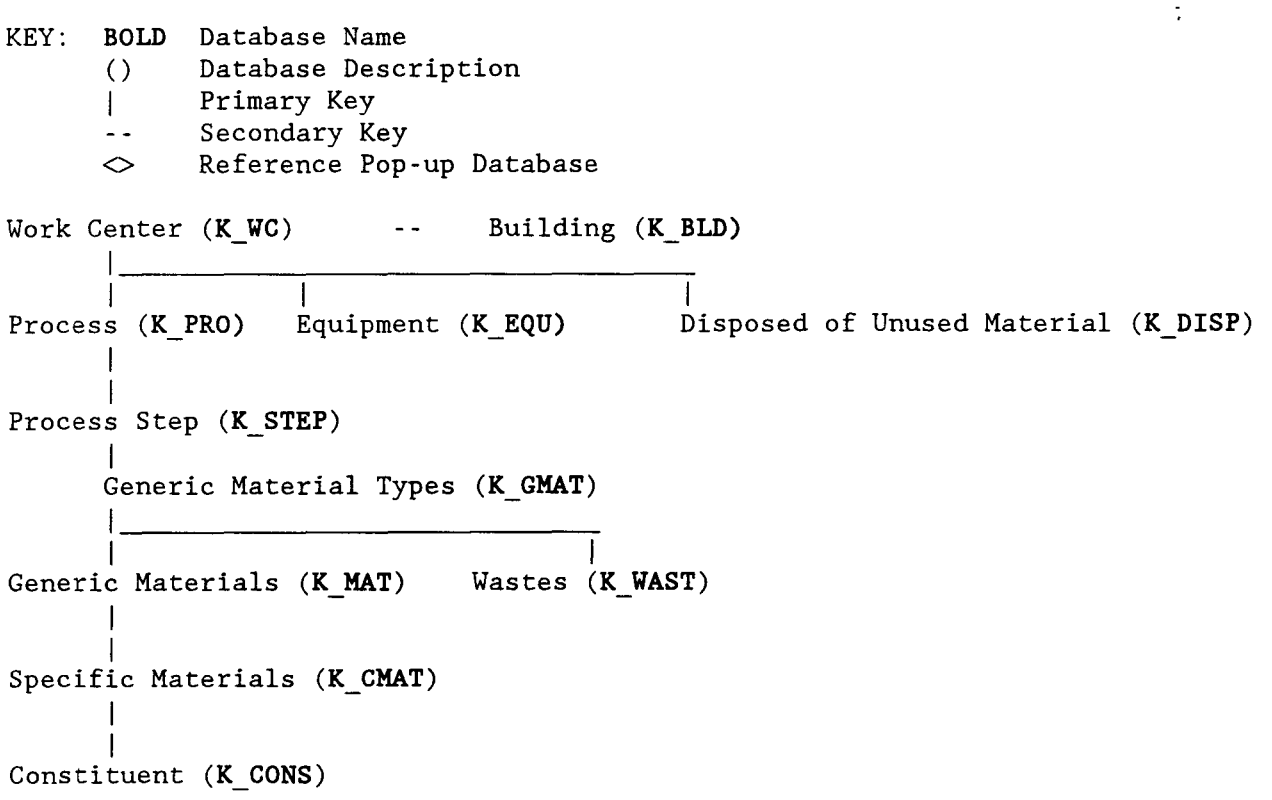
Screen Header

Each screen in the database has a header that displays the user's current position in the data structure. For example, at the work center level, the tenant command and selected work center name will be displayed.

Menu Bar

Each level has a main menu bar that shows the selections available at that level. The key information element for each level, or the element that the user must select to go to the next level, is always on the far left. The menu bar selection on the far right allows the user to return to the previous level. Other selections allow the user to access information at the same level.

Data Flow/Menu Schematic



Data Entry Reference Databases

Type Names (<K_STREAM>)
Manufacturers (<K_MANUF>) Material Trade Names (<K_TRADE>)

Parent-Child Relationship

Throughout this document there are references to a parent-child relationship to describe the integrations between two databases. In a parent-child relationship the child is wholly dependent on the parent. For example, a process is wholly dependent on a work center. The process is defined by the work center that it "belongs to" and cannot exist without it. The parent-child relationship is a one-to-many relation. One work center has many processes, much in the same way a parent may have many children. For example, processes and equipment are both the "children" of a work center, but each "child" is not dependent on other "siblings."

A second type of relationship is the relationship by a secondary key. Buildings and work centers are examples. A building may house many work centers, but the information in the work center database is not "dependent" on the building information.

There are also a number of "reference" databases in this system. The reference databases hold standard values for some fields. These databases are accessed by

pop-up windows in the data entry system. These databases have been built as interview information was entered to provide consistency between the packages (for example, refering to a manufacturer in a consistent fashion, e.g., ACME Inc. rather than ACME, ACME CO, or ACME Incorporated).

Moving to the Next Level

A controlling parent record selection must be made at each level before the user may proceed to the next level. For example, the user must select a tenant command to access the work center information for that tenant command.

Secondary Menu

Some menu bar selections have a secondary menu. The menu shown on Figure 1 will be displayed, although some of the options may not be available at every level (the system will indicate if the option is not available). The options available in the secondary menu only apply to the item selected from the menu bar.

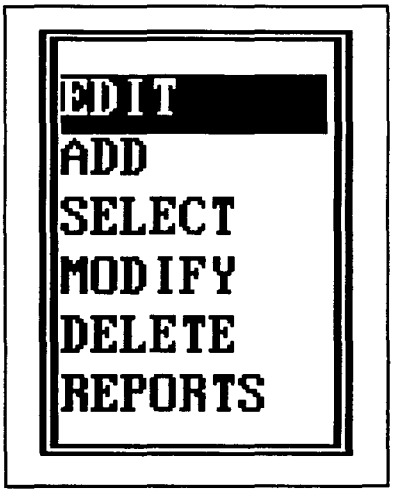


Figure 1. NSB Kings Bay Database System: Secondary Menu

Edit	Select and edit an item
Add	Create and select a new item
Select	Select an item as parent to the next level
Modify	Edit primary key information (password required). Note: Modifying a primary key of the parent (main) record modifies the primary keys of the child (related) records.
Delete	Delete a record (password required) Note: Deleting a parent (main) record causes all child (related) records to be deleted.
Reports	Select an available report (available reports are level-dependent)

Work Center / Process Selection Screens

In areas of the data entry system where the user must select a work center or process, the system presents a list of available information (see Figure 2).

Use the arrow keys to scroll up or down to view additional selections.

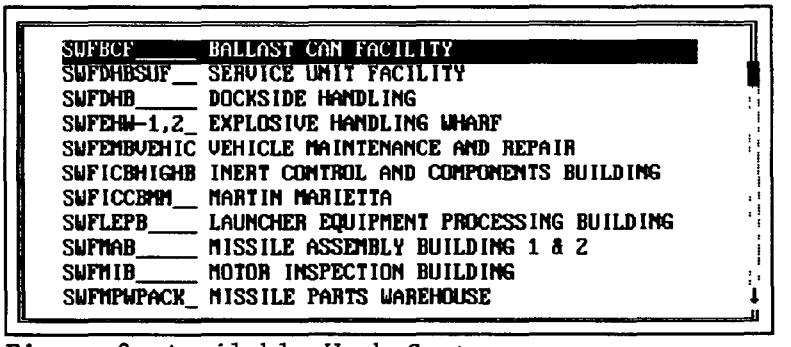


Figure 2 Available Work Centers

Save Options

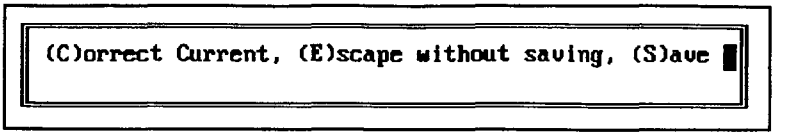
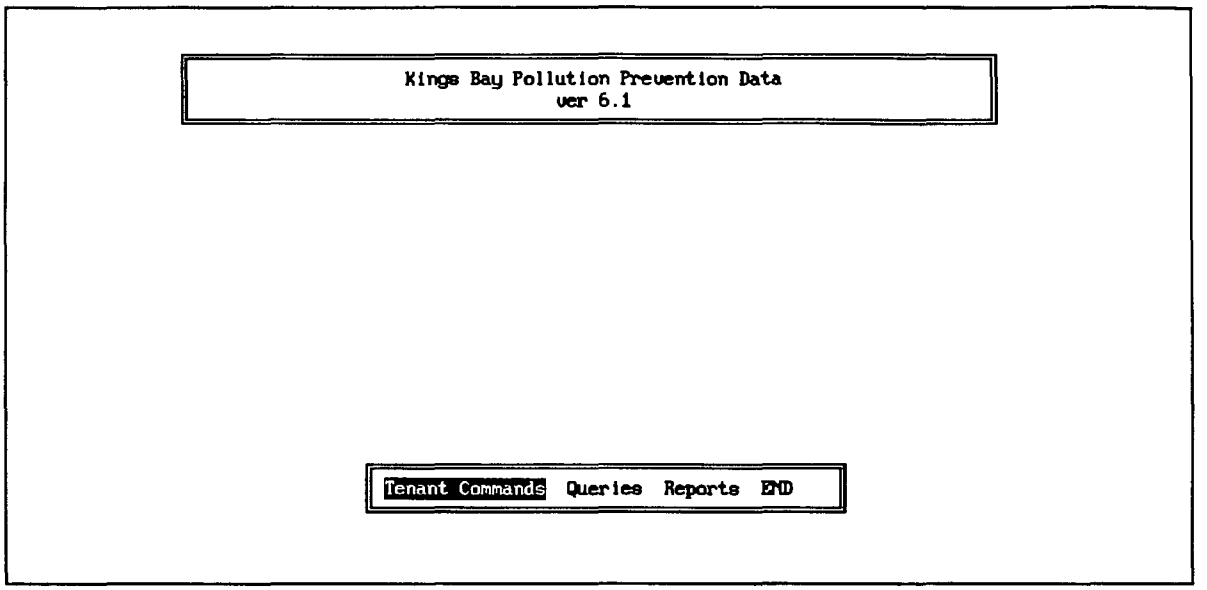


Figure 3. NSB Kings Bay Database System: Save Options

The Save Options menu is shown on Figure 3. While adding or editing a record, data entry can be ended by reaching the end of the data entry screen, pressing the escape key, or pressing the page down key. The user then has the option to continue the edits, exit without saving, or save the changes and exit.

Large Text Fields

A number of fields in the database are larger than they appear on the data entry screen. These fields will "scroll" when edited, allowing the user to enter the appropriate information. These fields are noted throughout this user guide as Scrolling Fields.



Initial Screen

While the database is starting up the user is asked if the data should be indexed. THE DATABASE MUST BE INDEXED THE FIRST TIME IT IS USED.

Indexing the data is a time-consuming operation, and only needs to be done periodically. If there is a problem with the data at any time, and the database or indexes become corrupted, the database should be indexed to correct the problem.

An example of the initial screen is shown on Figure 4. Use the left and right arrow keys to move through the menu bar, or enter the first letter of the desired action.

The menu bar selections are described below.

Tenant Commands allows the user to select a specific tenant command, discussed on page B-7.

Queries allows the user to perform queries on the database, discussed on page B-18.

Reports allows the user to produce batch reports, discussed on page B-20.

End returns the user to the DOS prompt.

TENANT COMMAND LEVEL

Tenant Command Selection

The database is organized by tenant command. After you select **Tenant Command** in the initial screen, the tenant command selection menu will appear, as shown in Figure 5. Use the up and down arrow keys to select the desired tenant command from the list and press enter.

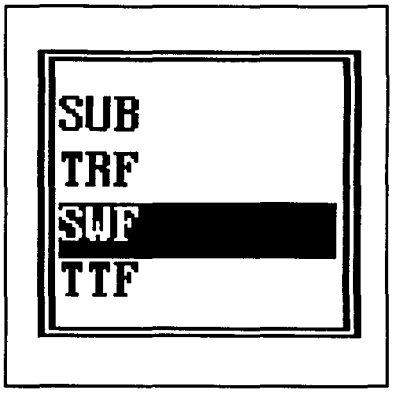


Figure 5. NSB Kings Bay Data Base System: Tenant Command Selection Menu

Work Center Level

After the tenant command has been selected, the user can access information at the work center level. Note that the three-letter code for the selected tenant command shows in the screen header.

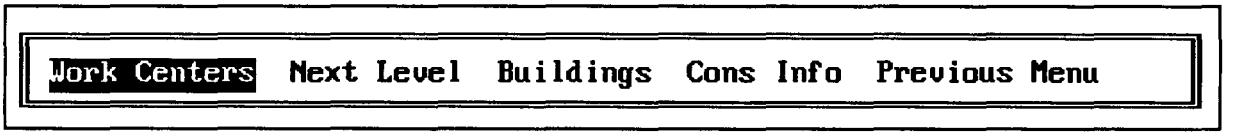


Figure 6. NSB Kings Bay Database System: Work Center Level Menu

The selections available in the menu at this level (shown on Figure 6) are described below.

Work Centers allows the user to access or enter specific work center information, discussed on page B-8.

Next Level allows the user to access the process level, discussed on page B-10.

Buildings allows the user to access or enter building information for the selected tenant command, discussed on page B-8.

Cons Info allows the user to access or enter specific constituent information, discussed on page B-9.

Previous Menu allows the user to return to the tenant command level.

Work Center Data

The data entry screen for work center information is shown on Figure 7. Information should be entered in the appropriate fields. The building number is selected from a pop-up list of buildings in the selected tenant command. Pressing enter on an empty building field accesses the pop-up menu.

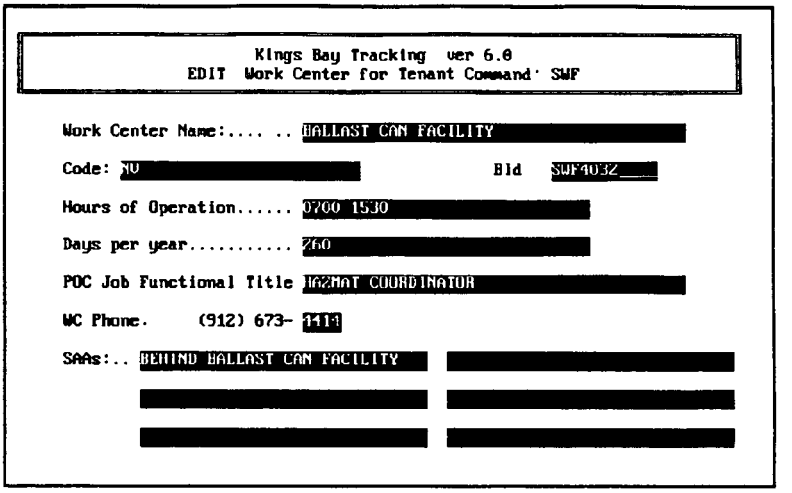


Figure 7. NSB Kings Bay Database: Work Center Data Entry Screen

Building Data

The data entry screen for building information is shown on Figure 8. Building information is tenant command-specific and may be shared between multiple work centers.

Note: Building information should be entered before the work centers associated with the building are entered so that the building data may be presented in the pop-up menus used during work center data entry.

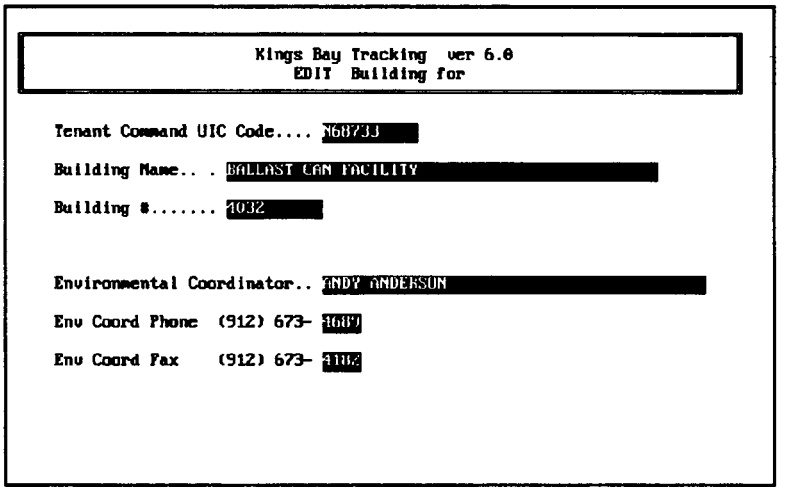


Figure 8. NSB Kings Bay Database: Building Data Entry Screen

Manually Entered Constituent Data (CONS INFO)

Most (95 percent) of the constituent data can be obtained electronically. The data entry screen for any constituent data that must be manually entered is shown on Figure 9. Constituent data should be entered before the material is used within a process. A constituent may belong to many materials. Any changes made at this level will not be incorporated at other occurrences of this constituent. To do this, the record must be linked with the material data, in the material screen.

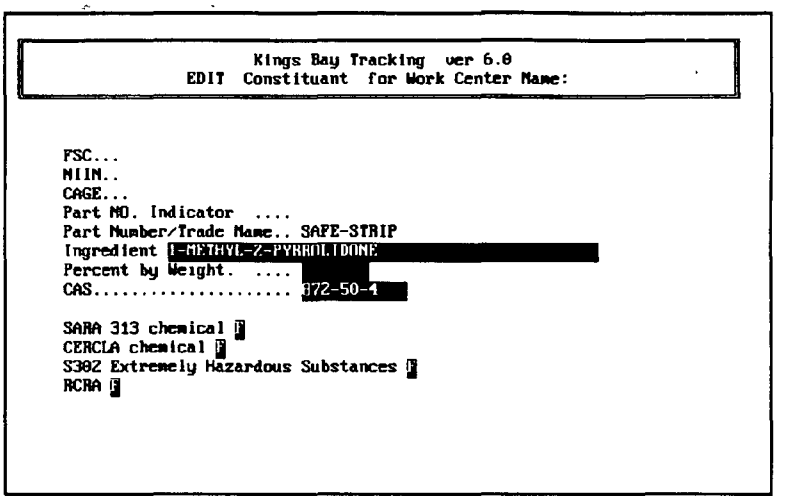


Figure 9. NSB Kings Bay Database System: Constituent Data Entry Screen

Process Level

Information at the process level is related to the work center in which the process is performed (the parent work center) by the parent work center's identification code, which is embedded in each of the process records.

The menu bar selections at this level, shown on Figure 10, are described below.

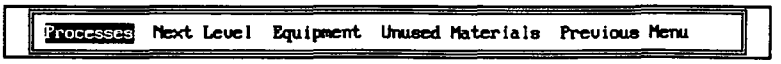


Figure 10. NSB Kings Bay Database System: Process Level Menu Selections

Processes allows the user to access or edit specific process information, discussed on this page.

Next Level allows the user to access the process step level, discussed on page B-12.

Equipment allows the user to access or edit information on specific equipment, discussed on page B-11.

Unused Materials allows the user to access or edit information on unused materials that are disposed of, discussed on page B-11.

Process Information

The data entry screen for a process is shown on Figure 11. The primary purpose of this screen is to create the key information for this process.

The scrolling fields are process description, waste minimization information, and comments.

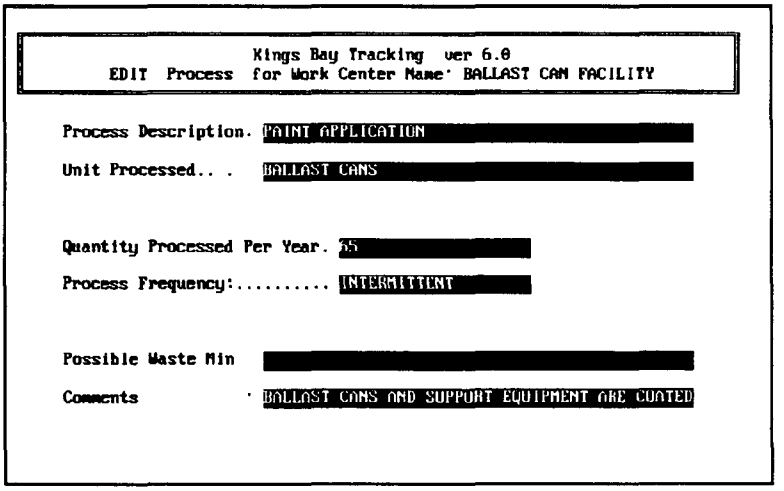


Figure 11. NSB Kings Bay Database System: Process Data Entry Screen

Equipment Information

The data entry screen for equipment information used at this work center is shown on Figure 12.

The scrolling fields are equipment ID, function, and comments.

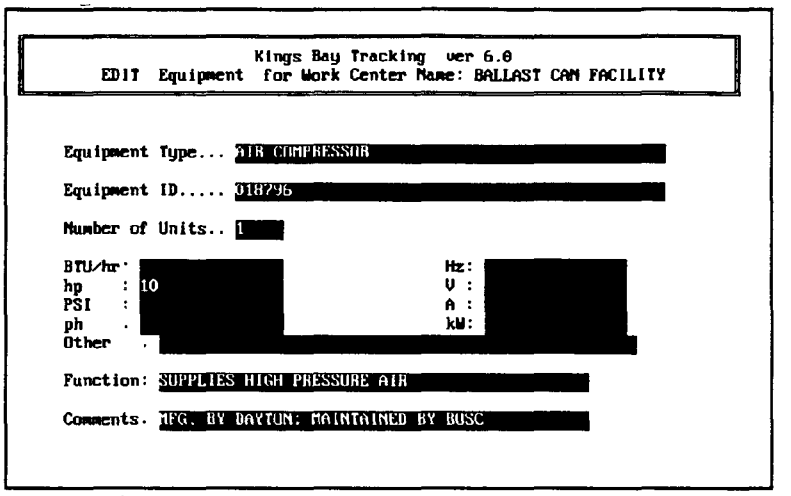


Figure 12. NSB Kings Bay Database System: Equipment Data Entry Screen

Unused Material Disposal

The data entry screen for unused materials is shown on Figure 13.

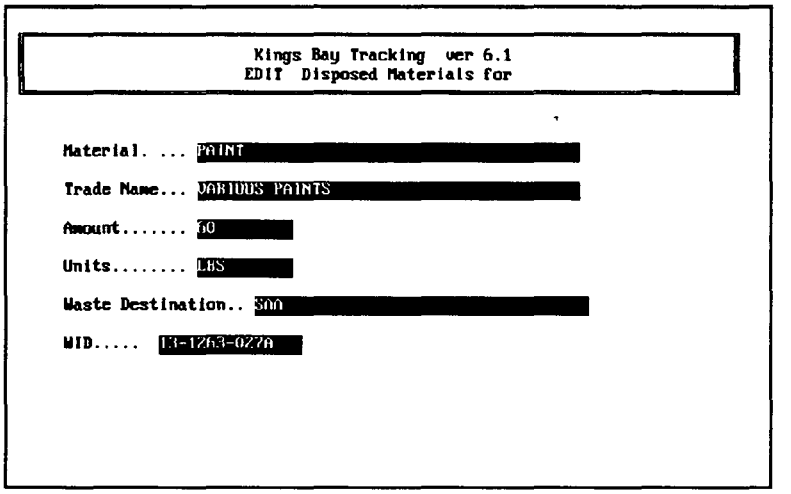


Figure 13. NSB Kings Bay Database System: Disposed Of Materials Data Entry Screen

Process Step Level

Information at this level is related to the process in which the step is performed (the parent process) by the process identification code, which is embedded in each of the process step records.

The process step level menu is shown on Figure 14. The menu bar selections are described below:

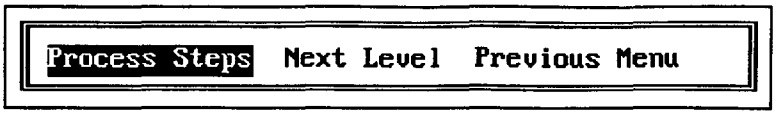


Figure 14. NSB Kings Bay Database System: Process Level Menu Selections

Process Steps allows the user to access or edit process step information, described on this page.

Next Level allows the user to access the materials/wastes level, discussed on page B-14.

Previous Menu or Level, allows the user to return to the process level.

Process Step Data

The data entry screen for process step information is shown on Figure 15. Each step in a process may have a virtually unlimited number of generic materials or wastes. No data are displayed in the material and wastes on the main screen. The displayed fields are used to activate a second level of data entry.

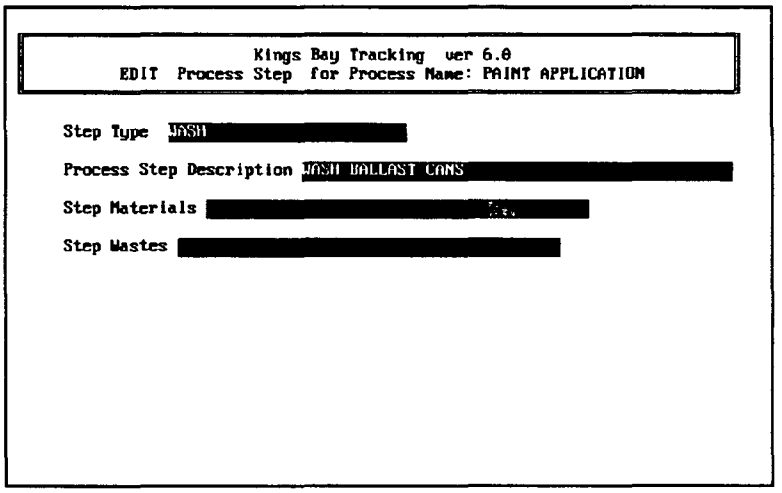


Figure 15. NSB Kings Bay Database System: Process Step Data Entry Screen

Each generic material or waste is entered into a pop-up box activated by selecting the Step Materials or Step Waste fields, as shown on Figure 16. The data entry person may enter as many wastes and materials as necessary

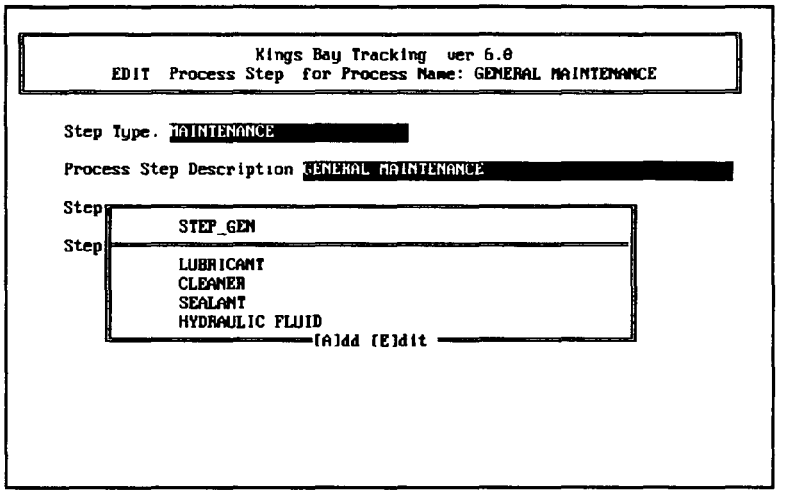


Figure 16. NSB Kings Bay Database: Process Step Level Pop-up Menu

Materials and Wastes Level

Material and waste information is related to the process step in which the material or waste is used (the parent step) by the process step identification code. Each generic material and waste defined at the step level may be associated with multiple specific items.

The menu selections are shown on Figure 17 and are described below:

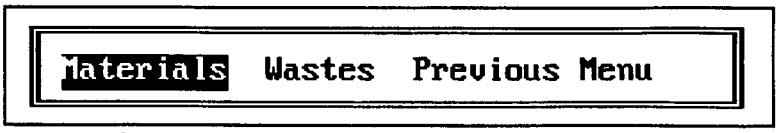


Figure 17. NSB Kings Bay Database System: Materials/Wastes Menu Selections

Materials allows the user to enter or edit material information, discussed on this page.

Wastes allows the user to enter or edit waste information, discussed on page B-17.

Previous Menu allows the user to return to the process step level.

Material Data

A blank material data entry screen is shown on Figure 18. When the user selects the Generic Material field, a pop-up list of the generic materials entered at the step level is shown (see Figure 19 for example). Multiple material records may be created for each generic material.

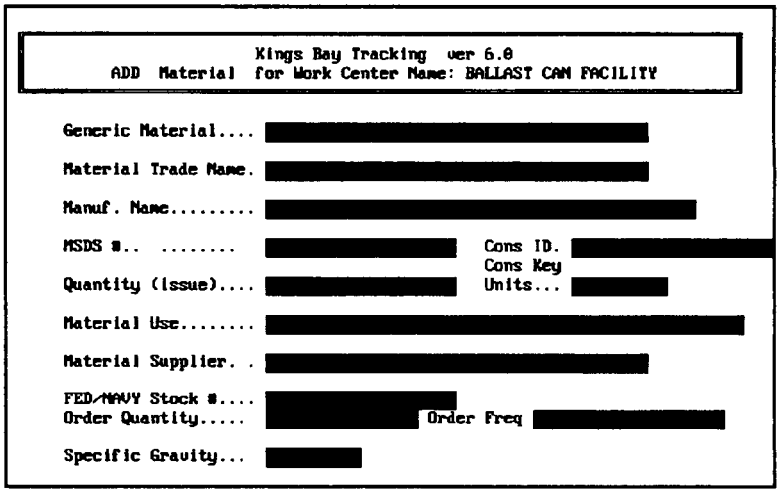


Figure 18. NSB Kings Bay Database System: Materials Data Entry Screen

This screen also contains pop-up menus with lists of material trade names and manufacturers.

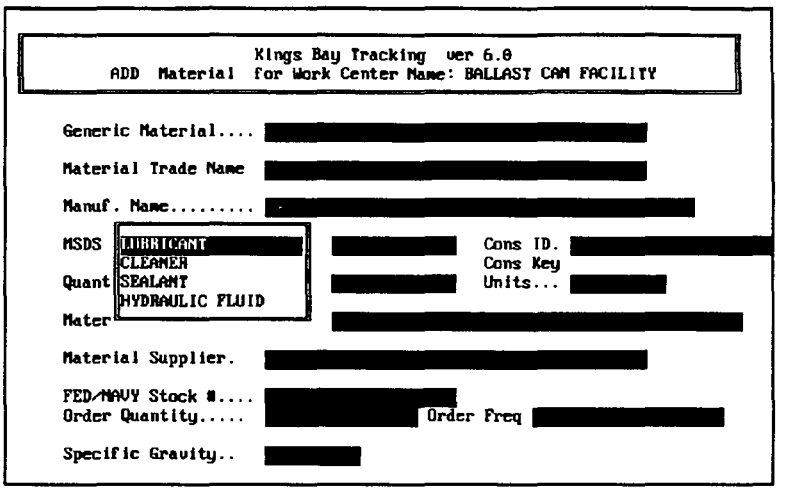


Figure 19. NSB Kings Bay Database System: Materials Level Pop-up Menu

To select from the pop-up menu, enter the first letters of the material trade name and press enter, as shown on Figure 20.

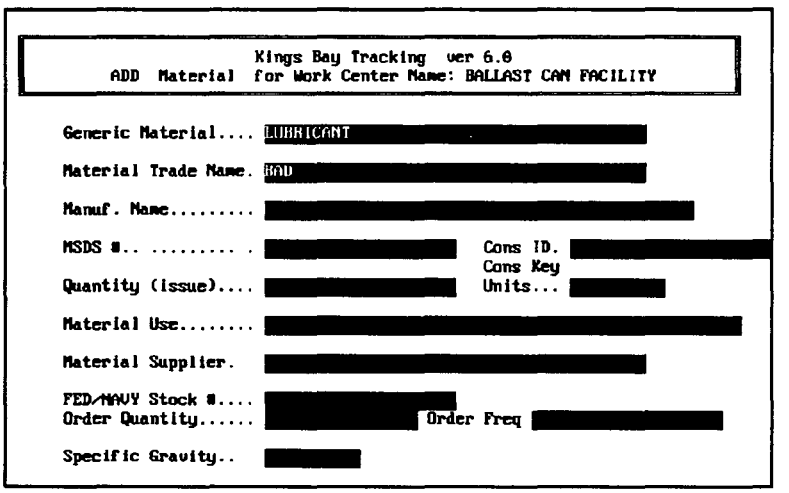


Figure 20. NSB Kings Bay Database System: Entering a Material Trade Name

A pop-up menu with the closest possible matches will appear, as shown on Figure 21. Move through the list with the up/down arrow keys and select the appropriate trade name by pressing enter.

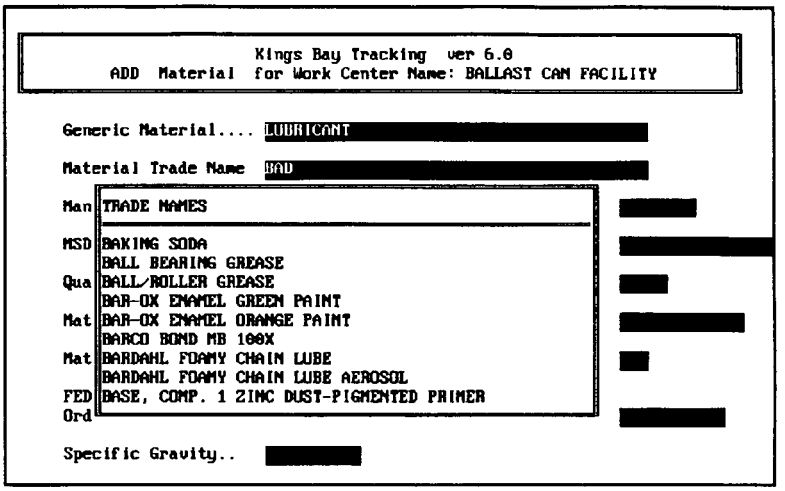


Figure 21. NSB Kings Bay Database System: Material Trade Name Pop-up Menu

If no match is found, a new material can be added to the list by pressing the F10 key. A material box will be displayed, as shown on Figure 22, and the user can enter the new information.

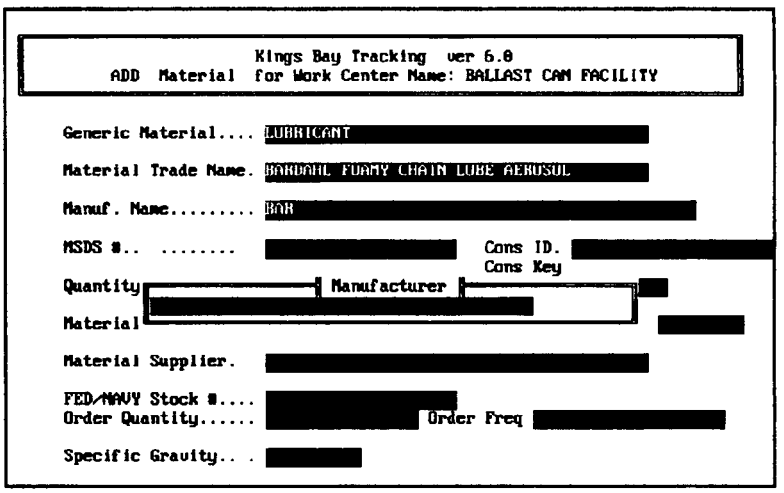


Figure 22. NSB Kings Bay Database System: Entering a New Material

Waste Data

The waste stream data entry screen is shown on Figure 23. The user can select a generic waste from a pop-up menu with the list of waste streams that was entered at the step level.

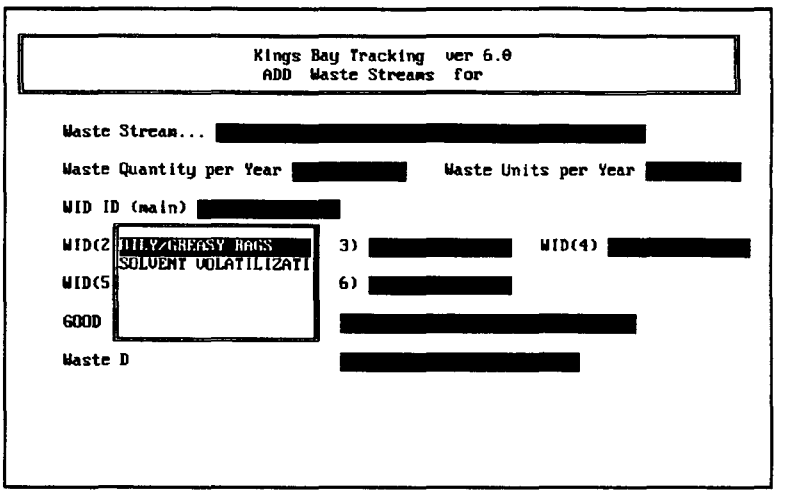


Figure 23. NSB Kings Bay Database System: Waste Stream Data Entry Screen

Figure 24 shows the data entry screen after a waste stream has been selected and the waste information has been entered.

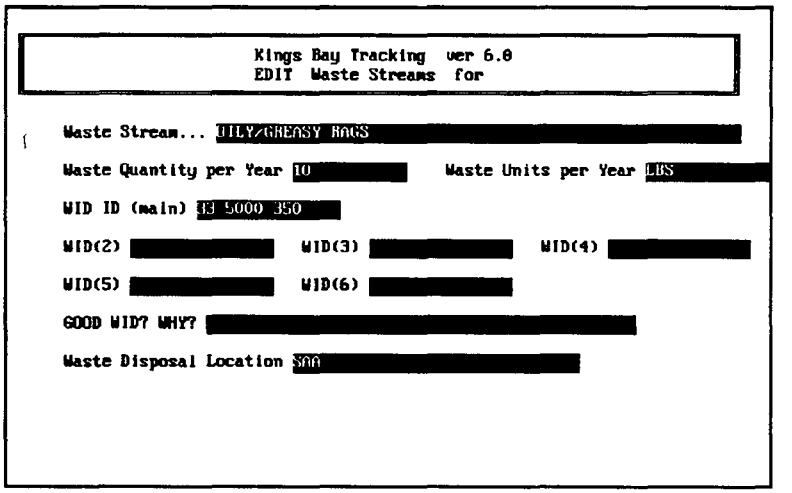


Figure 24. NSB Kings Bay Database System: Waste Stream Data Entry Screen

QUERIES

This option produces a report that details the steps, processes, and work centers that utilize selected materials.

After selecting QUERIES from the main menu, the menu shown on Figure 25 will appear.

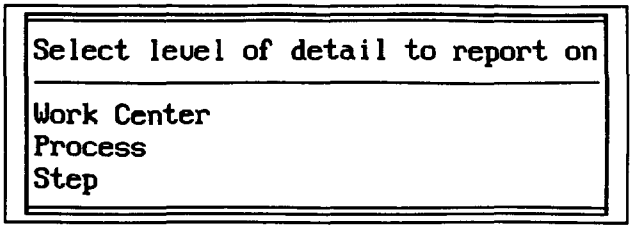


Figure 25. NSB Kings Bay Database System: Queries Menu

Use the up and down arrow keys to select the desired level and press enter. The menu shown on Figure 26 will appear.

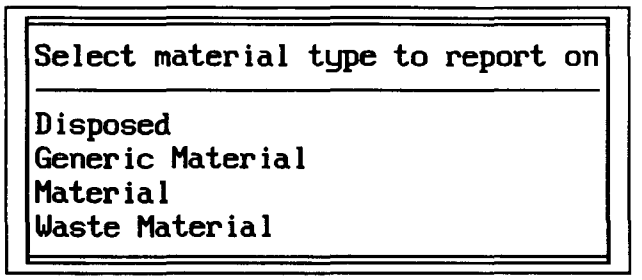


Figure 26. NSB Kings Bay Database System: Material Type Menu

Use the up and down arrow keys to select the desired material category and press enter. A menu with a list of the materials in that category will appear. The up and down arrow keys will move you one element at a time, [PgUp] and [PgDn] will move you a screen at a time, and [Home] and [End] move you to the top and bottom of the list, respectively. Press enter to select the material.

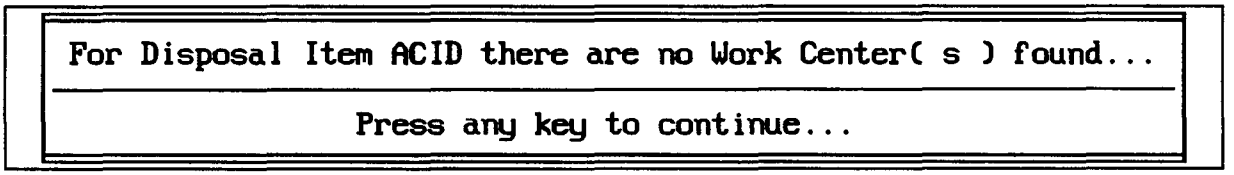


Figure 27. NSB Kings Bay Database System: No Data Available Menu

The application will now generate a WordPerfect 5.1 formatted document that contains the report in table form. The file will be named MATRPT.WP (for MATerial RePorT). If there are no data for a particular material, the following warning menu will appear as shown in Figure 27.

CAUTION! If you run this utility multiple times, each new report that is created will overwrite the previous report. To avoid this problem, rename each file as you create it.

Once in WordPerfect, you may do anything that you would normally do: save the file, print the file, etc. When you exit Wordperfect you will be returned to the initial screen.

If you experience difficulties when the system is attempting to load WordPerfect, please refer to the technical note below.

****

TECHNICAL NOTE: The application first tests to see if WordPerfect exists in the path. It looks for WP.EXE or WP.BAT. If it finds either, it attempts to run WordPerfect with MATRPT.WP as the parameter. If you use a batch file to launch WordPerfect, it must pass a parameter to WordPerfect. The line launching WP must be: **WP %1**

****

REPORTS

After you select REPORTS in the initial screen, the tenant command selection menu will appear. Use up and down arrow keys to select the desired tenant command from the list and press enter.

The batch reports pop-up menu will appear as shown on Figure 28. Reports at this level provide data or summary information on an entire tenant command. Available reports are described below.

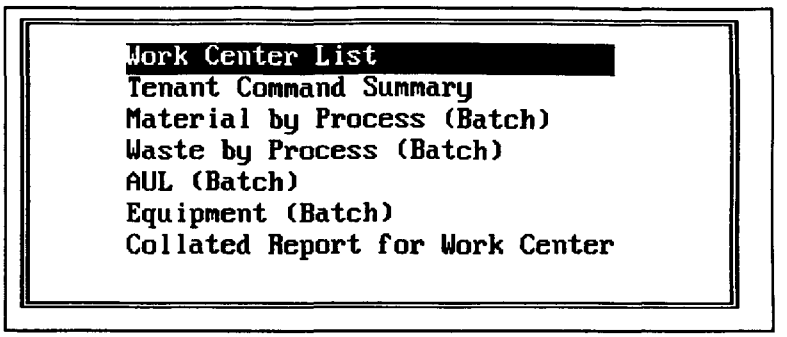


Figure 28. NSB Kings Bay Database System: Batch Reports Pop-up Menu

The application will generate a WordPerfect 5.1 formatted document that contains the report in table form. The user will be prompted for a file name. If no data are available, a blank document will be created. Please refer to the CAUTION and TECHNICAL NOTE on pages B-18 and B-19, respectively.

Work Center List provides a list of the work centers in the selected tenant command.

Tenant Command Summary provides an overview of the information pertaining to one tenant command.

Material by Process (Batch) provides information for materials by process. This report may be run in a batch mode for all processes in a work center or all processes in a tenant command.

Waste by Process (Batch) provides information for wastes by process. This report may be run in a batch mode for all processes in a work center or all processes in a tenant command.

AUL (Batch) the user is allowed to select (with the space bar) a list of work centers, and generate the authorized use lists (AULs) for those work centers. Selected work centers are designated with a check mark. NOTE: AULs print on 17x11 inch paper!

Equipment (Batch) provides information for equipment by work center. This report may be run in a batch mode for all equipment in a work center or all work centers in a tenant command.

Collated Report for Work Center creates a collated report of equipment, materials and wastes for an entire tenant command. This report was used to generate the tenant command appendices (F, G, H, and I) and is not recommended for normal use.

Work Center Information

File Name: K_WC.DBF
Description: The work center database is the primary database. All work centers in a tenant command are identified in this database, and the controlling key information for all other databases is created here.

Key Fields: **WC_ID** primary key - 11 characters
1-3 Three-letter tenant command code.
4-11 Data entered key for work center, must be unique (system checks) and right fills with "_" to make each entry the same length.

BLD_KEY Links work center to building information. During data entry, a pop-up list of buildings is displayed. User selects building and key is forced.

Field Name	Type	Length	Field Description
WC_ID	C	11	Work center identification code (see Key Fields).
WC_NAME	C	40	Work center name.
WC_CODE	C	25	The department code associated with the work center.
BLD_KEY	C	11	Building key (see Key Fields).
WC_HOURS	C	30	Hours of operation for the work center.
WC_DAYS	C	30	Days per year the work center operates.
POC_JOB	C	40	Job title of the work center's point of contact.
WC_PHONE	C	4	Work center phone number.
SAA_ID1	C	100	Satellite Accumulation Area used by the work center.
SAA_ID2	C	100	"
SAA_ID3	C	100	"
SAA_ID4	C	100	"
SAA_ID5	C	100	"
SAA_ID6	C	100	"

Building Information

File Name: K_BLD.DBF
Description: The information for the various buildings on NSB Kings Bay that contain work centers.

Key Fields: **BLD_NUM** This field links the building database to the work center database. When a work center is entered, this database is accessed by a pop-up screen in the work center data entry screen. When a building is selected, the appropriate key information is copied over. This is a system-generated identifier.

Field Name	Type	Length	Field Description
BLD_ID	C	11	System-generated building identification code (see Key Fields).
CMD_CODE	C	10	Tenant Command Unit Identification Code (UIC) Code.
BLD_LID	C	45	Building name.
BLD_NUM	C	10	Building number.
ENV_COORD	C	40	Environmental Coordinator for the tenant command.
ENVC_PHONE	C	4	Environmental Coordinator's phone number.
ENVC_FAX	C	6	Environmental Coordinator's fax number.

Disposal of Unused Material

File Name: K_DISP
Description: This file tracks the amount of unused material being disposed of by work center personnel.

Key Fields: **DISP_ID** The first 11 characters are the work center identification code (WC_ID) of the parent work center. Characters 12 through 14 are "D" plus a two-digit disposal number, which is automatically generated.

Field Name	Type	Length	Field Description
DISP_ID	C	14	Disposed of material identification code (see Key Fields).
DISP_MAT	C	40	Material being disposed of.
DISP_TRADE	C	40	Material trade name.
DISP_QUANT	C	10	Amount.
DISP_UNIT	C	10	Units.
DISP_DEST	C	35	Waste destination.
DISP_WID	C	15	Waste Identification (WID) number. Supplied by the base operating services contractor (BOSC).

Equipment Information

File Name: K_EQU.DBF
Description: The information on equipment used by a work center. Equipment information is maintained at the work center level to accommodate multiple processes that use the various pieces of equipment.

Key Fields: **EQU_ID** The first 11 characters are the work center identification code (WC_ID) of the parent work center. Characters 12 through 14 are "E" plus a two-digit equipment number, which is automatically generated.

Field Name	Type	Length	Field Description
EQU_ID	C	14	Equipment identification code (see Key Fields).
EQU_TYPE	C	250	Equipment type.
EQU_SHOPID	C	150	Equipment identification number: often the inventory number assigned by the Navy.
EQU_UNIT	C	5	Number of units pieces of equipment (Units)
EQU_BTU	C	15	BTU per hour (energy rating).
EQU_HZ	C	15	Hertz.
EQU_HP	C	15	Horsepower (energy rating).
EQU_V	C	15	Volts.
EQU_PSI	C	15	Pound per square inch.
EQU_A	C	15	Amps.
EQU_PH	C	15	Phase.
EQU_KW	C	15	Kilowatt.
EQU_OTH	C	50	Other.
EQU_FUNC	C	250	Function.
EQU_COMM	C	250	Comments.

Process Information

File Name: K_PRO
Description: Detailed information on the processes in each work center. Processes do not need to be input into the system in any order.

Key Fields: **PRO_ID** The first 11 characters are the work center identification code (WC_ID) of the parent work center. Characters 12 through 14 are "P" plus a two-digit process number. The user is prompted for the process number, which was previously assigned to interview forms. The system forces unique identifiers.

Field Name	Type	Length	Field Description
PRO_ID	C	14	Process identification code (see Key Fields).
PRO_DESC	C	250	Process description.
PRO_UNIT	C	45	Unit processed.
PRO_QTYYR	C	20	Quantity processed per year.
PRO_FREQ	C	20	Number of times the process is performed per year.
PRO_WMIN	C	250	Possible waste minimization ideas.
PRO_COMM	C	250	Comments.

Process Steps

File Name: **K_STEP**
Description: Each step of each process is described.

Key Fields: **STEP_ID** The first 15 characters are the process identification code (PRO_ID) of the parent process. Characters 16 through 17 are "S" plus a two-digit step number. The user is prompted for the step number from the process flow diagram. The system forces unique identifiers. Steps do not have to be input in order.

Field Name	Type	Length	Field Description
STEP_ID	C	17	Process step identification code (see Key Fields).
STEP_TYPE	C	25	Step type (ex: PAINTING). The data entry person selects standard step type from a pop-up list. If a required step type is not available, the data entry person adds steps to the pop-up list.
STEP_DESC	C	150	Process step description.
STEP_IN	C	40	This field is required during data entry to prompt for an input - no data stored.
STEP_W	C	40	This field is required during data entry to prompt for a waste - no data stored.

General Material Database

File Name: K_GMAT
Description: The generic materials and wastes generated by the steps are stored here. A single step may have any number of generic materials or wastes (e.g., Materials: OIL, RAGS, Wastes: OILY RAGS).

Key Fields: **STEP_ID** The process step identification code (STEP_ID) from the parent database.

Field Name	Type	Length	Field Description
STEP_ID	C	17	Process step identification code (see Key Field).
STEP_GEN	C	40	The generic material or waste.
GEN_TYPE	C	1	"I" if this is an input material, "W" if it is a waste.

Waste Material

File Name: K_WAST

Description: Information on the wastes from the process steps.

Key Fields: **WAST_ID** The first 17 characters are the process step identification code (STEP_ID) of the parent step. Characters 18 through 20 are "W" plus a two-digit number. This number is automatically generated by the data entry system.

Field Name	Type	Length	Field Description
WAST_ID	C	17	Waste identification code (see Key Fields).
WAST_STRM	C	75	Waste stream name.
WAST_QTY_Y	C	12	Waste quantity per year.
WAST_UNITY	C	20	Waste units per year.
WAST_WID	C	15	WID number. Supplied by BOSC.
WID2	C	15	WID(2).
WID3	C	15	WID(3).
WID4	C	15	WID(4).
WID5	C	15	WID(5).
WID6	C	15	WID(6).
WAST_WIDY	C	150	Indicates if the WID is correct, and why.
WAST_DISP	C	30	Waste disposal location.

Process Materials

File Name: K_MAT
Description: The material information gathered during the interview process. This database includes some generic materials and material groups. Information on the amount of material is also entered at this level.

Key Fields: **MAT_ID** The first 17 characters are the process step identification code (STEP_ID) of the parent step. Characters 18 through 20 are "M" plus a two-digit step number, which is automatically generated by the data entry system.

Field Name	Type	Length	Field Description
MAT_ID	C	20	Material identification code (see Key Fields).
TAG	C	1	System-generated field used in Hazardous Material Information System (HMIS) data search (see appendix C).
NIIN	C	9	System-generated field used in HMIS data search (see appendix C).
MAT_GEN	C	40	The generic material that was specified at the step level. This is a required field, and no other data may be entered until a generic material has been selected from the provided pop-up list.
MAT_TRAD	C	65	Material trade name.
MAT_MANUF	C	45	Manufacturer's name for the material.
MAT_MSDS	C	20	Material Safety Data Sheet (MSDS) number.
CMAT_ID	C	11	Constituent identification code.
CMAT_KEY	C	12	Constituent key.
MAT_QUANT	C	15	Quantity of material issued.
MAT_UNIT	C	10	Units.
MAT_USE	C	50	How the material is used in the parent step.
MAT_SUP	C	40	Material supplier.
MAT_FEDS	C	20	FED/NAVY stock number.
MAT_ORD	C	10	Order quantity.
MAT_FREQ	C	55	Order frequency.
FREQ_MULT	N	11,2	This is a system-generated field. Information from the mat_freq field is use to create a multiplier used to calculate the amount of material used for one year.

Material Information

File Name: CMAT

Description: The specific material for the materials/material classes entered at the K_MAT database. Where possible, this information was electronically retrieved from the HMIS database. See "Importing HMIS Data" for a description of data retrieval from HMIS. For materials that were not in HMIS, the information was data entered from material data sheets.

NOTE: The primary key for all HMIS data is the National Stock Number (NSN). The NSN is divided into the following parts:

FSC	4 characters
NIIN	9 characters
CAGE	5 characters
PART No.	2 characters

Information from the HMIS system was copied "as - is," and was not reviewed for accuracy.

Key Fields:

CMAT_ID The construction of the CMAT_ID depends if it was generated from HMIS or manually entered. For the structure of the HMIS ID see "Importing HMIS Data". The manually entered ID is a system-generated sequential number with a previous of "M_".

CONS_ID A system-generated link to the constituent database.

Field Name	Type	Length	Field Description
CMAT_ID	C	11	CMAT identification code (see Key Fields).
CONS_ID	C	22	Constituent identification code (see Key Fields).
FSC	C	4	FSC
NIIN	C	9	NIIN
CAGE	C	5	CAGE
PNIND	C	2	Part number identification code.
PARTNO	C	60	Part number/trade name.
ITEMNAME	C	60	Item's generic name.
MFRNAME	C	50	Manufacturer's name.
MSDSSERNO	C	5	MSDS serial number.
MFRSTRET	C	40	Manufacturer's street address.
MFRPOBOX	C	6	Manufacturer's P. O. BOX.
MFRCITY	C	40	Manufacturer's city.
MFRSTATE	C	2	Manufacturer's state.
MFRZIPCD	C	10	Manufacturer's zip code.
EMERPHON	C	35	Manufacturer's emergency phone number.
DIST1	C	1	Distributer.
CMAT_KEY	C	12	This is a temporary field use in data entry. It will be removed for the released version.
GLOVES	C	40	Glove protection is recommended when handling the material.
EYEPROT	C	40	Eye protection is recommended when handling this material.

OTHREQIP	C	120	Other personal protective equipment is recommended when handling this material.
CHRONICHAZ	C	3	Information if this material is a chronic hazard.
ACUTHAZNON	C	1	Rate the Acute Health Hazard of the material - None.
ACUTHAZMOD	C	1	" - Moderate.
ACUTHAZSLT	C	1	" - Slight.
ACUTHAZSEV	C	1	" - Severe.
REACHAZNON	C	1	Rate the Acute Reactivity Hazard of the material- None.
REACHAZSLT	C	1	" - Slight.
REACHAZMOD	C	1	" - Moderate.
REACHAZSEV	C	1	" - Severe.
PROTEYE	C	1	If this field equals "Y", eye protection is necessary when handling this material.
PROTSKIN	C	1	If this field equals "Y", protect skin when handling this material.
PROTRESP	C	1	If this field equals "Y", respiratory protection is necessary when handling this material.
UI	C	2	Unit of issue.
UICONT	C	13	UICONT.
TYPECONT	C	13	TYPE CONT.
STABILITY	C	3	Stability.
SPECGRAV	C	15	Specific gravity of the material.
FLASHPT	C	16	Flash point.
CANCNTP	C	10	CARCINOGENICITY - NTP.
CANCIARC	C	10	CARCINOGENICITY - IARC.
CANCOSHA	C	10	CARCINOGENICITY - OSHA.
EXPLCANC	C	120	Explanation of carcinogenicity ratings.
RESPPROT	C	240	Respiratory protection special instructions.
DATEMSDS	C	7	Date of MSDS change.

Constituent Information

File Name: K_CONS

Description: The constituent information for specific materials. This information was retrieved from the HMIS database or manually entered for those materials not found in HMIS. The data for ozone-depleting substances (ODS), extremely hazardous substances (EHS), and toxic substances were retrieved by cross-referencing the Chemical Abstract Service (CAS) numbers of the ingredients with a list of regulated substances. If the CAS number was missing or incorrect, the fields were left blank.

Key Fields: **CONS_ID** HMIS Data:
"H_" + FSC + NIIN + CAGE + PNIND

Manually Entered Data:
"MXX" plus ##################
where, XX is a Tenant Command code:

SWF	"MA"
SUB	"MB"
TRF	"MC"
TTF	"MD"

= left zero filled, sequentially assigned numbers

Field Name	Type	Length	Field Description
CONS_ID	C	22	Constituent identification code (see Key Fields).
INGSEQNO	C	2	Ingredient sequence number.
FSC	C	4	Federal supply class.
NIIN	C	9	National item identification number.
CAGE	C	5	Commercial and government entity.
PNIND	C	2	Part number indicator.
PARTNO	C	60	Part number/trade name.
INGREDNT	C	120	Ingredient.
PERCENT	C	7	Percent by weight.
CAS	C	11	Chemical Abstract Services number.
S313	C	1	If this field equals "Y", this constituent is a Superfund Amendments and Reauthorization Act (SARA) 313 chemical (toxic substance).
CERCLA	C	1	If this field equals "Y", this constituent is a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) chemical (hazardous substance).
S302	C	1	If this field equals "Y", this constituent is an S302 Extremely Hazardous Substance.
RCRA	C	1	If this field equals "Y", this constituent is a Resource Conservation and Recovery (RCRA) hazardous waste.
ODS	C	1	If this field equals "Y", this constituent is an Ozone-Depleting Substance.

Importing HMIS Data

The process described in this section was used to extract HMIS data and import them into the NSB Kings Bay database. All the data files and fields discussed here are documented in the data dictionary.

The MAT_FEDS field in the K_MAT data file was the key field used in retrieving HMIS data. This process took into consideration that the MAT_FEDS field may or may not contain a valid NSN, and allowed for corrections to be made.

The K_CMAT and K_CONS data files needed to be empty when the process started. All manually entered records in these files were temporarily removed before the process started and were put back at the end of the process.

The following steps assume you are familiar with HMIS batch processing and database programming techniques.

1. Create a data view form in HMIS and save it. This form should only contain the fields defined in the K_CMAT and K_CONS data files.

2. For each record in the K_MAT data file, extract an "NIIN" number from the MAT_FEDS field and store it in the NIIN field.

3. Generate a unique list of "NIIN" numbers from the K_MAT data file. The list should be written as a DOS text file.

4. Modify this text file into an HMIS batch search script. This script should reference the data view form you created in step 1, and its output type should be dBASE.

5. Run HMIS with this script. This will generate three dBASE files. Two of these files contain data that will be imported into the K_CMAT and K_CONS data files. The third dBASE file is not used.

6. Compare the K_MAT data file with the HMIS-generated dBASE files using the NIIN field. Flag all records in the K_MAT file that do not match.

7. If any records in the K_MAT file were flagged, manually edit the MAT_FEDS field and make corrections as required. If any changes were made, go to step 2 and continue. If a flagged K_MAT record contains a valid NIIN number, we can assume these data are missing from HMIS and you should continue with the next step.

8. Import data from the HMIS-generated dBASE files into K_CMAT and K_CONS. Update the CMAT_ID field in K_MAT, the CMAT_ID and CONS_ID fields in K_CMAT, and the CONS_ID field in K_CONS, as follows:

```
CMAT_ID = "H_" + NIIN
CONS_ID = "H_" + FSC + NIIN + CAGE + PNIND
```

Constituent Information

File Name: K_CONS

Description: The constituent information for specific materials. This information was retrieved from the HMIS database or manually entered for those materials not found in HMIS. The data for ozone-depleting substances (ODS), extremely hazardous substances (EHS), and toxic substances were retrieved by cross-referencing the Chemical Abstract Service (CAS) numbers of the ingredients with a list of regulated substances. If the CAS number was missing or incorrect, the fields were left blank.

Key Fields: **CONS_ID** HMIS Data:
"H_" + FSC + NIIN + CAGE + PNIND

Manually Entered Data:
"MXX" plus ##################
where, XX is a Tenant Command code:

SWF	"MA"
SUB	"MB"
TRF	"MC"
TTF	"MD"

= left zero filled, sequentially assigned numbers

Field Name	Type	Length	Field Description
CONS_ID	C	22	Constituent identification code (see Key Fields).
INGSEQNO	C	2	Ingredient sequence number.
FSC	C	4	Federal supply class.
NIIN	C	9	National item identification number.
CAGE	C	5	Commercial and government entity.
PNIND	C	2	Part number indicator.
PARTNO	C	60	Part number/trade name.
INGREDNT	C	120	Ingredient.
PERCENT	C	7	Percent by weight.
CAS	C	11	Chemical Abstract Services number.
S313	C	1	If this field equals "Y", this constituent is a Superfund Amendments and Reauthorization Act (SARA) 313 chemical (toxic substance).
CERCLA	C	1	If this field equals "Y", this constituent is a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) chemical (hazardous substance).
S302	C	1	If this field equals "Y", this constituent is an S302 Extremely Hazardous Substance.
RCRA	C	1	If this field equals "Y", this constituent is a Resource Conservation and Recovery (RCRA) hazardous waste.
ODS	C	1	If this field equals "Y", this constituent is an Ozone-Depleting Substance.

Importing HMIS Data

The process described in this section was used to extract HMIS data and import them into the NSB Kings Bay database. All the data files and fields discussed here are documented in the data dictionary.

The MAT_FEDS field in the K_MAT data file was the key field used in retrieving HMIS data. This process took into consideration that the MAT_FEDS field may or may not contain a valid NSN, and allowed for corrections to be made.

The K_CMAT and K_CONS data files needed to be empty when the process started. All manually entered records in these files were temporarily removed before the process started and were put back at the end of the process.

The following steps assume you are familiar with HMIS batch processing and database programming techniques.

1. Create a data view form in HMIS and save it. This form should only contain the fields defined in the K_CMAT and K_CONS data files.

2. For each record in the K_MAT data file, extract an "NIIN" number from the MAT_FEDS field and store it in the NIIN field.

3. Generate a unique list of "NIIN" numbers from the K_MAT data file. The list should be written as a DOS text file.

4. Modify this text file into an HMIS batch search script. This script should reference the data view form you created in step 1, and its output type should be dBASE.

5. Run HMIS with this script. This will generate three dBASE files. Two of these files contain data that will be imported into the K_CMAT and K_CONS data files. The third dBASE file is not used.

6. Compare the K_MAT data file with the HMIS-generated dBASE files using the NIIN field. Flag all records in the K_MAT file that do not match.

7. If any records in the K_MAT file were flagged, manually edit the MAT_FEDS field and make corrections as required. If any changes were made, go to step 2 and continue. If a flagged K_MAT record contains a valid NIIN number, we can assume these data are missing from HMIS and you should continue with the next step.

8. Import data from the HMIS-generated dBASE files into K_CMAT and K_CONS. Update the CMAT_ID field in K_MAT, the CMAT_ID and CONS_ID fields in K_CMAT, and the CONS_ID field in K_CONS, as follows:

```
CMAT_ID = "H_" + NIIN
CONS_ID = "H_" + FSC + NIIN + CAGE + PNIND
```