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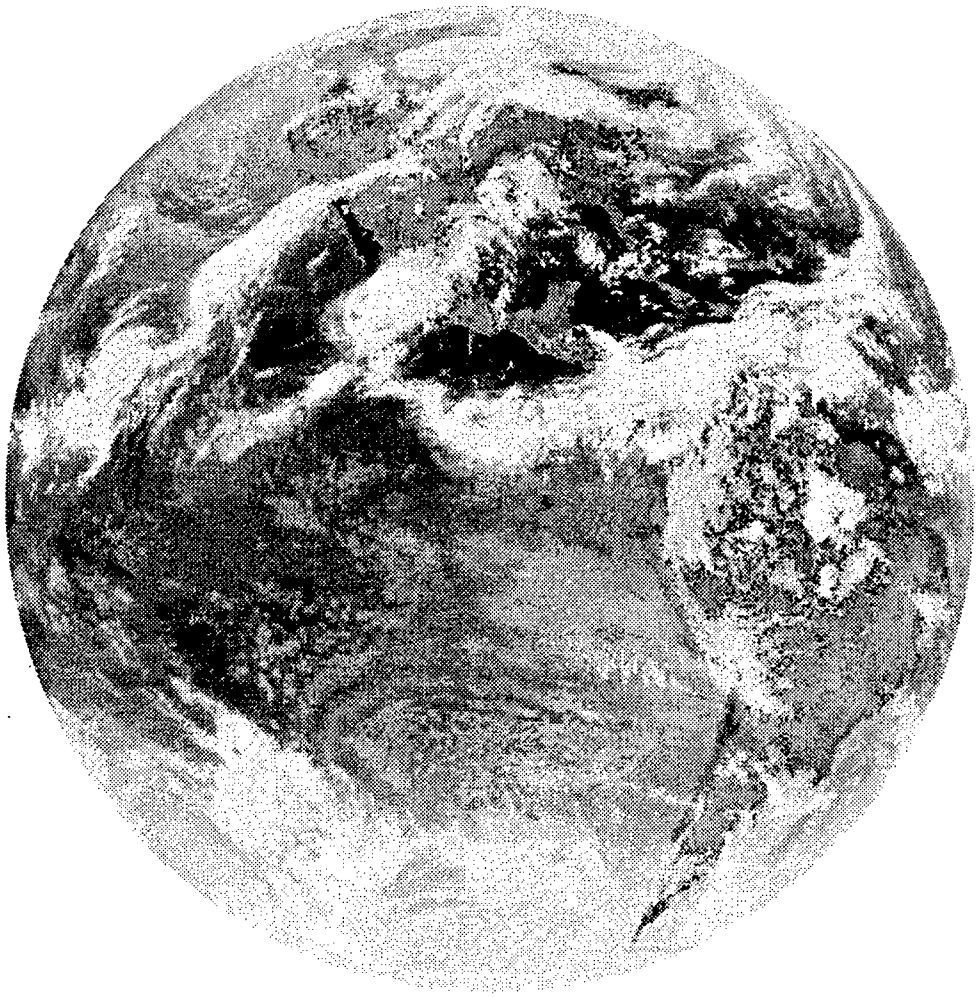
U.S. ARMY
ENVIRONMENTAL QUALITY REPORT



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This report discusses the Army's environmental program accomplishments, improvements, and areas where challenges remain. Its primary objective is to provide a picture of environmental conditions and trends at Army installations.

The report is divided into three sections: Environmental Quality Program Trends; Media Specific Reviews; and Future Directions. Environmental Quality Program Trends are detailed analysis of program indicators over the fiscal year. Media Specific Reviews provide analysis of all Army environmental pillars. The Future Diections section provides recommendations on actions that will help the Army continue to meet its environmental stewardship responsibilities while fulfilling its primary mission of maintaining a trained and ready force.

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Executive Summary

The Army is proud of its environmental quality program and the results it has achieved. This report discusses the Army's accomplishments in the program, those areas where environmental quality is improving, as well as those areas where challenges still remain. Its primary objective is to provide a picture of environmental conditions and trends at Army installations worldwide. The status of the Army's restoration (clean up) program is not specifically addressed in this report. That information is detailed in DoD's comprehensive annual report to Congress addressing the installation restoration program.

To achieve this, the report begins with an overall analysis of major environmental quality program health indicators, followed by more specific media-focused summaries of goals, objectives, accomplishments, and issues that must be resolved to ensure continued success. Lastly, it provides appropriate recommendations for what the Army must do to ensure that it continues to meet its environmental stewardship responsibilities, while fulfilling its primary mission of maintaining a trained and ready force.

Overall, the indicators reflect a vigorous environmental quality program that is clearly headed in the right direction. Senior leadership direction, involvement, and support is now at the highest visibility levels in the program's history. Although total program resourcing reflects rapid growth during the past five years, personnel and funding shortfalls continue to be areas of concern.[1] In view of this, effectively transitioning program emphasis from compliance and control to prevention will present a formidable challenge in the years ahead.

From the regulatory perspective, program performance is much improved. Enforcement action and violation rate trends continue to move downward. The Environmental Compliance Assessment System program and the pollution prevention program (via pollution prevention opportunity assessments), in conjunction with increased command emphasis at all levels, is beginning to achieve positive results, both in Continental United States as well as at overseas installations. However, additional work needs to be done to reverse the current trend in the number and amount of regulatory fines and penalties resulting primarily from implementation of the Federal Facilities Compliance Act of 1992.

[1]The Army has experienced difficulty in accurately identifying total environmental personnel requirements. Accordingly, staffing issues are not addressed here in detail.

The generation and disposal of solid and hazardous waste are in a downward trend, as are the number of hazardous substance spill incidents. Simultaneously, the number of installation recycling programs are increasing and succeeding in reducing the solid waste stream and associated disposal costs.

The Army is heading into the 21st century with a solid environmental quality program. However, as with any effort of this magnitude and diversity, improvements can always be made to ensure that momentum and focus are maintained. Several areas will receive increased management attention in the next year:[2]

- The primary environmental data bases available to program management (i.e., the Army Compliance Tracking System, Environmental Compliance Assessment System, and RCS 1383) will be upgraded to improve overall capability, speed, and accessibility.

- Army Environmental Strategic Action Plans will be used to track program status in relation to the established goals, objectives, and performance indicators. This will help keep decision-makers abreast of the various program areas, identify shortfalls early on, and facilitate the timely development of needed policy changes and budget/program objective memorandum modifications.

- The Army will conduct a comprehensive review of all media program area management (performance) indicators to ensure that they are realistic, measurable, and meet other basic requirements. Once this has been done, existing data bases will be reviewed and appropriately updated to ensure that the requisite data elements are incorporated.

- In order to provide an adequate source of funding for innovative pollution prevention investments, the Army will continue to investigate the feasibility of establishing a Pollution Prevention Investment Fund. This will entail seeking support (and perhaps even partial funding on a trial basis) from the Deputy Under Secretary of Defense for Environmental Security (under the new ENVEST initiative). Additionally, the Army will explore alternative revisions to its existing must-fund policy to allow installation commanders more flexibility in deciding how environmental funds will be spent.

[2]These are in addition to the issues and concerns outlined in the media-specific program areas.

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CHAPTER 1

Background, Purpose, and Scope of Report

INTRODUCTION

Background

As one of the largest Federal real estate holders (more than 5,000 Active, Reserve, and National Guard installations on more than 24 million acres of land), the Army is keenly aware of its responsibilities in the areas of environmental protection and enhancement. In consonance with its defense mission, the Army has established an environmental management policy that will ensure the long-term protection of the land and resources entrusted to its care.

Issued jointly by the Secretary of the Army and Chief of Staff in 1990, this policy charges the Army with being the environmental leader within DoD. It mandates that taking care of the environment is a necessary part of Army business that must be fully integrated into the Army's mission. A key concept inherent in this policy is that Army actions must be "environmentally sustainable." That is, the Army must enable mission accomplishment without compromising the environmental integrity of future generations.

To ensure proper focus and continued progress toward achievement of this objective, the Army has established a comprehensive, forward-looking environmental quality program. Falling under the purview of the Assistant Chief of Staff for Installation Management (ACSIM), day-to-day management is provided at the Army Staff level by the Office of the Director of Environmental Programs (ODEP), with technical field support being primarily drawn from the U. S. Army Environmental Center (USAEC), Aberdeen Proving Ground, Maryland. Funded during FY94 with more than $1.7 billion, it addresses the major functional areas of compliance, restoration, prevention, and conservation.

Purpose and Scope

The Army is proud of its environmental quality program and the results it has achieved. This report discusses the Army's accomplishments in the program, areas where environmental quality is improving, and areas where challenges still remain. Its primary objective is to provide a picture of environmental conditions and trends at Army installations around the world. To achieve this, the report begins with an overall analysis of major environmental quality program health indicators, followed by more specific media-focused summaries of

goals, objectives, accomplishments, and issues that must be resolved to ensure continued success. Lastly, it provides appropriate recommendations for what the Army must do to ensure that it continues to meet its environmental stewardship responsibilities, while fulfilling its primary mission of maintaining a trained and ready force.

While the Army recognizes that many serious problems persist because of contamination from past operations and activities, progress under the restoration (cleanup) program is not specifically addressed in this report. That information is detailed in DoD's comprehensive annual report to Congress addressing the installation restoration program.

CHAPTER 2

Environmental Quality Program Trends

OVERVIEW OF THE ENVIRONMENTAL QUALITY PROGRAM

The Army Environmental Quality Program is founded upon the Army vision of being a national leader in environmental and natural resource stewardship for present and future generations as an integral part of its mission. To attain this vision, the Army has implemented an environmental strategy that focuses on achieving environmentally sustainable operations at all facilities, whether they be military installations or civil works projects.

The strategy serves as the basis for planning, programming, and budgeting decisions for the environmental quality program. Throughout the strategy, the primary values and themes are merged into the vision that clearly demonstrates leadership, preserves and enhances the environment, and illustrates the Army's desire to achieve continued excellence in stewardship. The strategy is to protect the environment and sustain our natural resources at Army installations by

- giving immediate priority to compliance with all environmental laws,
- continuing to restore previously contaminated lands as quickly as resources permit,
- focusing efforts on prevention to reduce or eliminate pollution and environmental degradation at the source, and
- conserving and preserving natural and cultural resources so they will be available for present and future generations to use and enjoy.

In addition, the strategy defines the Army's leadership commitment and philosophy for

- meeting present and future environmental challenges;
- harnessing Army strengths (command leadership, organization, and commitment to purpose) to achieve environmental stewardship;
- recognizing the Army's responsibility to the Nation and the world to protect the environment;
- providing a cohesive framework to ensure that environmental concerns are integral to the Army's mission;

- ensuring that an environmental stewardship ethic governs all Army activities;
- establishing the Army as a steward worthy of the resources entrusted to its care;
- enhancing mission accomplishment; and
- reducing costs to the Army, Nation, and environment.

The Army Environmental Quality Program is organized into four key program areas, or pillars, three of which are the focus of this report and which are briefly described below. To help meet its broad program management responsibilities, the Army established the Environmental Compliance, Conservation, and Pollution Prevention Program (ECCPPP). ECCPPP is an umbrella program that integrates the five basic steps needed to achieve and maintain the highest standards of environmental quality: training, planning and programming, resourcing, assessing, and correcting deficiencies.

Compliance. The objective of the environmental compliance program pillar is to ensure that operations at Army facilities fully comply with all Federal, state, local, Army, and applicable host nation environmental requirements. These requirements principally flow from the Clean Water Act (CWA), Clean Air Act (CAA), Noise Control Act (NCA), Resource Conservation and Recovery Act (RCRA), Toxic Substances Control Act (TSCA), Safe Drinking Water Act (SDWA), and National Environmental Policy Act (NEPA).

A key element of the compliance pillar is the Environmental Compliance Assessment System (ECAS). Essentially an expanded auditing program, ECAS determines how well Army installations are complying with applicable environmental laws, statutes, and regulations. Under ECAS, compliance assessments are conducted for installations every three years by an independent agency. Internal self-audits are conducted annually. These assessments help installations identify deficiencies, develop corrective action plans, and manage their program resources to achieve and maintain compliance in the most expedient and cost-effective manner.

Conservation. This pillar addresses two basic types of resource management — conservation and preservation. Conservation focuses on effectively managing and sustaining Army lands to ensure long-term natural resource productivity. Preservation focuses on resource protection. This means limiting use of some Army lands to ensure the future integrity of valuable resources such as wetlands, endangered species and their habitats, and historic/cultural sites.

Many Army installations have cooperative agreements for natural resources management with the U.S. Fish and Wildlife Service (USFWS), the U.S. Soil Conservation Service, and state natural resource agencies. The Army's complex land use planning and land management requirements are aided by tools such as the Geographic Information System (GIS), which lets land managers and regulators

analyze, store, update, model, and display data; and the Integrated Training Area Management (ITAM) standardized inventory, monitoring, and management program used at Army installations to help managers make smart decisions as they plan and develop training ranges, maneuver areas, and other capital improvements.

Prevention. Prevention involves instilling an environmental ethic that will change behaviors across the Army to help avoid future compliance and cleanup problems. The focus of this pillar is on eliminating pollution to the greatest extent possible. This includes reducing hazardous material usage and hazardous waste generation. All phases of the materiel management life cycle from "cradle to grave" are included.

Generally, prevention is achieved in a hierarchical process, starting with source reduction. The amount of waste generated is reduced by changing process inputs, seeking environmentally acceptable or less toxic material substitutes, increasing efficiency by recycling or reusing materials and byproducts, and by treating residual wastes prior to discharge to ensure they do not cause further environmental degradation.

Environmental Quality Program Health Indicators

Traditionally, annual reports describing environmental quality program performance have focused almost exclusively on enforcement action history, with particular emphasis on the number of enforcement actions (ENFs) received. That has been the case largely because, until the past year or so, there was not much other qualitative data available. The belief has been that the number and frequency of ENFs received by an organization equates directly to overall performance. While the Army views ENFs as an indicator of a condition that is unacceptable and that must be corrected, the use of this indicator alone can be very misleading.

ENF analyses can clearly provide some useful information to program managers, but there are simply too many variables involved that can skew the data and the conclusions that might be drawn from it.[1] For example, a substantial reduction in ENFs from one year to the next may indicate a substantially improved compliance posture; but, in fact, the reduction may have occurred simply because the frequency and/or quality of inspections dropped by an equal proportion, or that there was a large reduction (perhaps as a result of base closures) in the number of installations in the regulated universe.

[1] Appendix A contains additional, more detailed enforcement action data for FY94. It is intended to serve as a baseline for comparison with future program performance in this area.

Significant alternative data sources are becoming available for the first time in FY94. The Army's data bases have been implemented across all installations, ECAS assessments have been completed at most major active installations,[2] and the regulatory environment has (at least for the time being) settled down. These conditions have provided the opportunity to develop ***broad-based indicators that more accurately reflect the true health of the environmental quality program.***[3] While ENFs are included (albeit to a much lesser degree), the focus is on the essential elements comprising the very foundation of the program (e.g., leadership support, and resourcing) and those indicators that illustrate whether or not the program is succeeding in achieving its ultimate goal — improving environmental quality by reducing adverse environmental impacts. The best way to illustrate the latter is to examine trends over time, such as waste disposal and recycling, energy consumption, hazardous waste generation, and yes, even regulatory compliance status. Collectively, these indicators will show whether or not the program is receiving what it needs to succeed and if the results achieved justify the level of investment being made.[4]

It should be noted, however, that the indicators presented here suggest only one alternative approach to interpreting the data that is presently available. As new or additional data evolves, or as future program management focus shifts to other more critical areas of concern, it may be desirable (or necessary) to modify or even replace them with more appropriate indicators. Accordingly, they should not be construed to be permanent or otherwise unchangeable. With this in mind, the key health of program indicators are presented in the sections that follow.

Program Indicator: Army Leadership Support Trends

Twenty years ago, there essentially was no Army environmental quality program — at least not much beyond one or two involved people at the Pentagon and perhaps one individual at each installation who tackled environmental issues as an additional duty. Today, the program is firmly established on a solid foundation of people, funding, management and organization, communications, and shared values. Clearly, the program has come a long way.

Command Support. The Army Environmental Strategy mentioned earlier was christened with the strong support of both the Secretary of the Army and Chief of Staff. Both of these key senior leaders, together with field commanders at all levels, continue to reinforce the importance of integrating environmental considerations into all aspects of mission accomplishment. For example, General Sullivan, the Army's Chief of Staff, presented a keynote address to the Fifth Annual Senior Environmental Leadership Conference (SELC) in November 1993.

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[2] Assessments of Reserve and National Guard installations will be completed at the end of FY95.

[3] Although these new data sources have been implemented and are now available, there is an adjustment period during which the effective use of the data systems throughout the Army must mature.

[4] Indicators are also known as "measures of merit."

At that time, he stressed the fact that: "We are, in fact, and I expect to be, the environmental leader in the United States and I expect the very best from everyone in the organization." He then went on to say: We must protect our environment, we must clean it up, and we must ensure we do not damage it. It's going to require the best from all of us. I will give you all the support I can . . ." Comments of this nature made in public forums have done much to bolster general support for, and command involvement in, the environmental quality program.

In addition to this type of command support, other program leadership initiatives have had positive impacts as well. For example, the SELCs described above have and continue to provide a forum for focusing the attention of the Army's senior commanders and staff on critical environmental issues. The Army Environmental Policy Institute (AEPI) works closely to assist the Army Secretariat in developing proactive policies and strategies to address environmental issues that may have significant future impacts on the Army. The Senior Executive Environmental Council (SEEC), which primarily draws its membership from the Army Staff, actively reviews the progress of the environmental quality program.

Army Environmental Strategic Action Plans. The development and implementation of the comprehensive environmental strategy has been strengthened through fielding of its accompanying action plan (i.e., *Army Environmental Strategy Action Plan,* or [AESAP]). For each goal and objective in the strategy, the action plan defines the appropriate parties and partnerships, needed projects and activities, resources, and timeframes. The action plan is reviewed annually and serves as the basis for monitoring progress in both implementing the strategy and for identifying additional strategic environmental issues. The plan is fully integrated into the Army budget cycle and the RCS 1383 Environmental Requirements System.

Environmental Partnerships. The Army continues to recognize that environmental partnering offers many benefits. Besides pooling scarce resources to address areas of mutual interest, partnering encourages participants to get along better and take increased pride in their work. By working together to find win/win solutions, positive results are being obtained and substantial progress is being made — including improved environmental quality and relationships with regulators, minimal litigation, and substantial cost savings to taxpayers. For example, ongoing Army efforts with the Tidewater Interagency Pollution Prevention Program (TIPPP) continue to promote cooperation in the Chesapeake Bay Region, while simultaneously developing innovative pollution prevention technologies and facilitating technology transfer among the Services and other agencies involved.

Through another partnership with the Soil and Conservation Service (SCS), the Army is using the SCS's ecological systems planning expertise to help protect training areas. Under the agreement, the SCS provides full-time experts in soil and water conservation to support the USAEC. Additionally, SCS field offices support Army installations as consultants on issues such as soil erosion, watershed protection, and land conservation/restoration. A similar program is in

place with the U.S. Geological Survey for assistance in water resources and related geosciences. Other projected partners include the U.S. Forest Service, the Bureau of Land Management, and the U.S. Fish and Wildlife Service (USFWS).

Other ongoing activities in the partnership arena include the following:

- The Army serves as lead agency for two of seven regional Coastal America projects. These projects are partnerships between Federal, state, and local agencies, as well as private interests; all work to solve coastal environmental problems.

- The Army participates in the NATO Committee on the Challenges of Modern Society (CCMS), which explores ways to effectively use the experience and resources of the Western nations to improve the quality of life and the environment for all. Specific Army studies have included environmental impacts of aircraft noise and methods to improve environmental awareness in the Armed Forces.

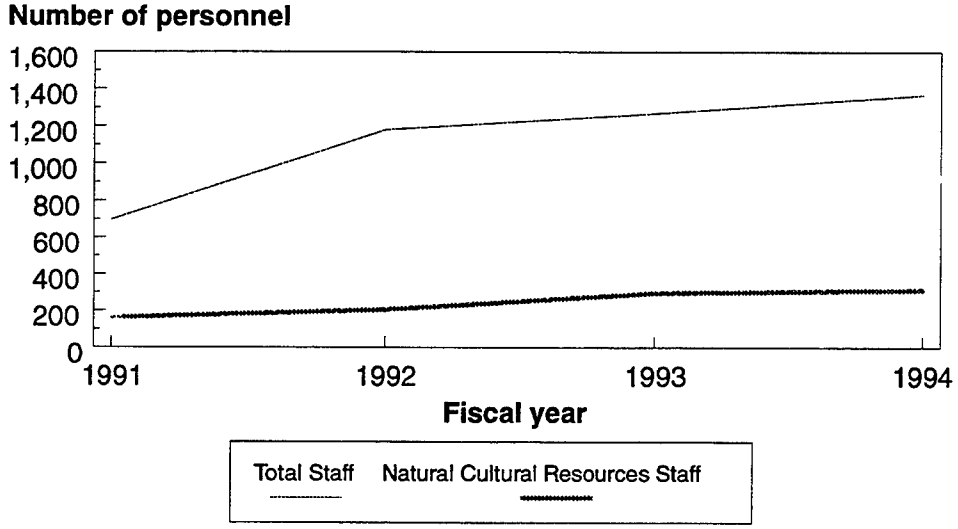
- The Army has entered into an active environmental data exchange with the Federal Republic of Germany. Both parties regularly exchange data about experiences and ideas, and they cooperate on selected problems concerning environmental protection in the area of defense.

- The Army contributes to the North American Waterfowl Management Plan Cooperative Agreement with the U.S. Fish and Wildlife Service as part of an international effort to restore declining waterfowl populations.

Regional Environmental Office Initiative. Under this DoD-directed initiative, the Army (through the U.S. Army Environmental Center) is establishing liaison offices across the country. The ultimate goal is to reduce conflicts; bolster cooperation; expedite actions through improved communications; and generally improve relationships with the U.S. Environmental Protection Agency (USEPA), regional, state, and local regulators. The Army is also manning four DoD Regional Executive Agent Offices (USEPA regions IV, V, VII, and VIII).

U.S. Army/USEPA Exchange Program. Established under the Training-With-Industry Program (TWI), this initiative affords selected Army officers the opportunity to study environmental policy and regulatory issues while working within the major program offices of the USEPA. Under the program, officers develop their own agendas of study on the basis of personal preference and the job-specific requirements of their follow-on assignments. After completing 10 months with the USEPA, the officers return for a minimum one-year utilization tour to an environmental position within the Army. USEPA staff members are similarly assigned to Army positions at all levels of command. The most prominent exchange assignments for USEPA staff members have been, and continue to be, with U.S. Army, Europe (USAREUR) Headquarters, Heidelberg, Germany, and the Office of the Director of Environmental Programs on the Army Staff.

Trained and competent environmental professionals are essential for managing and executing the Army's complex worldwide program. Commensurate staffing and structure, combined with a rigorous recruiting and training program, is being pursued to ensure that quality environmental professionals are available to support the environmental program. Environmental quality program staffing trends are as shown in Figure 2-1.



Note: Figures do not include MACOM, MSC, or HQDA staff.

Figure 2-1.
Environmental Quality Program Staffing Trends

As indicated, environmental staffing levels have experienced moderate, but continual improvement, and they appear to be stabilizing. While this is clearly favorable, it is important to note that the figure reflects actual staffing over time — not requirements. The best indicator of program health in this area is the ratio of actual to required staffing levels.[5] Until recently, however, determination of accurate staffing requirements has been difficult due to the lack of a current environmental staffing standard.

Until total requirements are accurately identified, it will be difficult to address staffing issues in detail. In general, however, Army environmental program managers believe that staffing levels are insufficient, particularly in light of increased regulatory emphasis across all media program areas. Staffing shortages are believed to be particularly acute at the installation level, where primary responsibility for program implementation resides. To compound this problem,

[5]The Army will begin tracking this staffing trend indicator beginning with next year's environmental quality report.

continued downsizing across the Army will make it extremely difficult to bolster environmental program staffing in the coming years.

The U.S. Army Force Integration Support Activity (USAFISA) has completed development of an Army common standard for installation environmental management offices. The standard, which contains manpower staffing guidelines and work center description products, can be used locally to provide an estimate of environmental manpower requirements. Extracts of the standard also provide a tool allowing functional proponents and managers to analyze each work center's current mode of operations, and monitor internal performance. USAFISA is also developing a functional estimating equation (FEE) as the final product to be fielded to support major command (MACOM) manpower programming in the FY96 – FY01 Program Objective Memorandum (POM).

Program Indicator: Environmental Quality Program Funding Trends

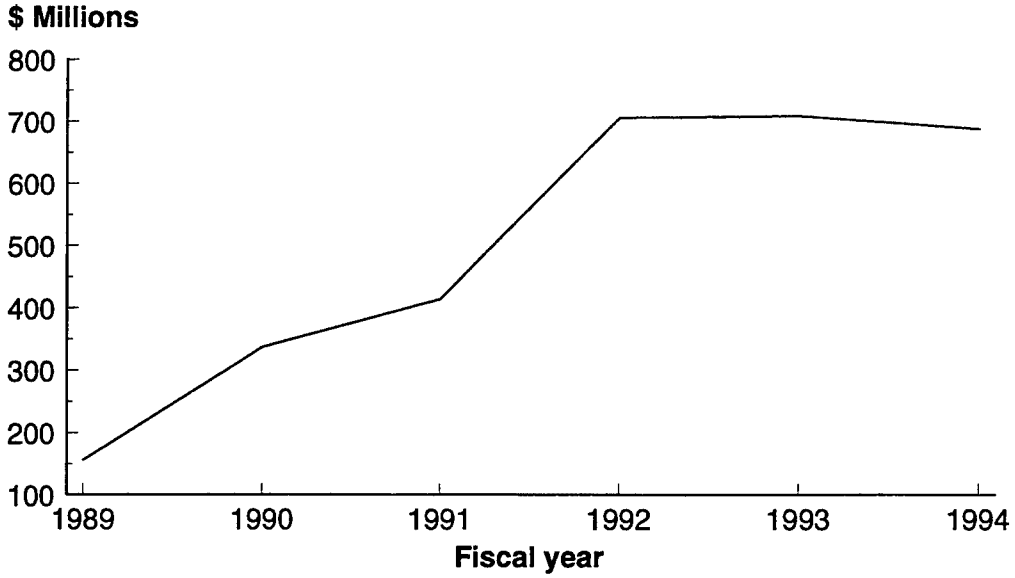
RCS-1383 Report and Data Base. The RCS 1383 reporting system is the centerpiece for programming and planning resources needed to execute the environmental quality program. It is designed to identify all program requirements, which are tracked from inception until they are executed or otherwise addressed. Data reported in the RCS 1383 is used to forecast costs of new program requirements, prepare budget guidance, build the POM, develop budget estimates, and validate budget requests. It also assists in assessing program execution and is used to prioritize and distribute funds in times of shortfall. Input from the RCS 1383 is provided to USEPA and Office of Management and Budget (OMB), who use it to prepare the President's budget for submission to Congress.

Must-Fund Policy. The must-fund policy implements Federal law and Executive order mandates by requiring commanders to identify those areas where they are currently out of compliance (or may go out of compliance in the future), and to align resources to ensure compliance. Specifically, policy requires that all Class I requirements, all Class II which will become Class I by the end of the fiscal year for which budget estimates are formulated, and hazardous waste disposal must be funded. The policy also encourages commanders to be proactive, to anticipate future requirements, and to go beyond compliance by also funding additional Class II and III requirements.

This policy has greatly improved the Army's compliance posture. However, it is causing concern among commanders who must try to address ever-increasing requirements with ever-decreasing resources. The Army's overall environmental quality program objective is to reduce costs, liabilities, and environmental impacts by replacing environmentally sensitive activities with environmentally benign processes. However, once all must-fund requirements have been met, little to no funding is left to apply to investments for innovative projects, pollution prevention efforts, and stewardship initiatives. Commanders feel that the original must-fund policy objective has been met and that it is now time for a major funding policy revision. Accordingly, the Army is working to

develop alternative strategies that will better enable proactive environmental stewardship, offer more flexibility, and achieve maximum return on investment.

Program Funding. Figure 2-2 depicts historical environmental quality program funding trends. As with staffing levels, it reflects healthy growth over time, although it did experience a slight decline between FY93 and FY94 ($709 million vice $688 million). In light of present budget realities, overall funding levels are not expected to increase substantially in the forseeable future. Nevertheless, at a time in history when Army budget authority continues to decline, the percentage of the Army's budget allocated to the environmental program continues to increase (see Figure 2-3). This trend is indicative of the relative importance placed on environmental programs by the senior leadership and resource managers.



Note: Figures do not include the Defense Envrionmental Restoration Account or base realignment and closure.

Figure 2-2.
Environmental Quality Program Total Funding Trends

However, while both of these charts generally reflect positive trends, the picture changes somewhat when funding levels are compared to total requirements (Figure 2-4). As shown, between 1989 and 1994 there has been a gradual increase in total program requirements. During the same period, funding levels have struggled to keep pace and, beginning in 1993, have started to fall. It also should be noted that while the confidence level is high regarding the accuracy of funding data shown, this is not true for requirements data prior to FY93. The environmental program has never been funded at or above 100 percent of requirements. The discrepancies reflected in the graph are attributed to inaccurate field reporting during the earlier program years. This is most likely due to

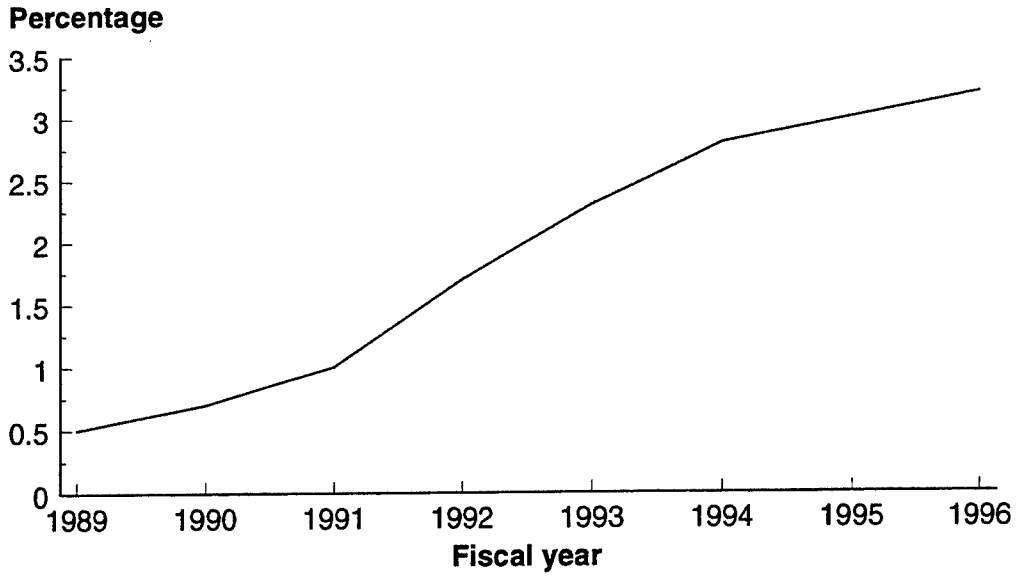


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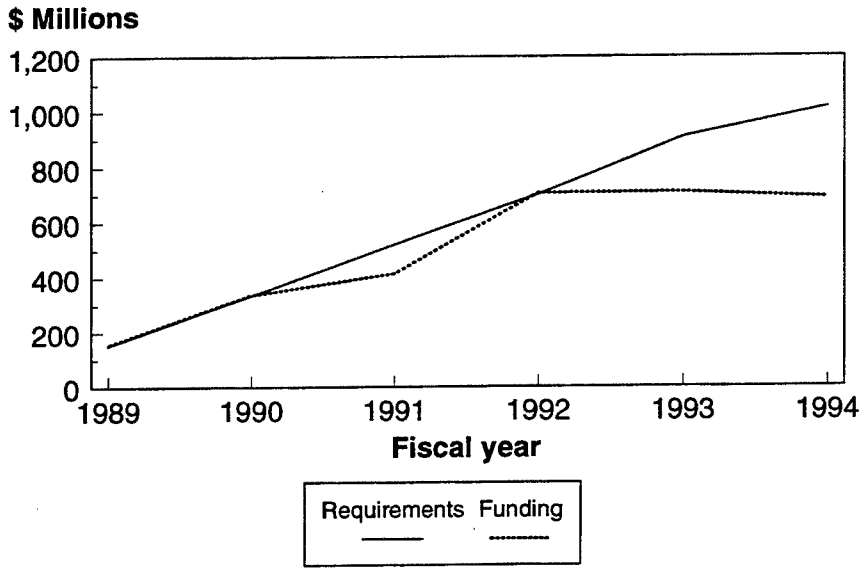
Figure 2-3.
Environmental Quality Program Funding as a Percentage of Total Budget



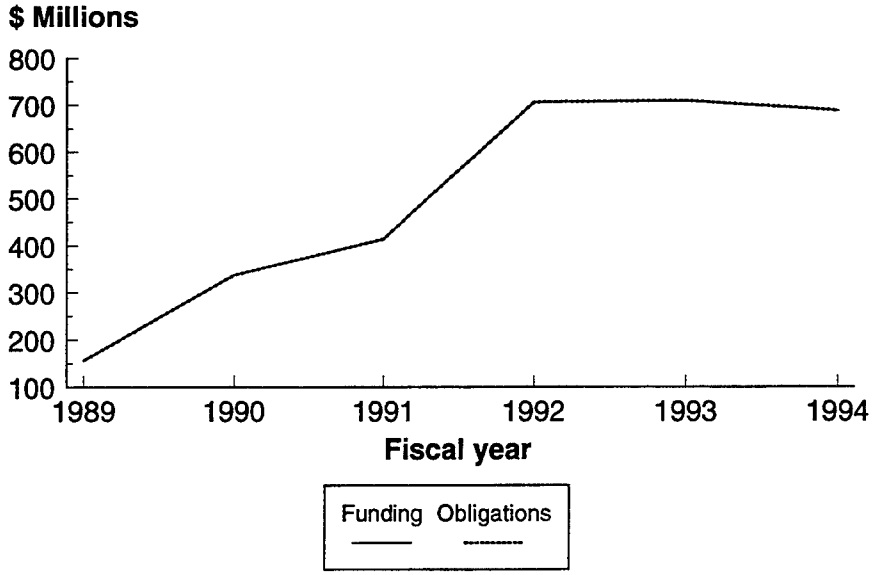
Note: Figures do not include the Defense Restoration Account or base realignment and closure.

Figure 2-4.
Environmental Quality Program Requirements vs. Funding Trends

several reasons: ever-increasing legislative requirements (i.e., the legislative power curve), overall declines in total Army budget authority, and implementation of the ECAS process in FY92 – FY93 that led to the identification of many previously unnoticed deficiencies. The increased shortfall between FY92 and FY93 was exacerbated by the implementation of the Federal Facilities Compliance Act (FFCA) of 1992, which undoubtedly motivated commanders to be more conscientious about identifying, documenting, and requesting funding for environmental requirements, as well as sharpening regulators' incentives to inspect Army facilities. Lastly, the gap continued to widen in FY93 to FY94.

It is too early to predict what direction this trend will take in the near future. Nevertheless, assuming that (1) the environmental budget will not experience significant additional annual growth, and (2) the universe of total program requirements for the outyears is not well-defined at this point in time, substantial additional shortfall increases are likely to occur.

Program Obligation Rates. Almost as critical as funding itself is the rate at which available funding is obligated. Failure to promptly obligate funds not only delays project implementation and completion by substantial margins, but can also result in the eventual loss of funds to other key program areas. The Army goal is to obligate all environmental quality program funding by the end of the programmed fiscal year. Historical program performance in this area is shown in Figure 2-5, which indicates that obligation rates are on track at 100 percent.



Note: Figures do not inlcude the Defense Environmental Restoration Account or base realignment and closure.

Figure 2-5.
Environmental Quality Program Obligation Rate Trends

Compliance vs. Prevention Funding. FY94 brought clarification of Army environmental program policy regarding prevention. The new policy states that "pollution prevention . . . is the preferred approach to environmental management and maintaining compliance with environmental laws and regulations. When alternative approaches are available to deal with an environmentally degrading operation, preventive measures must be used unless mitigating circumstances (e.g., excessive cost, time, or technology limitation) exist and can be documented. Pollution prevention is to be used to complement, and eventually replace (to the maximum extent possible), the traditional pollution control and cleanup orientation in existing Army environmental program management."

This represents a bold departure from the past — a major shift in corporate philosophy. It requires a change in behavior across the entire Army from one of control and compliance to one of prevention. Installations cannot be expected to make this transition unless they are provided the requisite means (e.g., funding) to do so. This means that funding priorities must gradually shift away from compliance and move toward prevention — a shift that ironically conflicts with the existing must-fund policy.

By the time all must-fund environmental projects and other mission-essential requirements have been funded, the typical installation has few resources left to apply toward the heretofore lower priority prevention projects that "go beyond compliance." This is particularly acute at installations operating under the Defense Business Operating Fund (DBOF), which must include capital and operating costs for such projects in the rates it charges its customers for services.

Unfortunately, precise historical prevention program funding data are not available (it will be tracked beginning with FY95). However, for FY95, the Army has budgeted approximately $608 million for compliance, but only $59 million for prevention. Of that later amount, more than $32 million is targeted for ozone depleting compounds (ODC) elimination, which is essentially a compliance requirement. This means that prevention is receiving only a token share of available environmental funding.

If the Army is to truly move toward prevention, the trend illustrated here must eventually be reversed. To achieve this, the Army is working to establish a Pollution Prevention Investment Fund (PPIF), which will provide an additional source of prevention funding, managed separately from compliance accounts. The PPIF initiative is discussed in more detail in Chapter 4 on prevention.

Funding Shortfall Identification Efforts. Much has already been said here about requirements identification and funding shortfalls. To address this issue further, USAEC has undertaken an initiative to ensure that requirements shortfalls are properly addressed during POM-building. For each media program area, specific statutory and regulatory requirements (e.g., pollution prevention opportunity assessments are required at each installation) are identified, quantified, and cost estimated. These program costs are then compared against budgeted amounts for the same requirements as reflected in the RCS 1383. Where

significant shortfalls are found, MACOMs are notified so that appropriate adjustments to budget requests can be made. In some instances, installations and MACOMs may be planning to address these requirements through internal operating budgets, general management funding, or free services from organizations such as the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM). When this is not the case, shortfall areas are considered for central funding and/or management.

Program Indicator: Enforcement Action Trends

As alluded to earlier, ENF trend data can be useful in evaluating overall program performance when examined in conjunction with other key indicators. Its principal value is in assessing general compliance status with respect to statutory and regulatory requirements, and perhaps to a lesser degree, estimating the amount of interest being placed on Army facilities by the respective regulatory agencies. Figure 2-6 summarizes the total number of enforcement actions received at Army installations and facilities. For the purpose of this report, the universe of enforcement actions includes notices of violation (NOVs), compliance agreements, and lawsuits. The data does not include warning letters. Although not depicted on the graph, the Army received a comparatively small number of ENFs in FY90 (and prior years as well). This is reflective of the fact that Federal agencies were still protected by the general sovereign immunity provisions of most statutes (particularly RCRA), and were therefore not as closely scrutinized as the rest of the regulated community. The increases that began in 1991 are most likely attributed to the pronounced shift in regulatory enforcement strategies (particularly across the USEPA Regions) that were designed to increase compliance pressure on Federal facilities. This general trend was then followed

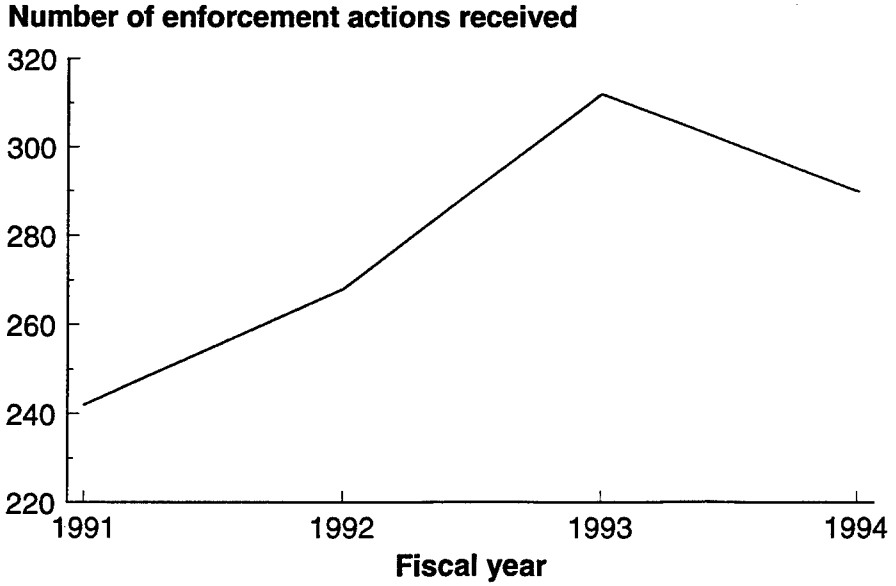
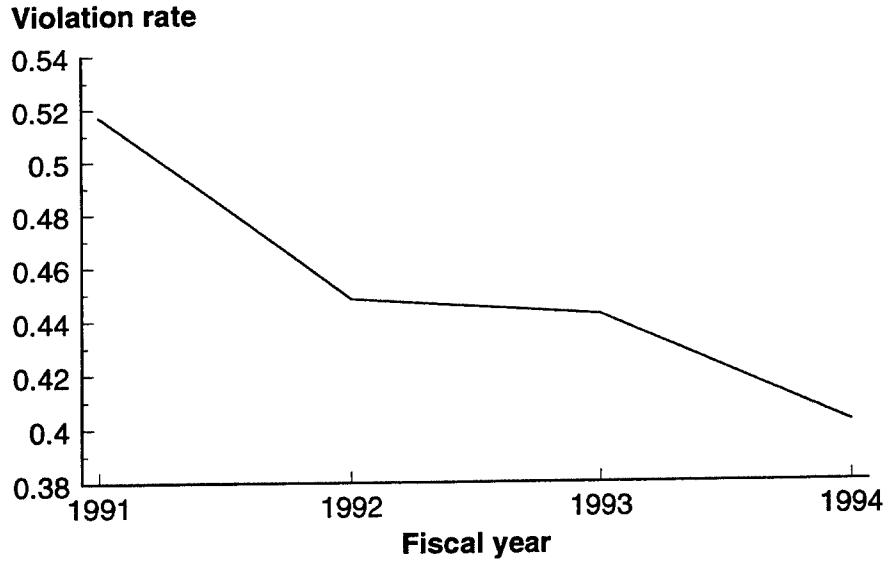


Figure 2-6.
Environmental Quality Program Enforcement Action Trends

by the FFCA of 1992, which removed the last vestiges of sovereign immunity under RCRA. This is reflected in the sharp rise in ENFs that began during that year and peaked in FY93. From that point on, there is a positive downward trend in the number of ENFs received.

Figure 2-7 looks at the same data in relation to the number of inspections conducted (i.e., the violation rate — computed as the ratio of violations to inspections), while Figure 2-8 addresses inspection frequency. These charts provide additional insight into overall trends, and they tend to confirm that the Army compliance posture is in fact headed in a positive direction. There has been a consistent decline in the violation rate since FY91. There was some leveling off from FY92 to FY93 as a result of FFCA implementation, but the overall downward trend continued through FY94. Note that this positive trend has continued even with the increasing inspection frequency. Although the recent decline in overall ENFs could be the result of regulators not looking as closely for deficiencies, it is more likely than not that installations are doing a better job at regulatory compliance.



Note: Violation rate = number of enforcement actions per number of inspections.

Figure 2- 7.
Environmental Quality Program Violation Rate Trends

In principle, while the Army goal is to aggressively continue this downward trend, it may be difficult in practice to achieve and sustain violation rates much below the 0.35 to 0.40 range. This is because of the enormous complexity and sheer number of environmental requirements that must be addressed, coupled with the fact that future regulatory inspections are likely to become more infrequent but, at the same time, much more comprehensive and in-depth.

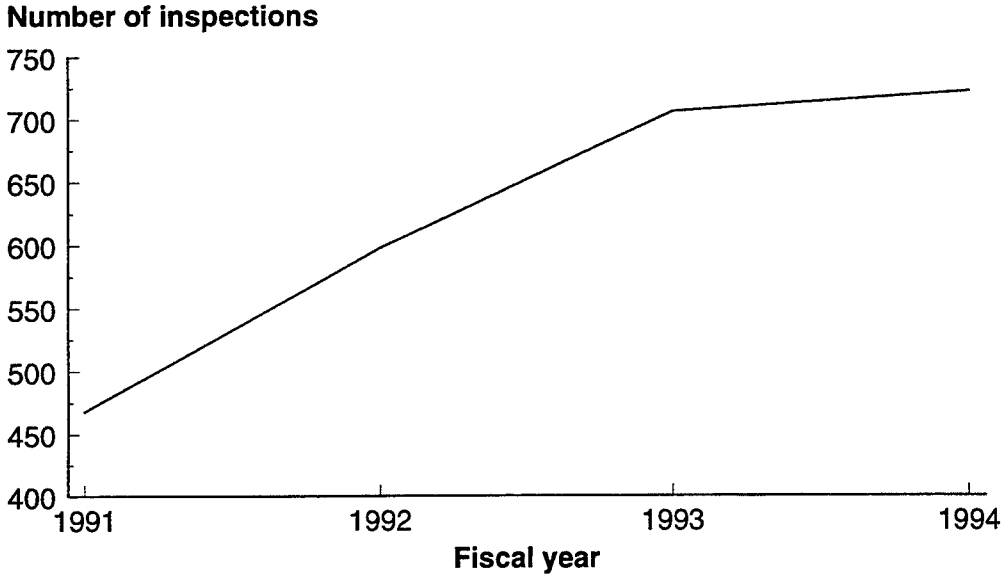
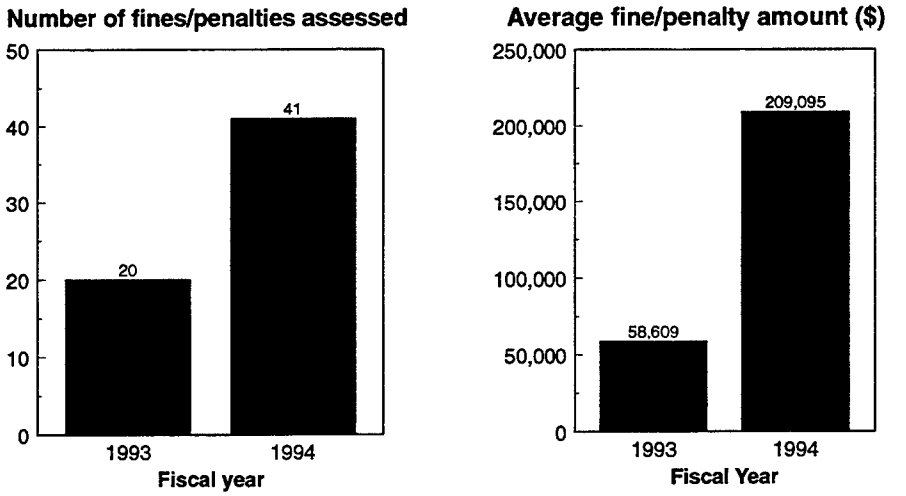


Figure 2-8.
Environmental Quality Program Inspection Frequency Trends



Note: Assessment figure includes fine and supplemental environmental project amounts.

Figure 2-9.
Environmental Quality Program Fines and Penalties Trends

Number/Amount of Fines and Penalties Assessed. Figure 2-9 shows the Total number of fines and penalties assessed against Army installations at the Federal, state, and local levels for FY93 and FY94. It also shows the average dollar amount of those assessments. Statistical data for prior fiscal years is not available, but this information will be closely tracked in the future to allow more in-depth trend analysis.

Ideally, a healthy program should reflect an overall downward trend in the total number and amount of fines/penalties assessed. Army program performance for the years shown reflects more than a 100 percent increase in frequency, while the average assessment increased by more than 350 percent. This should be a cause for concern, particularly in light of the fact that one of the primary objectives of the ECAS program is to reduce the number and amount of fines and penalties received. This concern is reinforced by the fact that the total number of enforcement actions declined by 9 percent during the same period.

While the trend implied here is less than desirable, there are several factors that must be considered before meaningful conclusions can be drawn. First, losing RCRA immunity under the FFCA of 1992 may have motivated regulators to be more rigorous in their assessment of fines against Army installations during the years in question. This possibility is further indicated by the fact that 52 percent of FY93 fines and 70 percent of FY94 fines fell under the RCRA category.

Second, it is important to note that assessing a fine or penalty in conjunction with a particular enforcement action is up to the discretion of the regulator. It could very well be that many other enforcement actions should have resulted in fines or penalties, but the regulator simply chose not to assess one.

Lastly, there were isolated incidents where the fine/penalty assessed was many orders of magnitude higher than the average for all violations. For example, during FY93 the West Virginia Ordnance Works was assessed $2,025,500 for a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) violation, which was roughly 12 times the average for that year. This type of situation tends to skew the data.

Overall ECAS Findings. As mentioned earlier, ECAS is a tool that helps installation commanders achieve and maintain compliance with environmental regulations. Problem areas are identified for each media program. Installation corrective action plans (ICAPs) are then developed, which identify necessary corrective measures and corresponding resource requirements. When the program is working effectively, deficiencies are identified and corrected *before* they can become a finding during a regulatory inspection — thereby reducing the installation's violation rate.

Figure 2-10 shows the overall ECAS finding trend using data since formal tracking began in FY91. Capturing the essence of ECAS findings on a single graph is difficult at best; however, it illustrates that the general trend is a positive one. The average number of "negative" findings per installation assessment is gradually declining, as are the average number of health and safety findings.

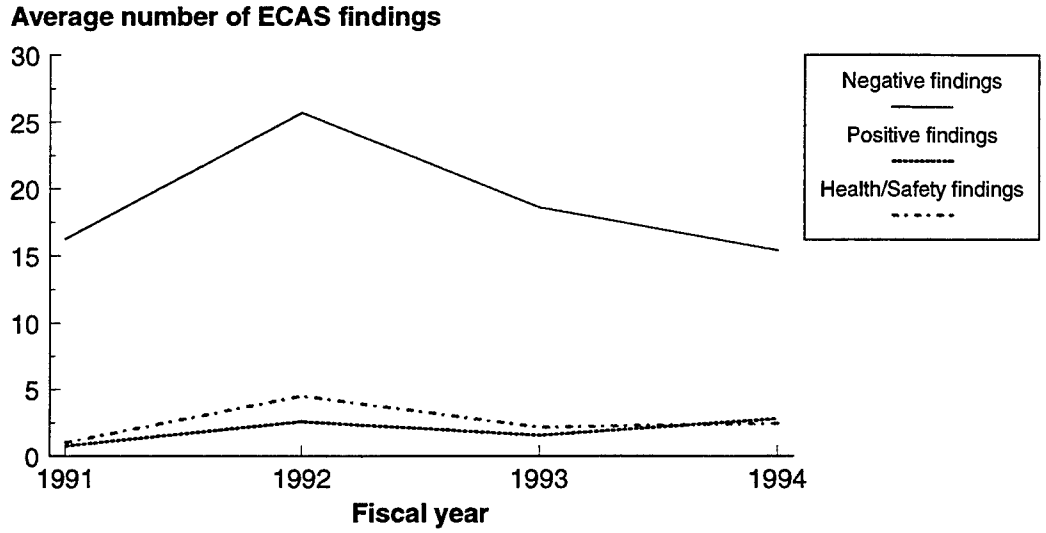


Figure 2-10.
Environmental Quality Program ECAS Findings Trends

While this trend may reflect the fact that the first installations assessed were those known to have the most problems, the overall indication is that compliance programs are improving, and that personnel risks (and associated liabilities) are being held to acceptable levels. Also note that the average number of "positive" findings is on the increase as well. As additional ECAS assessments are completed and corrective action plans implemented, the Army expects to gradually narrow the gap between positive and negative findings.[6]

Another key observation that can be made from ECAS findings is their relationship to the violation rates that were presented in Figure 2-7 earlier. Note that over time, the higher the number of overall ECAS findings, the lower the overall violation rate tends to be. As previously stated, this is the trend that would be expected if ECAS is having the desired effect.

Program Indicator: Energy Consumption Trends

The Army continues its efforts toward achieving the energy reduction goals established in Defense Energy Program Policy Memorandums, applicable Executive Orders, and the Energy Policy Act of 1992. The primary objective is to reduce total Army facility energy consumption by 25 percent by FY05, using FY85 as the baseline consumption year. Figure 2-11 portrays the Army's progress to date.

[6] Additional ECAS summary data detailing findings and corrective actions is provided in Appendix B.

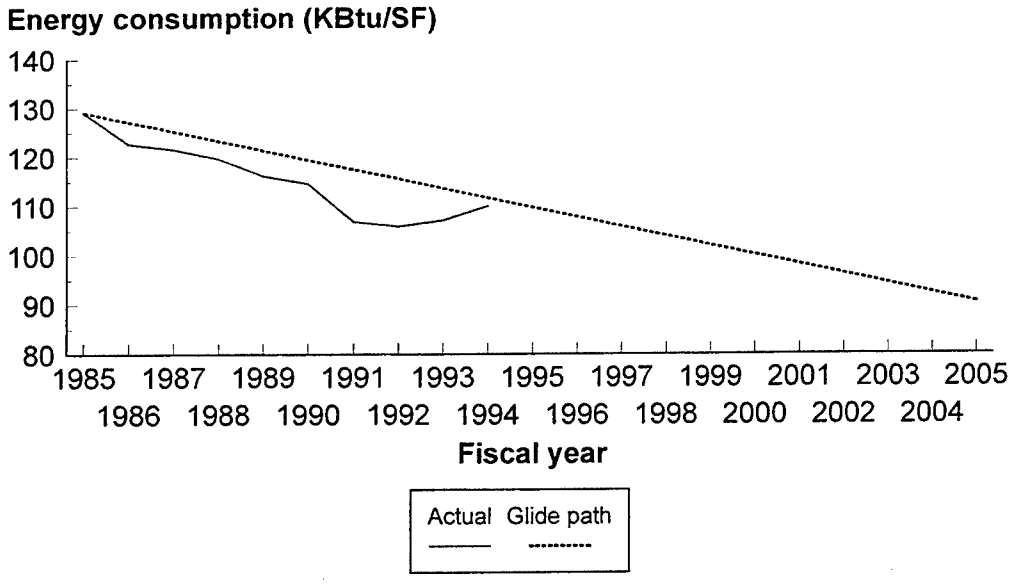


Figure 2-11.
Environmental Quality Program Facility Energy Consumption Trends

On a total thousand British thermal units (MBtu) consumption basis, the Army consumed 17.42 percent less facilities energy in FY94 than in FY85. The Army has consistently stayed below the ideal glide path required to meet mandated goals. The slight trend increase during FY92 – FY94 is due to the closing of several highly energy-efficient facilities in Europe. The Army remains committed to efficient energy management and will continue to pursue energy saving opportunities that make good sense. In FY94, the Army consumed approximately $967 million in facilities energy. The average cost was $8.96 per MBtu, or approximately $0.98 per square foot per year.

Program Indicator: Hazardous Waste Disposal Trends

Army policy is to manage hazardous materials and wastes to minimize generation and reduce financial and operational impacts to the installation, while protecting public health and the environment. To achieve this, the Army is focusing its efforts to ensure that hazardous material (HM)/hazardous waste (HW) personnel are properly trained and experienced; that functional and complete HW management plans are developed and implemented at all installations; and that required regulatory permits are maintained at all treatment, storage, and disposal facilities.

The best indicator of program performance in this area is the amount of hazardous waste disposed during a given year. Figure 2-12 summarizes disposal data for the total Army beginning with CY85. Note that there has been an overall 53 percent reduction in hazardous waste disposal since 1985. This is a significant achievement by anyone's standards. In fact, the initial Army (and DoD)

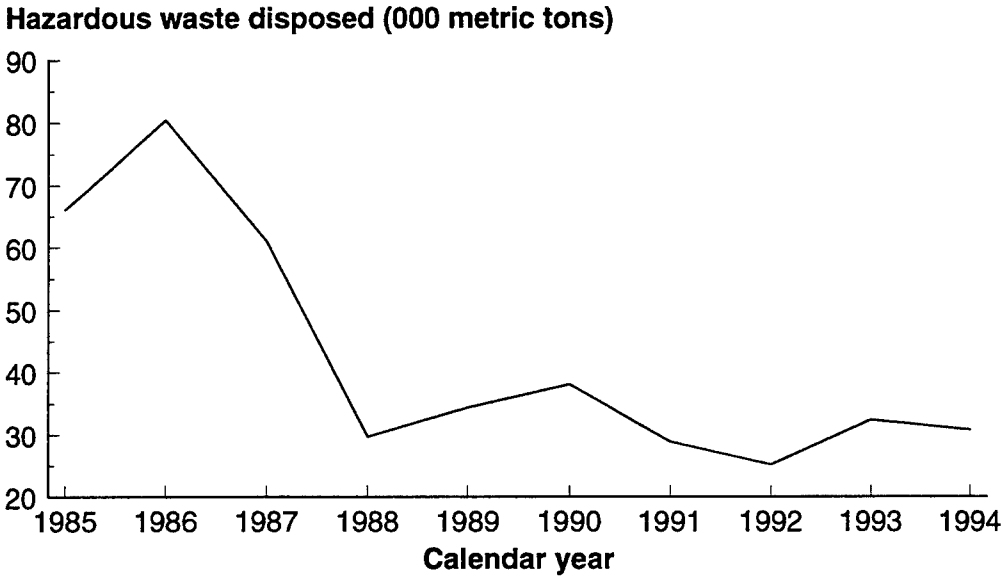


Figure 2-12.
Environmental Quality Program Hazardous Waste Disposal Trends

goal of reducing waste disposal by 50 percent by FY92 (FY85 base) was exceeded, with a 56 percent reduction being posted.

As the data indicate, total waste disposal trends continue to be highly favorable. The program initiatives underway will help to ensure that this trend continues into the foreseeable future.

In addition to vastly reducing the amount of hazardous wastes being generated, the Army has shown similar improvement in reducing environmental degradation due to spillage of these wastes (Figure 2-13).

PROGRAM INDICATOR: SOLID WASTE DISPOSAL TRENDS

Army policy is to minimize or eliminate sources of pollutants to the air, land, and surface or ground waters due to solid waste collection, processing, treatment, and disposal. The current strategy for achieving this end is to adopt and implement integrated management approaches, procedures, and operations in all Army mission areas to conserve and reduce the consumption of resources and to minimize the environmental impacts resulting from solid waste generation.

The overall program incorporates integrated solid waste management practices and principles. Under its tenets, installations are required to follow a five-step hierarchy: **source reduction** — procuring items that generate less waste and toxicity in their use or that were manufactured in a way that minimizes waste and toxicity; **reuse** — reducing waste by using a product or package (without remanufacturing) after its original purpose has been achieved; **recycling** —

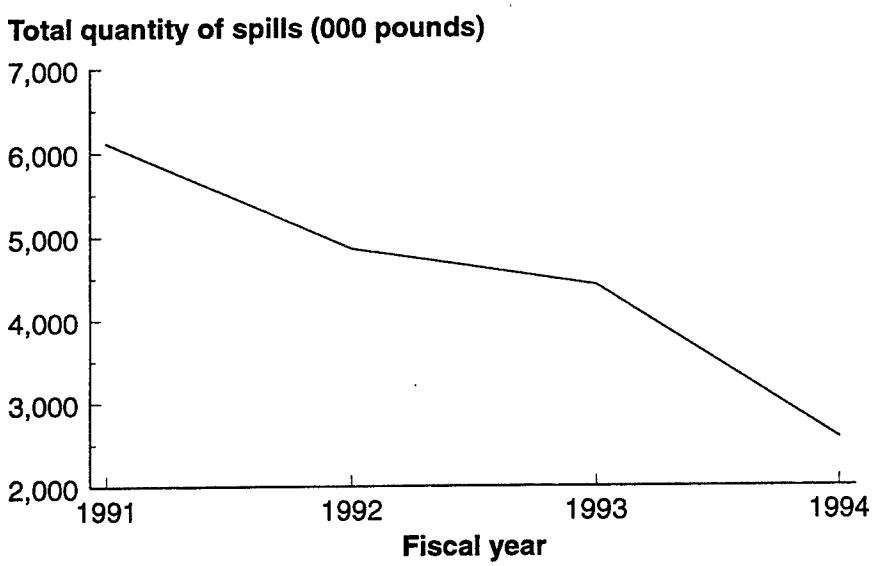


Figure 2-13.
Environmental Quality Program Hazardous Waste Spill Trends

collecting and sorting used materials to be remanufactured into new products; **incineration** — controlled burning of those materials that cannot be reduced, reused, or converted into methane gas; and, when the preceding actions fail, **landfilling** — burying garbage in pits designed and monitored to minimize leakage and methane gas migration.

Army progress to date in reducing the amount of solid waste disposed in landfills is reflected in Figure 2-14. As indicated, there has been a gradual reduction in total quantities disposed each year since FY89. Quantities disposed in FY94 represent a 56 percent reduction from FY89 levels.

In addition to this success, the Army continues to work to reduce and eventually eliminate the number of active landfills operated on its installations. Although a precise inventory has not been completed, it is estimated that there are no more than 25 to 30 active landfills in operation. This represents a reduction of more than 50 percent compared to totals of just a few years ago.

Program Indicator: Recycling Trends

Army policy stipulates that solid and hazardous wastes should be recovered and recycled to the greatest extent practicable. Army recycling efforts emphasize waste stream reduction, closed-loop approaches (installation or intra/inter Service reuse), as well as offering materials for sale. Generally, closed-loop recycling offers the greatest economic and environmental benefit.

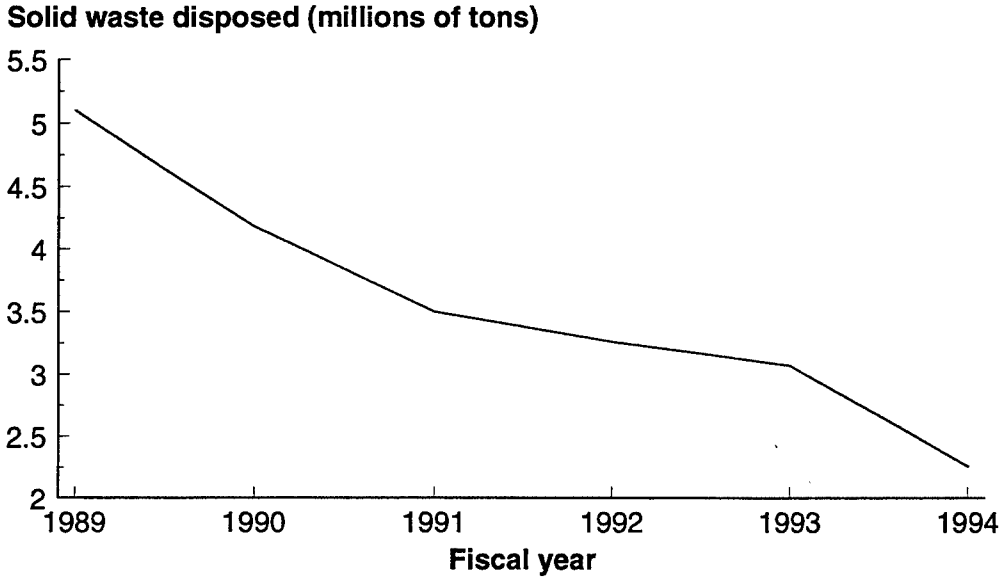


Figure 2-14.
Environmental Quality Program Solid Waste Disposal Trends

Installations are encouraged to establish their own recycling programs, or to cooperate to the extent practicable in programs conducted by the surrounding civilian community. Basic guidelines for recycling program participation are that the end result furthers resource recovery, and that the annual cost to the Army is no greater than that of alternative waste disposal systems. Currently, 176 installations have recycling programs; 21 of these programs participate with their local communities, and 49 incorporate hazardous materials recycling.

During the period from FY90 through FY94, Army installations achieved considerable success at recycling both solid and hazardous wastes. Materials are recycled through the Defense Reutilization and Marketing Service or through direct marketing sales. Specific accomplishments during this period were as follows:[7]

Total quantity recycled (lbs.)	
Paper, plastic, metal	12,587,399
Hazardous material/waste	774,734
Recycling proceeds (net)	$14,813,428
Recycling proceeds spent on MWR	$11,113,350

[7]These figures are extremely conservative. We have not provided trend charts because of incomplete reporting; these figures are provided for those installations that *did* report.

Recycling proceeds spent on environmental projects	$ 3,700,078
Net recycling cost avoidance	$70,159,537

The true value of recycling can be seen not only in net proceeds and waste reduction, but also in the saving of more than $70 million in waste disposal fees. As recycling programs and markets expand, the Army expects to generate even greater revenues and savings through increased cost avoidance.

PROGRAM INDICATOR: ENVIRONMENTAL MANAGEMENT AND INTEGRATION IN FOREIGN NATIONS

Army policy with respect to overseas installations and facilities is that they must maintain cooperative relationships with their respective host nations, while complying with standards and regulations that adequately protect human health and the environment. The latter includes compliance with Final Governing Standards (FGS) developed by DoD Executive Agents in consideration of DoD overseas environmental baseline guidance and host nation/Status of Forces Agreement (SOFA) environmental requirements. The Army exercises DoD Executive Agent responsibility for all DoD installations in Germany, Belgium, the Netherlands, Korea (through U.S. Forces, Korea), all nations in Southern Command, as well as those countries in the U.S. Central Command's area of responsibility.

In connection with its overseas operations, activities, and responsibilities, the Army has

- continued development of final governing standards for Germany, Belgium, and the Netherlands;
- implemented ECAS overseas. (this program initiative began in FY92 and initial evaluations will continue through FY96; a total of 50 ECAS evaluations were completed during FY94);
- initiated development of a viable overseas environmental restoration policy in partnership with the other DoD Components;
- participated in a joint Service effort to review the applicability of NEPA overseas;
- established an annual formal In-Progress Review (IPR) program to facilitate comprehensive planning and execution of the overseas environmental program; and
- incorporated new overseas environmental policies and guidance in the draft AR 200-1.

Internal Awards. The Secretary of the Army presents annual awards in the categories of natural resource conservation, environmental quality, cleanup, pollution prevention, and recycling. The FY94 award recipients and specific achievements are briefly outlined below.

Chief of Staff Natural Resources Conservation Award

Installation — Fort Leavenworth, Kansas. Fort Leavenworth was cited for its demonstrated success in establishing multidisciplinary environmental partnerships, research on global warming, and many other innovative programs that reflect its commitment to natural resources and the larger community.

Individual — Valerie Morrill, Conservation Program Manager, Yuma Proving Ground, Arizona. She was cited for her skill at combining limited resources with those of cooperating agencies and volunteers to establish and maintain natural and cultural resources programs for the 830,000-acre installation.

Environmental Quality Award

Installation — Lake City Army Ammunition Plant, Missouri. LCAAP was cited for its effective implementation of total quality environmental management principles throughout its daily operations and activities. This work has earned LCAAP a reputation for environmental excellence in compliance and general program management.

Individual (Industrial) — James E. Gansel, Riverbank Army Ammunition Plant, California. He was cited for consistently directing one of the most effective environmental programs in the Army. His achievements included publication of a Model Community Relations Manual, development and approval of the first *DoD Base-Wide Record of Decision*, and recognition by the USEPA's Administrator for his community relations activities and overall leadership of a model environmental program.

Individual (Non-industrial) — Cristal Fosbrook, Chief, Environmental Restoration and Compliance Branch, Fort Richardson, Alaska. She was cited for excellence in management of a $60 million annual budget compliance program, as well as her work as the remedial project manager for both of the Army's National Priorities List sites in Alaska. She also served as the lead technical negotiator for the U.S Army Alaska Environmental Program. Additionally, she won several awards and citations for her innovative and resourceful work in the environmental field.

Cleanup Award

Installation — Sacramento Army Depot (SAD), California. SAD was cited for its implementation of an effective and efficient Fast Track Cleanup program. Through teamwork, dedication, and an extremely positive relationship with regulators and the local community, several remediation projects were initiated or completed ahead of schedule using innovative technologies. The result was the expeditious, beneficial reuse of the properties.

Pollution Prevention Award

Installation (Non-industrial) — Texas Army National Guard. The Texas Army National Guard was recognized for its achievements in meeting the environmental challenges posed by the size, complexity, training tempo, and large geographic area of responsibility of its operations and activities. In particular, its Pollution Prevention Committee represented the best example of teamwork, experimentation, and innovation as an action arm of the command oversight Environmental Quality Control Committee.

Installation (Industrial) — Lake City Army Ammunition Plant, Missouri. LCAAP was cited for its success at integrating pollution prevention throughout its operations and activities worldwide. LCAAP demonstrated that it can compete as a national leader in environmental stewardship, primarily through its efforts to reduce pollution at its source, as well as its strong commitment to the environment.

Team Acquisition — Environmental Management Office for the Project Manager (PM), Abrams Tank System, Program Executive Office, Armored Systems Modernization, Michigan. The team was recognized for developing and implementing an Environmental Management Program that has made concern for the environment a top priority. Its pollution prevention program led to virtual elimination of cadmium and chromium from the Abrams tank design. In addition, the team successfully implemented an environmental training program targeted at PM personnel and others within and outside the Tank Automotive and Armaments community.

Recycling Award

Installation — Tobyhanna Army Depot (TAD), Pennsylvania. TAD was cited for achieving a 73 percent reduction in its solid waste stream and subsequent disposal impacts on area landfills. This success was realized through the use of several innovative techniques, such as reuse of coal fly ash, and a closed-loop wood recycling project with a local Defense Logistics Agency activity.

Individual — Charles Penwell, Recycling Coordinator, Tobyhanna Army Depot. He was recognized for facilitating the transformation of TAD into an environmental leader and award-winning installation. As a direct result of his

efforts, TAD was able to recycle some 11.34 tons of material. This earned the installation revenues of more than $388,400 from the sale of the material, and also saved in excess of $1 million in waste disposal fees.

External Awards. In FY94, Army individuals made a strong showing in the Department of Defense Environmental Awards competition. Three of the above Army award winners went on to receive DoD awards as follows:

Individual Natural Resources Conservation Award — Ms. Valerie Ann Morrill, Yuma Proving Ground, Arizona.

Individual Recycling Award — Mr. Charles Powell, Tobyhanna Army Depot, Pennsylvania.

Pollution Prevention Team Acquisition Award — Environmental Management Team for the Project Manager, Abrams Tank System, Program Executive Office, Armored Systems Modernization, Michigan.

Health of Program Summary

Overall, the indicators reflect a vigorous environmental quality program that is clearly headed in the right direction. Senior leadership direction, involvement, and support is at the highest visibility levels in the program's history. Resourcing reflects rapid growth over the past five years, although personnel[8] and funding shortfalls continue to be areas of concern. In view of this, effectively transitioning program emphasis from compliance and control to prevention will present a formidable challenge in the years ahead.

From the regulatory perspective, program performance is much improved. Enforcement action and violation rate trends indicate that Army installations enjoy a favorable compliance posture. The ECAS program and the pollution prevention program (via pollution prevention opportunity assessments [PPOAs]), in conjunction with increased command emphasis at all levels, is beginning to achieve positive results, both in CONUS as well as at overseas installations. However, additional work is needed to reverse the current trend in the number and amount of regulatory fines and penalties, resulting primarily from implementation of the FFCA.

The generation and disposal of solid and hazardous waste are in a downward trend, as are the number of hazardous substance spill incidents. Simultaneously, installation recycling programs are increasing and succeeding in reducing the solid waste stream and associated disposal costs.

In the next chapter, compliance pillar media-specific summaries of goals, objectives, accomplishments, and issues are presented.

[8] The Army has had difficulty in accurately identifying total environmental personnel requirements. Accordingly, staffing issues cannot be addressed here in detail.

CHAPTER 3

Compliance Pillar: Media-Specific Program Summaries

GENERAL

The compliance pillar of the Environmental Quality Program focuses on activities designed to ensure that current operations at Army installations and activities (including civil works project sites) meet or exceed Federal, state, local, and applicable host-nation environmental requirements. These requirements include statutes, case law, regulations, policies and directives principally in the media program areas of air quality, radon, asbestos, environmental noise, safe drinking water, wastewater, hazardous/munitions waste, underground storage tanks (USTs), and the National Environmental Policy Act.[1]

More than 50 major Federal environmental statutes are on the books, with more introduced every year. This makes full compliance a very challenging and sometimes elusive goal. Nevertheless, the Army continues to make progress in this area as reflected by the gradual decline (beginning in FY92) in the overall violation rate and number of enforcement actions received. As alluded to earlier, the greatest challenge for the Army will be to continue to improve its compliance posture and, at the same time, effectively transition to the prevention mode of operation.

The balance of this chapter briefly summarizes the major goals, objectives, achievements, and issues related to each of the individual media program areas outlined above.

AIR QUALITY MANAGEMENT

Overall Program Goals: To control emissions to the atmosphere to protect human health and the environment and to comply with all applicable Federal, State, local, and host nation air quality control regulations.

FY94 Program Management Goals: To complete and update air emissions inventories at all CONUS Army installations, to develop and initiate an installation air permits assistance program, and to develop an air emissions reduction credit program.

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[1] ECAS, solid waste, and overseas environmental management/integration are also included under the compliance pillar, but have already been addressed in Chapter 2.

FY94 Program Achievements:

- Completed air emissions inventories at all major CONUS installations.

- Established a formal air permits assistance program to help installations address CAA Title V permitting requirements. In conjunction with the USACHPPM, a major guidance document was developed and fielded under the program — *Title V Permit Assistance Guide for Army Installations* (July 1994). The guide provides detailed information concerning Title V requirements, application preparation, tracking and monitoring of air pollution sources, and various resource considerations. The guide complements the *Protocol for Conducting an Air Pollution Emission Inventory at the Department of the Army Activities*, which was fielded in May 1993.

Major Issues/Concerns:

- The Army must ensure that all Title V permit applications are submitted in accordance with prescribed regulatory guidelines. The estimated cost for doing this is approximately $150,000 – $200,000 per installation application.

- Continuing costs to maintain permits, conduct required monitoring and record keeping, submit annual reports, and complete 5-year renewal applications will be complicated, labor intensive, and will strain already sparse budgets. In addition, staff available to address continuing administrative requirements is inadequate at most installations (normally only one person assigned per installation).

RADON REDUCTION

Overall Program Goal: To reduce the risk of lung cancer to soldiers, their families, and civilian Army personnel by minimizing exposures to radon.

FY94 Program Management Goals: To establish a management control system to ensure that radon mitigation is accomplished, wherever required, in a timely fashion. To accelerate completion of the assessment phase of the program, and increase emphasis on the mitigation phase.

FY94 Program Achievements:

- Completed radon testing of approximately 93,000 buildings (88 percent of priority I universe, 76 percent of priority II, 45 percent of priority III, and 75 percent of all buildings). Identified roughly 6 percent that require retesting or mitigation.

- Completed draft revision of AR 200-1, which will focus radon efforts on the mitigation phase, allow installations more flexibility, and provide installation medical officers a larger role in determining relative health risks and in evaluating additional testing and mitigation needs.

Major Issues/Concerns:

- Radon testing and mitigation to date has cost $5.5 million. Installations have identified additional requirements for $20.5 million, but only $9.5 million has been programmed.

- Radon program requirements are in RCS 1383 funding Class 3 because the requirements of TSCA Title III have been met and additional efforts are not mandated by law. This situation resulted in a 90 percent reduction in overall radon program funding in FY94; it will be very difficult to obtain future funding to complete the assessment phase.

SAFE DRINKING WATER MANAGEMENT

Overall Program Goal: To provide potable and palatable drinking water free of objectionable levels of contaminants; to comply with applicable regulations and standards; to ensure the availability of water resources for legitimate uses; to conserve water resources; to protect water resources from contamination.

FY94 Program Management Goals: To establish a Drinking Water Management Workgroup, with representation from major commands and technical centers, in order to provide guidance on Army-wide program direction and requirements, and monitor program progress. To conduct impact assessments of major new regulations (e.g., lead, copper, and disinfectants rules).

FY94 Program Achievements:

- Significantly reduced the number of regulatory enforcement actions received as compared to FY93 (overall 48 percent reduction), reestablishing the downward trend of earlier years.

- Assessed impacts of new drinking water regulations that affect Army operations and activities, including lead and copper rule, disinfectants, and disinfection byproducts rule.

- Began development of a strategy that will explore the requirements for an effective program with specific tasks, milestones, resource requirements, and measures of merit.

Major Issues/Concerns:

- The age of the Army's water infrastructure, coupled with more stringent standards envisioned in the near future, could result in regulatory impacts affecting the Army's ability to operate some installations. Major increases in water-related investments could be required to upgrade those facilities to meet standards (e.g., improved corrosion control and better filtration/ disinfection).

- Watershed-based regulations could result in significant shifts in the regulation of Army water facilities. The funding originally programmed to inventory and assess watersheds was cut from the budget.

WASTEWATER MANAGEMENT

Overall Program Goals: To ensure the availability of water resources for legitimate uses, to conserve water resources, and to protect them from contamination.

FY94 Program Management Goals: To operate wastewater treatment systems in compliance with applicable standards and permits; to reduce the quantity of toxic releases from wastewater treatment plants and subsequent impacts on receiving waters; to provide a wastewater system infrastructure and adequately trained staff capable of complying with current and future regulations; to conserve water resources by increasing recycling/reuse of wastewater.

FY94 Program Achievements:

- Significantly reduced the number of regulatory enforcement actions received as compared to FY93 (overall 39 percent reduction).

- Developed a Federally-Owned Treatment Works (FOTW) questionnaire to enable the Army to assess the compliance status of Army FOTWs, and assist installations in the development of formal pretreatment programs.

- Initiated an effort to assess the Army wastewater treatment plant (WWTP) infrastructure to determine plant capabilities in meeting existing and future Clean Water Act requirements.

- Established the Mobile District, U.S. Army Corps of Engineers (USACE) as the Army's stormwater technical center of expertise. Mobile District will assist installations in general compliance with stormwater regulations.

- Made considerable progress in the preparation of installation stormwater permits (260) and stormwater pollution prevention plans (156).

- Conducted six installation stormwater coordinator training courses for 119 personnel.

Major Issues/Concerns:

- Regulatory requirements are becoming more stringent and complex.
- Costs for repair and/or replacement of infrastructure are unknown.

HAZARDOUS WASTE MANAGEMENT

Overall Program Goals: To ensure waste management practices that protect public health while minimizing operational impacts on the installations; to minimize the disposal of waste; to minimize the need for Army-operated waste storage facilities; to comply with all applicable statutes and regulations. A major subcomponent of this program is the management of munitions disposal.

FY94 Program Management Goals: To ensure that all required HW training is accomplished for applicable personnel. To ensure that all hazardous waste treatment, storage, and disposal facilities are properly permitted, while simultaneously minimizing the need for such facilities. To develop alternatives to permitting munitions disposal facilities.

FY94 Program Achievements:

- Significantly reduced the number of regulatory enforcement actions received as compared to FY93 (overall 34 percent reduction).
- Shut down a number of treatment, storage, and disposal (TSD) facilities in conjunction with the base realignment and closure (BRAC) process. Also, several installations upgraded their HW management processes to the point that permitted storage facilities are no longer needed.
- Undertook a study to evaluate the cost effectiveness of consolidating open burning/open detonation (OB/OD) operations/activities in order to develop alternative permitting strategies. Provided assistance to the 52 installations that may ultimately require Subpart X (OB/OD) permits.
- Spearheaded the effort to organize and conduct a joint Defense Logistics Agency (DLA)/tri-Service HM/HW conference.
- Increased the Army's focus on the monitoring and overall management of polychlorinated biphenyls (PCBs) from a risk-based perspective. Integrated PCB management into maintenance plans and identified needed projects to remove elevator and hydraulic lift transformers having more than 50 parts per million of PCB.

Major Issues/Concerns:

- Although enforcement actions continue to decline, the bulk of such actions are still based on administrative or operational failures at the installation level, indicating continuing problems with training or leadership.

- The increase in the use of RCRA corrective action rather than the Defense Environmental Restoration Account (DERA) process may result in major unanticipated funding shortfalls, because DERA cannot be used to address these requirements.

- Initial costs for OB/OD permits could exceed $1 million per installation. Costs for renewal and annual compliance with permit conditions are unknown, but are likely to be equally substantial.

- Increasing legislative focus on PCBs will likely increase time, record keeping and dollar costs for program management. It is difficult to accurately identify the scope of PCB items since PCB is found in many parts of buildings and other elements of installation infrastructure in addition to transformers.

UNDERGROUND STORAGE TANKS

Overall Program Goal: To ensure compliance with applicable regulations and standards.

FY94 Program Management Goals: To develop comprehensive UST inventories and management plans at all installations; to meet all mandated regulatory upgrade requirements as deadlines occur; to develop and maintain adequately trained staff resources.

FY94 Program Achievements:

- Reduced the number of regulatory enforcement actions received; enforcement actions are now almost exclusively related to conduct of leak/spill remediation rather than UST operating deficiencies. This represents a major trend reversal and illustrates that training programs are having a positive impact.

- Spent $132 million on UST removal, replacement, and upgrade. A total of 5,000 USTs have now been closed, with 11,837 remaining in the inventory. Of those remaining, 5,915 require upgrading to comply with environmental protection deadlines. Of that number, 41 percent require spill/overflow protection; 23 percent require cathodic protection; and 78 percent require leak detection.

- Completed fielding of the TANKMAN data base system, which has become the transition software for the Defense Environmental Security Corporate Information Management (DESCIM) UST module; it features a risk model to

give users a simpler way to prioritize tanks. It also provides extensive tracking and reporting capabilities, including well information modeling, testing information, enforcement action and other historical tracking, and inventory reconciliations. TANKMAN is already in high demand by Federal, state, and local agencies, as well as many private companies.

- Developed guidance on preparation of installation UST management plans.

- Completed a UST training needs analysis, which has been integrated into the *Army Environmental Training Master Plan.*

Major Issues/Concerns:

Effective budgeting for tank upgrades and remediations at the installation level remains a concern due to fluctuating requirements from the field.

ASBESTOS MANAGEMENT

Overall Program Goals: To control asbestos (including all asbestos-containing materials, friable and nonfriable); and to minimize environmental release and subsequent occupational and incidental exposures.

FY94 Program Management Goals: To review and coordinate the overall Army program; to ensure that each installation has an asbestos management team and an asbestos management plan; to increase efforts to complete installation asbestos surveys; to ensure that prompt follow-up actions are taken wherever necessary to minimize health risks; and to ensure that individuals identified to work with asbestos are trained and certified per Federal, state, local, and host-nation requirements.

FY94 Program Achievements:

- Initiated development of technical manual (TM) 5-612 which will serve as an asbestos supplement to AR 200-1. The TM 5-612 will provide detailed guidance for asbestos control, and it will facilitate continuous updates as new technology and procedures for asbestos management evolve.

- Established an Army Asbestos Workgroup with representation from ACSIM, USAEC, USACHPPM, and MACOMs. Its purpose is to review the Army's program and make recommendations for needed improvements, particularly in the areas of policy and technical guidance.

- Modified the asbestos portion of the ECAS protocol to increase program focus.

Major Issues/Concerns:

- Overall asbestos program management responsibilities at the Headquarters, Department of the Army (HQDA) level require clarification to ensure productive program execution.
- Asbestos-abatement funding priorities require clarification.
- Many installations do not appear to have asbestos management teams in place, nor do they have comprehensive asbestos management plans.
- Army-wide asbestos surveys required by AR 200-1 have not been completed at many installations.
- In some instances, particularly in family housing, prompt follow-up actions have not been taken subsequent to identification of a potential asbestos health hazard.
- Health and safety training for personnel working with asbestos needs improvement.

ENVIRONMENTAL NOISE

Overall Program Goals: To protect present and future installation missions. To protect the health and welfare of military personnel and their dependents, Army civilian employees, and the public adjacent to Army installations. To reduce community annoyance from environmental noise to the extent feasible, consistent with Army training and materiel testing activities.

FY94 Program Goals: To reduce harmful or objectionable noise impacts to the greatest extent possible; to comply with applicable laws and regulations; and to maintain an active program to protect installations' operational capabilities.

FY94 Program Achievements:

- Improved the historical record keeping process for registering noise complaints by establishing a noise complaint data base, centralizing the logging of complaints, and providing ongoing monitoring of calls.
- Established a HQDA-level noise committee with representation from USACHPPM, ODEP, Construction Engineering Research Laboratory (CERL) and MACOMs. The primary goal is to identify new funding methodologies that will raise funding priorities for noise projects. Ongoing efforts include research and development; reviewing installation concerns; and developing, reviewing, and prioritizing noise projects.

- Completed revision of Chapter 7 of AR 200-1. Changed requirements to produce Installation Compatible Use Zones (ICUZ) study to routine management and awareness of installation/off-post noise.

Major Issues/Concerns:

- Noise assessments/situations are being overtaken by ongoing BRAC activities. Army stationing decisions and installation missions are in such flux that it is often meaningless to take the findings of even a recent study too seriously. Prudent use of Army resources requires a critical analysis of the precise utility of each study as it progresses.

- Credible ICUZ computations require accurate operational data collection in the field. With fewer personnel available to do the work at many installations, this will be a difficult task unless a simple, computerized data collection system can be fielded. Some installations indicate that they cannot collect required data due to this lack of an automated support system.

- There is insufficient R&D/operations and maintenance (O&M) funding to collect signature data or conduct the basic research needed to improve noise assessments.

NATIONAL ENVIRONMENTAL POLICY ACT

Overall Program Goals: To ensure the wise use of natural resources on Army land by matching military mission requirements with the ecological compatibility of the land and natural resources; to integrate environmental considerations into the decision-making process; to recognize worldwide and long-range environmental problems; where consistent with national security and foreign policy, to support programs to protect the quality of the global environment.

FY94 Program Management Goals: To define the scope and nature of the Army's NEPA compliance requirements; to define current NEPA roles and responsibilities for all Army organizations; to develop performance indicators to measure NEPA compliance; to develop methods for identifying NEPA funding requirements; to develop a comprehensive NEPA strategic action plan.

FY94 Program Achievements:

- Completed a comprehensive review of the Army NEPA program to include management structure, roles and responsibilities, strategic issues, and identification of problems/concerns.

- Identified program shortfalls and developed recommended improvements to be implemented over the next fiscal year. These include establishing centralized management oversight at ODEP with centralized interdisciplinary expertise at either USAEC or the Mobile District, USACE.

- Completed a comprehensive draft revision of AR 200-2, *Environmental Analysis of Army Actions*.

- Identified tentative NEPA performance indicators, which focus on measuring the rate of NEPA integration into operations and activities and the overall quality of NEPA documents.

Major Issues/Concerns:

- How to create and instill a corporate understanding of the NEPA process and spirit. It is difficult to instill a genuine understanding of NEPA into the Army's decision-makers.

- Cosmic issues such as biodiversity, socioeconomics, and environmental justice are being newly institutionalized or given more emphasis. These are ill-defined concepts and, while somewhat legitimate, their increased visibility will probably provide more ammunition to those who view the NEPA process as a way to frustrate the Federal government.

CHAPTER 4

Prevention Pillar: Media-Specific Program Summaries

GENERAL

The Army recognizes that prevention is clearly the best long-term solution for reducing risks to human health and the environment from pollution. The prevention pillar focuses on eliminating pollution to the greatest extent possible by adopting and implementing integrated management approaches, procedures, and operations in all Army mission areas to minimize harmful environmental impacts.

As was the case with the private sector, the Army has learned that it cannot continue to rely solely on compliance-oriented environmental program management techniques. After all, it is enormously expensive to provide end-of-pipe treatment and control of waste, or failing that, to undertake extensive restoration of contaminated sites. Compliance is, in fact, considered to be only the minimum acceptable level of performance (e.g., standard). Organizations wishing to achieve higher levels of performance and avoid the frustration of failure must be willing to reorient and take on new direction. In the Army's case, this means undertaking the task of changing its institutional behavior from one of compliance and control to one of prevention.

The Army has already begun this transition with the formal establishment of its pollution prevention program. Embodied within the program is the philosophy that pollution prevention, in concert with the conservation of natural and cultural resources, is the Army's preferred approach to environmental management and maintaining compliance with environmental laws and regulations. In this regard, pollution prevention will be used to initially complement, and eventually replace (where practical) the traditional pollution control and clean up practices that presently predominate.

Media-specific program areas under the prevention pillar addressed in this chapter include installation/facility pollution prevention; environmental training;[1] weapons system management/logistical support; acquisition; and research, development, test, and evaluation (RDT&E).[2] Program summaries are provided in the sections that follow.

[1] This is a foundation component of the environmental strategy.

[2] Installation solid waste reduction, energy efficiency, and medical activities are also part of the prevention pillar. Solid waste and energy are addressed in Chapter 2, while medical activities have not been included in this year's report.

INSTALLATION/FACILITY POLLUTION PREVENTION

Overall Program Goal: To reduce, as much as possible, installation reliance on products or processes that generate environmentally degrading impacts.

FY94 Program Management Goals: To update and formalize Army pollution prevention (P2) policy; to conduct PPOAs and develop P2 plans at all Army installations; to establish baselines for Emergency Planning and Community Right-to-Know Act (EPCRA)/Toxic Release Inventory (TRI) reporting; to develop a pollution prevention funding strategy; to minimize the use of hazardous materials at installations; to reduce the release, transfer, and disposal of pollutants to all environmental media; to integrate pollution prevention concepts into all Army operations and activities.

FY94 Program Achievements:

- Developed and fielded a PPOA Protocol and a Model P2 plan for use by all installations.
- Completed 4 of 19 programmed (centrally funded) PPOAs/P2 plans.
- Established baselines for the use of hazardous materials and the release of pollutants Army-wide. Analyzed TRI data from government-owned, contractor-operated ammunition plants to develop an initial list of chemicals that the Army uses and releases in large quantities.
- Initiated an EPCRA technical notes publication containing Federal, state, and Army points of contact, information sources, and an analysis of available software.
- Prepared a model statement of work for EPCRA report preparation for use by installations and USACE Engineer Districts.
- Fielded two EPCRA manuals to installations: *Getting Started with EPCRA,* and *EPCRA Calculation Manual.*
- Sponsored 16 EPCRA courses at 12 locations at which 360 installation staff members were trained.
- Fielded a videotape containing a technical analysis of EPCRA and Executive Order (EO) 12856.
- Developed a proposal for an Army PPIF, which would provide a funding source for installation pollution prevention initiatives separately from the compliance and restoration accounts.
- Fielded a modeling system for developing and evaluating the costs and benefits of investing in prevention opportunities at all installations, activities, and facilities. Called the Pollution Abatement and Prevention Analysis

(PAPA) model, it will allow installation commanders to set priorities for pollution abatement and prevention programs in order to achieve the greatest possible return on investment while simultaneously maximizing environmental benefits.

- Revised formal Army pollution prevention program guidance contained in AR 200-1 and its supporting Pamphlet 200-1.

Major Issues/Concerns:

- Since the current Army must-fund policy focuses on Class I projects, many installation pollution prevention projects go unfunded.

- Many instructional documents call for the use of specific hazardous materials in some maintenance operations. These documents include technical manuals and depot maintenance work requirements. This situation counteracts ongoing efforts to substitute less polluting materials and processes.

ENVIRONMENTAL TRAINING

Overall Program Goals: To develop highly competent environmental staff at all organizational levels; to develop an environmentally aware and knowledgeable Army community and work force; to develop high-quality environmental training and awareness products; to incorporate environmental sensitivity and stewardship into the Army's day-to-day operations and activities by integrating and embracing environmental values.

FY94 Program Management Goals: To institutionalize environmental training for Army military and civilian personnel in all grades/ranks; to integrate environmental-awareness training into Army leadership schools; to establish organizational relationships that properly implement and integrate the respective responsibilities of the environmental program proponent and training executive agent (trainer); to identify mutual training requirements with other Services and/or agencies, which can be cost-or resource-effective; to evaluate progress in implementing the *Army Environmental Training Master Plan* (AETMP).

FY94 Program Achievements:

- Completed 14 of 20 environmental training needs analysis (TNA) reports as required by the AETMP. The TNAs identify training needs for all Army personnel by grade and specialty code. They were furnished to Training and Doctrine Command (TRADOC) for integration into soldier training programs.

- Established an environmental integration steering committee and an environmental training working group, consisting of representatives of several TRADOC schools, to begin integrating environmental issues into soldier training and doctrine.

- Initiated development of a MACOM environmental program awareness videotape, which will provide a core overview of the environmental program supplemented by MACOM-specific introductions and environmental issues summaries.

- Developed and fielded 13 environmental training support packages and a videotape entitled, "The Soldier and the Environment," for use in TRADOC military schools.

- Began development of an installation-level training program that will promote environmental awareness and stewardship for DA civilian supervisors, unit environmental compliance officers, and tenant units.

- Developed and fielded a videotape entitled, "U.S. Army Environmental Strategy Into the 21st Century."

- Presented training through 15 different environmental courses to more than 12,000 students at the Army Logistics Management College.

- Trained more than 6,600 students in courses about asbestos, hazardous waste operations, emergency spill response, and hazardous materials handling at the Center for Environmental Initiatives and Hands-on Training, located at Fort Sill, Oklahoma.

- Expanded the Army PROSPECT training program to include 34 environmental courses.

- Sponsored six two-day acquisition pollution prevention seminars for 131 PMs.

- Graduated 130 officers with majors in environmental fields of study from the U.S. Military Academy.

- Developed and fielded a *Unit Leader's Handbook for Environmental Stewardship.*

- Received official sanctioning by the Interservice Environmental Education Review Board of the Army Directory of Environmental Training Courses, which is now used by all DoD Components.

- Began development of a series of environmental manager's handbooks. Fourteen of the 20 programmed volumes were completed and released in draft for review and comment.

- Responded to more than 800 environmental training inquiries through the Environmental Training Resource Center.

- Initiated or completed development of nine exportable environmental training courses.

- Developed an environmental safety course for Army safety managers.

Major Issues/Concerns:

- It is uncertain whether funding will be available to continue the environmental training integration effort required to support completed training needs analyses ($3 million per year).

- While funding is available to continue present programs and courses, no funding is available for initiating newly required environmental training courses.

WEAPONS SYSTEM MANAGEMENT AND LOGISTICS SUPPORT

Overall Program Goals: To incorporate environmental protection requirements into Army logistics policies, plans, programs, and systems. To identify, track, and manage materials in accordance with environmental standards. To support Army environmental reporting requirements. To examine and promote alternative uses of recycled maintenance-related hazardous materials. To fund, support, and implement environmentally friendly packaging programs.

FY94 Program Management Goals: To improve hazardous materials management and tracking; to improve visibility of environmental information in Army/Federal supply catalogs; to identify hazardous items that are issued with units of issue larger than the required units of use; to develop a five-year plan to lessen the environmental impact of packaging; to develop a program to encourage recycling of maintenance fluids at Army installations.

FY94 Program Achievements:

- Supported a DESCIM initiative to identify and select the migration system for hazardous materials management and tracking. The system selected was the Hazardous Substances Management System (HSMS). The Army specifically developed system functional architecture.

- Trained logisticians about their responsibilities to implement requirements of EO 12856, Federal Compliance With Community Right-to-Know Laws.

- Provided EPCRA training to more than 300 personnel, including environmentalists, medical staff, logisticians, fire fighters, and emergency responders.

- Developed data fields and entered appropriate data that will enable better access to environmental information contained in Army/Federal supply catalogs. Also provided a guidance document to users.

- Completed an initial unit of issue changes for hazardous items that were being issued in larger than needed quantities. Coordinated proposed unit of issue changes with appropriate inventory managers and the MACOMs.

- Completed preliminary planning stage of developing a five-year packaging reduction/recycling program. Program milestones were developed and funding requirements were identified.

- Initiated planning to develop an installation-level recycling program for maintenance fluids.

- Implemented a centralized hazardous material management and control systems at Corpus Christi Army Depot, Tooele Army Depot, and the 98th Area Support Group (Wuerzburg, Federal Republic of Germany). Corpus Christi Army Depot was designated as DoD's model installation for implementation of the Depot Maintenance – Hazardous Material Management System.

- Fostered development of a centralized tracking and control system for hazardous material. The HSMS will encourage all installations to centrally manage hazardous materials through employment of such practices as central (single) point procurement for HM, authorized user lists, inventory reduction techniques (e.g., precise unit of use issue), and automated tracking systems, etc. Benefits will include cost savings from reduced HM purchases and waste generation; reduced liability from HM storage, mishandling, or accidental releases; and reduced burden of EPCRA and other environmental, health, and safety reporting requirements.

- Began a study to integrate the Hazardous Material Information System (HMIS) with standard Army supply systems.

Major Issues/Concerns:

- Scope of funding requirements has not been identified.

- Close coordination will be required between Deputy Chief of Staff (Logistics), DLA, and DoD on HSMS and catalog improvement initiatives.

- Complete integration of DESCIM and LOGCIM efforts will be required.

- Establishing interfaces between HSMS, HMIS, and multiple Army logistics systems will be difficult.

- Alternative packaging materials meeting military specifications for storage, handling, and distribution is lacking.

ACQUISITION POLLUTION PREVENTION

Overall Program Goals: To integrate acquisition pollution prevention into the Army's research, development, acquisition process; to ensure pollution prevention is incorporated into the review and approval of all RDT&E and procurement budget justifications; to establish an Army acquisition pollution prevention budget methodology that integrates prevention across all RDT&E appropriations; to include prevention programs as a portion of the review of acquisition category I (ACAT I) request for proposals that have been designated for Under Secretary of Defense for Acquisition and Technology [USD(A&T)] review; and to identify, fund, and implement studies and initiatives to eliminate or reduce the use of hazardous materials within the system acquisition process for both new and existing systems.

FY94 Program Management Goals: To establish an Army Acquisition Pollution Prevention Action Program that includes objectives and delineates responsibilities; to eliminate or reduce hazardous or environmentally unacceptable materials in all phases of system acquisition; to establish Army pollution prevention matrix support for materiel acquisition; to implement requirements of Section 3-303, EO 12856.

FY94 Program Achievements:

- Developed and conducted mobile acquisition pollution prevention training for PMs and program executives. Training focused on the need to recognize environmental issues when purchasing equipment and supplies and improving program management responsibilities for material acquisition.

- Developed a plan to review and revise specifications and standards in order to remove unnecessary requirements for hazardous materials, as required by EO 12856.

- Developed and implemented a pollution prevention program and model for the National Aerospace Standard (NAS) 411 hazardous materials management program as part of the RAH66 Comanche helicopter developmental system.

- Participated in a Joint Group on Acquisition and Pollution Prevention. Formed a subcommittee to explore pollution prevention strategies and issues.

- Initiated the Industrial Operations Command Pollution Prevention Centers for Technology Exchange Program. The program assigns the mission of developing, maintaining, and expanding the Army industrial community's technical expertise in the prevention of all forms of pollution from a particular industrial process. The program's initial focus includes the areas of new plating technology, mechanical/chemical depainting, OB/OD, solvent cleaning, painting, metal treatment processes, and regulation forecasting.

Major Issues/Concerns:

- Pollution prevention is not adequately addressed for the acquisition corps/community in Army regulations or budget guidance.
- Army acquisition user community requirements and pollution prevention program elements do not exist; therefore, pollution prevention initiatives are difficult to plan, program, and budget.
- Some acquisition pollution prevention training has been established and conducted, but there are no mandatory training requirements.
- Projects needed to implement EO 12856 requirements are largely unfunded. Army budget cuts have caused further reductions in pollution prevention spending in this critical area.

RESEARCH, DEVELOPMENT, TEST AND EVALUATION PROGRAM

Overall Program Goals: (Pollution prevention) To develop technologies that eliminate/reduce sources of pollution and minimize the generation of hazardous wastes and harmful emissions from "metals surface finishing" and cleaning, coatings application and removal, ordnance manufacturing and development, and manufacture of advanced materials. To reduce the generation of hazardous wastes and harmful emissions for general base support operations. To pursue alternative solvents, firefighting agents, and refrigerants to eliminate the use and reliance on ozone depleting substances. To develop nonhazardous solid waste reduction approaches and packaging improvements. To develop comprehensive assessment tools to assist decision-makers and design engineers to adequately address environmental consequences of weapon systems development from the concept stage through demilitarization. To identify technology gaps in material and process substitution that frustrate reaching waste/emission reduction objectives. To pursue alternative and renewable energy sources and develop control strategies and techniques for measuring the Army's contribution to greenhouse gas generation. To support testing and evaluation of alternatives to environmentally objectionable chemicals and compounds. To prioritize the sequence for correcting environmental problems.

FY94 Program Management Goals: To develop a complete set of prioritized user requirements; to establish and implement a set of RDT&E projects ranked on the basis of user requirements and technology quality; to improve overall management processes.

FY94 Program Achievements:

- Developed a comprehensive prioritized set of user requirements for environmental technology. This included developing a listing that would serve as a guide to prioritize the Army's R&D efforts in concert with the needs of installations. Used several quantitative weighing factors to define a prioritized list for each pillar of the Army environmental program.

- As Executive Agent for National Defense Center for Environmental Excellence (NDCEE), initiated projects that will facilitate transfer of environmental technology from DoD to the private sector, and vice versa. Projects included testing the effectiveness of new cleaning and plating solutions.

- Identified, qualified, and implemented alternatives for many ODC solvent applications at Army depots. As a result, eliminated the need for an Army ODC solvent reserve.

Major Issues/Concerns:

- The pollution prevention RDT&E program must be closely coordinated with the compliance RDT&E program. Pollution prevention will not completely solve all compliance problems. Compliance R&D needs to know of the pollution prevention R&D and be able to treat any streams left by the pollution prevention R&D program.

- Pollution prevention needs a separate funding line to support industrial operations in order for the Army to apply funding against its priorities. Opportunities exist for substantial reductions in the cost of cleanup and compliance if new materials and processes can be developed through pollution prevention.

CHAPTER 5

Conservation Pillar: Media-Specific Program Summaries

GENERAL

The overarching goal of the conservation pillar is to conserve, protect, and enhance environmental and natural/cultural resources, using all practical means consistent with Army missions, so that present and future generations may continue to use and enjoy those resources. In this regard, the key focus of conservation media programs is to assess, conserve, preserve, and restore ecological resources to maintain requisite carrying capacities; and to be more responsive to global environmental and natural/cultural resource concerns. Specific conservation media program areas addressed in this chapter include management of cultural resources, land use, pesticides, endangered species, and natural resources.

With stewardship for some 24 million acres of land, the Army has long been aware of its responsibility to preserve and protect the resources that have been entrusted to its care. First and foremost, the Army must continue to maintain a high state of readiness to ensure its capability to meet future challenges. However, while mission requirements for larger land areas have increased over time, the amount of usable land on Army installations has continued to decrease. This makes it all the more imperative to ensure that the tough, realistic training needed to achieve military readiness is balanced with the important requirement to preserve and enhance our limited resource capabilities for long-term use.

Army installations that now serve as home to more than one million soldiers and their families are also home to some 116 endangered species of plants and animals. On those same installations are more than 35,000 known cultural resource sites that include many historic buildings and significant archaeological finds. Conservation programs such as ITAM help us identify environmentally sensitive areas, rehabilitate those that have become damaged, and properly manage all land resources over the long term. This helps us make smart decisions as we plan and develop training ranges, maneuver areas, and other capital improvements. Other initiatives, such as the Legacy Resource Management Program, help to ensure that the Army effectively plans for identifying, managing and inventorying all significant cultural and natural resources that are either under its control or affected by its activities.

While the Army recognizes that training and other routine operations and activities can be destructive to land and water resources, it understands equally well that implementing effective management practices will ensure the sustained use of those resources in support of both Army missions and public needs for many years to come.

The balance of this chapter briefly summarizes the major goals, objectives, achievements, and issues related to each of the individual media program areas outlined above.

CULTURAL RESOURCE MANAGEMENT

Overall Program Goal: To ensure that the Army manages the cultural resources under its control in compliance with public laws, to enhance or facilitate the military mission, and in a spirit of stewardship of America's historic and cultural heritage.

FY94 Program Management Goals: To identify and evaluate cultural resources affected by Army activities; to initiate and/or update Cultural Resources Management Plans at all CONUS installations; to establish standards for all inventories of cultural resources; to revise regulatory guidance to installations.

FY94 Program Achievements:

- Completed first draft revision of AR 420-40, *Historic Preservation.*
- Revised an Army Compliance Tracking System (ACTS) data base module to facilitate improved data collection; merged Department of the Interior's *Archaeological Activities Report* data elements with ACTS to facilitate future reporting requirements.
- Established a cultural resource section with seven staff members at the Army Environmental Center; improved installation access to Corps Districts for additional cultural resource program management support.
- Gained efficiencies through multi-installation and regional studies of historic places, archaeological sites, and other cultural resources. This improved the quality of the cultural resources inventory and reduced overall costs.
- Worked extensively on compliance requirements of the Native American Graves Protection and Repatriation Act. The historic roles of the Army and Native Americans, in addition to current service members of Native American origin, increases the Army's moral obligation to ensure full compliance with this Act as well as the American Indian Religious Freedom Act. The Army initiated a program to develop an Army Native American policy.

- Coordinated closely with the Advisory Council on Historic Preservation in regard to cultural resources affected by BRAC actions.

- Developed and implemented cultural resource management plans at 15 installations. A total of 117 installations require the plans.

Major Issues/Concerns:

- Baseline inventories are insufficient for general planning, BRAC, and other actions.

- ECAS findings for cultural resource evaluations at installations are usually incorrect. Assessors do not fully understand requirements, and the resulting data they provide is often unreliable from a program management perspective.

- An Army Native American "policy" does not currently exist. The Army must consult with tribes; provide access to Army sites having religious relevance; and when appropriate, return artifacts to them. The RCS 1383 data base does not reflect any project funding related to the upcoming compliance deadline, although the program officially started in FY94.

- Presently, there is no Army regulation that accurately reflects current cultural resource program requirements.

LAND USE MANAGEMENT

Overall Program Goals: To carry out national land use and conservation policies as required on all Army lands to the extent practicable and in concert with the assigned mission; to use ITAM as the framework for effectively managing training lands.

FY94 Program Management Goals: To revise AR 420-74 to include installation-level procedures for using ITAM in land management; to monitor execution of ITAM and land management programs; to evaluate and assess Army land resources.

FY94 Program Achievements:

- The Army was named DoD Executive Agent for the Mojave Desert Ecosystem Initiative, which seeks to provide knowledge of the ecosystem in order to develop more scientifically-based land use plans. This effort evolved from a memorandum of agreement (MOA) between DoD and the Department of the Interior.

- Worked to initiate formal transfer of responsibility for the ITAM program, which will move from the environmental side (ODEP) to the operational side (DCSOPS). Since it is essential for the Army to preserve scarce training

land resources, it was decided that the training community should be in charge of training land maintenance. The new framework will give needed direction to the ITAM program. A detailed management plan was developed to support the transition that will be completed during FY95.

Major Issues/Concerns:

- Without full ITAM development, implementation, and operational integration, the Army will be unable to quantify what is being managed, monitor changing conditions of its land base, estimate its total land area requirements for resource sustainment and mission accomplishment, and it will ultimately place long-term mission execution at risk due to land degradation and noncompliance.

- Many installations lack the professional land management staff needed to effectively implement and integrate ITAM capabilities.

- Increasing environmental laws and enforcement will place additional constraints on continued land use, particularly in CONUS.

- The Army must expand the availability of training land, which is now being curtailed due to encounters with endangered species, their habitats, and cultural resources. Also, modernization of weapons systems and their increased firepower is rendering current training range lands inadequate.

PEST MANAGEMENT

Overall Program Goals: To protect the Army's property and natural resources from pest damage; to protect the health and welfare of the military community from pests and pest-transmitted diseases; to protect community members and employees from undue exposure to pesticides; to carry out program functions while minimizing overall risks to the environment.

FY94 Program Management Goals: To increase program's focus on measures of merit established by DoD as follows: ensure that approved pest management plans are in place at all installations by the end of FY98; ensure that all pesticide applicator personnel are certified by state, USEPA, Army, and/or DoD as required; and to reduce the total amount of pesticides applied at Army installations by 50 percent from the FY93 baseline in pounds of active ingredient.

FY94 Program Achievements:

- Prepared, reviewed, and/or approved pest management plans at 50 percent of active Army installations.

- Began development of a process that will be used (in conjunction with ACTS data base) to identify and track the status of all Army pesticide applicators who will require certification, to include contractor personnel. Began

working the issue of integrating certified pesticide applicator requirements into standard contracting language for pesticide services.

- Began development of procedures that will be used to quantify amounts of pesticides applied at installations each year. A questionnaire was circulated to begin to build baseline data; roughly 10 percent of the needed data has been obtained. A software package is available to help track and compute quantities of specific hazardous components by active ingredient, although it lacks necessary sophistication. Quantification is very difficult given that a large percentage of pesticides are acquired through local purchases and cannot be tracked through standard logistics systems.

- Began process of upgrading pesticide storage facilities at all installations.

- Increased emphasis on this area during ECAS evaluations. Class I findings are being more effectively translated into RCS 1383 requirements; the overall number of ECAS findings is on the decline.

Major Issues/Concerns:

- The Army must identify and provide training opportunities for personnel having managerial/oversight responsibilities for pesticide applicators. These personnel are unable to effectively assess pesticide applicator performance to ensure their compliance with applicable regulatory/statutory requirements.

- The accuracy of pesticide management data (e.g., pesticide chemical composition, staffing, certification) being reported by installations through the ACTS data base is questionable and must be improved, both qualitatively and quantitatively.

- It will be extremely difficult to precisely track and quantify pesticide usage by hazardous component, given the variety of brand names in use, the number of alternative procurement sources available at the installation level, and variations in active ingredients by strength and/or concentration, etc.

ENDANGERED SPECIES MANAGEMENT

Overall Program Goals: To maintain a trained and ready Army while meeting environmental compliance and stewardship responsibilities under the Endangered Species Act (ESA); to institutionalize the management process for resolving Army-wide endangered species issues at the HQDA level; to establish cooperative and mutually beneficial working relationships with other DoD and Federal agencies, the states, and public interest organizations on endangered species matters.

FY94 Program Management Goals: To monitor proposed amendments to the ESA and related legislation/Administration initiates and to prepare Army comments and recommendations that ensure Army interests and concerns are clearly reflected. To ensure that clear, comprehensive policies and guidance are issued and updated as required to meet legal and mission requirements related to the protection, conservation, and enhancement of endangered species and their habitats on a local, landscape, and ecosystem basis. To ensure that appropriate procedures are developed and executed to assess and evaluate the adequacy of resourcing endangered species program management activities identified in the POM and through the RCS 1383 process; to establish and maintain close working relationships with Federal endangered species regulatory agencies to foster interagency coordination/cooperation and minimize potential conflicts.

FY94 Program Achievements:

- Prepared and issued comprehensive policy and guidance (revision of Chapter 11, AR 420-74) on the protection and management of threatened and endangered species on Army lands. These guidelines ensure that endangered species, their habitats, and related natural resources are given equal consideration with other environmental media program areas.

- In coordination with the USFWS, prepared and issued management guidelines for the red-cockaded woodpecker (RCW) on Army installations, specifically including Forts Benning, Bragg, and Stewart. These guidelines represent a major milestone and apply to all Army installations known to have the RCW, or a habitat suitable for future population expansion or reintroduction. Guidance provides specific land-use procedures needed to satisfy military training requirements in concert with the ESA. The Navy is also adopting these guidelines at its installations.

- Finalized guidelines for the preparation of endangered species management plans at all installations. These "how to" guidelines include a model plan designed to demonstrate how Army compliance with Section 7 of the ESA should be documented. This will ensure effective and efficient compliance with ESA requirements and improve interagency coordination on all aspects of the ESA.

- Co-hosted (with the USFWS and National Biological Service) the Interagency Endangered Species R&D Symposium in April 1994. Approximately 50 individuals representing 19 Federal agencies participated. The purpose of the symposium was to promote coordination and cooperation among government and nongovernment organizations relative to endangered species R&D and related management activities. Emphasis was on identifying current technologies, avoiding unnecessary duplication of effort, and pinpointing additional opportunities for leveraging limited resources.

Major Issues/Concerns:

- The Army must more accurately monitor the impact of military operations and activities on the natural and cultural aspects of the environment, particularly regarding endangered species and their habitats.

- The current RCS 1383 process fails to provide adequate funding priority for actions needed to either reduce or prevent endangered species problems in the future. Unless this trend is reversed, endangered species issues will continue and increasingly affect the Army's ability to meet mission requirements.

NATURAL RESOURCES MANAGEMENT

Overall Program Goal: To set forth policy, procedures, and responsibilities for the conservation, management, and restoration of land and the natural resources thereon in support of the military mission and in consonance with national environmental policies. The scope includes the conservation, management, and military utilization of the soils, vegetation, water resources, croplands, rangelands, forests, and fish and wildlife species.

FY94 Program Management Goals: To develop and disseminate policy and technical guidance needed to meet legal and mission requirements related to the wise use, protection, conservation, and enhancement of renewable natural resources on Army lands (AR 420-74). To integrate all planning and management actions including personnel and documentation. To comply fully with local and national environmental laws and statutes. To develop integrated natural resource management plans at all installations. To prioritize funding for natural resources management. To use the Legacy Program to enhance management of the Army's natural resources.

FY94 Program Achievements:

- Completed a draft revision of AR 420-74, *Natural Resources — Land, Forest, and Wildlife Management.* The new regulation will be redesignated AR 200-3.

- Expanded USAEC natural resources staff from two part-time personnel to six full time. Also negotiated Interagency Agreements with the Bureau of Land Management, U.S. Fish and Wildlife Service, National Bureau of Standards, and the U.S. Forestry Service which will bring in additional support staff.

- Improved installation communications with the Soil Conservation Service on soil management issues.

- Initiated development of detailed guidelines for installation integrated natural resource management plans.

- Entered several agreements with other Federal agencies designed to foster improved interagency coordination and cooperation. Specific MOAs involve subjects such as wetlands inventory and mapping (agreement with USFWS); Neotropical Migratory Bird Program (agreement with several other agencies); North American Waterfowl Management Plan (agreement with USFWS); Endangered Species Act coordination (agreement with DoD and several other agencies); and the Chesapeake Bay Initiative (agreement with DoD and USEPA).

- Initiated work on establishing a process for instituting an ecosystem management approach on all Army installations. Components of ecosystem management and how to achieve and sustain healthy ecosystems were discussed and defined.

- Initiated a policy requiring 170 installations to develop an integrated natural resources management plan. The purpose of the plan is to help installations better balance their military missions with the biodiversity of the installation's ecosystem. A total of 27 installations had their plans current and in effect at the end of FY94.

Major Issues/Concerns:

Most natural resources projects and requirements fall within RCS 1383 funding class III. This results in little to no funding being available for execution.

CHAPTER 6

Future Directions

GENERAL

The Army is heading into the 21st century with a solid environmental quality program. However, as with any effort of this magnitude, improvements can always be made to ensure that momentum and focus are not lost along the way.

The data search, information gathering, and analysis processes undertaken during development of this report uncovered several areas that will receive increased management attention over the next year.[1] These are briefly outlined here without reference to relative priority.

Supporting Environmental Data Bases

The primary environmental data bases available to program management are the ACTS, Environmental Compliance Assessment System (ECAS), and RCS 1383. Collectively, they provide a fairly comprehensive set of data elements that address most management areas of interest. However, because the systems were developed independently as the need arose, they are not integrated with one another. Additionally, in computer terms, each of these systems is already quite archaic; they could be made much faster and more accessible.

- ACTS
  - In a number of cases where installations have not seen the need to strictly comply with established reporting requirements, the data in ACTS is obviously erroneous. If ACTS is to be used to its full potential, it is imperative that all data be entered accurately and in a timely manner. This will only be achieved with the full cooperation of installation personnel, since they are the ones who generate and input the bulk of the data. Resolving this issue will be a top priority.
  - Additional data fields are needed to ensure that all requirements of media program managers are being met. For example, ACTS does not provide adequate pesticide program management information in areas such as chemical consumption, applicator certifications, etc. To address this issue, each media manager will identify all data element inputs required to effectively monitor/manage the program area; the data base will be upgraded accordingly.

[1] These are in addition to the issues and concerns outlined in the media-specific program area chapters of this report.

- The general consensus from the field is that while input to ACTS is very user friendly, any other use of the system is undocumented and difficult to achieve. Installation environmental staff are often at a loss for where to find requested data and are uncertain about how to properly access it when and if they do locate it. This inability to *use* the system is the most likely reason for why it enjoys little support from the field.

- Even at USAEC, media managers cannot freely access the data base; when they need information, they are required to submit a written request for output, which often takes several days to receive. Efforts to ensure that media managers have more direct, timely, on-line access to ACTS data will be accelerated.

◆ ECAS

- The software developed for early (1991 to 1994) ECAS evaluations was a text-intensive system that was not amenable to analysis. As a result, more than 3,000 findings from the past three years had to be encoded before meaningful data analysis could begin. This was very time-consuming and counterproductive. Fortunately, this problem has since been corrected.

- Presently, ECAS assessment findings cannot be directly linked to ACTS data base enforcement action findings to facilitate cause/effect analysis, even though it is technically/economically feasible to do so (it has been accomplished separately off-line using commercial software). This capability will be added to the ECAS/ACTS systems without delay in order to provide added flexibility and eliminate needless duplication of effort.

◆ RCS 1383

- The accuracy of project funding information is unreliable, with the possible exception of requirements data. This is particularly true for the programmed, budgeted, and funded amounts shown. For example, historical 1383 data indicates that $100 million was obligated on compliance programs in 1989, when in fact, the Army Staff budget personnel confirm that actual obligations exceeded $156 million.

- Apparently, installations are doing a good job of identifying and reporting environmental requirements data. However, once funding is received, or a project is completed, there is little incentive to accurately track and input the historical funding data (e.g., actual amounts that were programmed, budgeted, and obligated). While this information may not be critical to installations, it is essential for program managers who may need to monitor trends over time. As with ACTS, installations must understand the significance of this information and input it as required. Again, however, since much of this information is, or

could be, available through resource management channels, a more open architecture would allow for automated transfer of this data.

Army Environmental Strategic Action Plans

Collectively, AESAPs are the basis for monitoring progress in implementing the Army Environmental Strategy and for identifying additional strategic environmental issues. In several instances, AESAPs were found to be outdated.

Close, continuous coordination will be effected between USAEC media managers and their counterparts at ODEP to ensure that AESAPs are current, accurate, and reflect true program direction. The AESAPs will be used by ODEP and USAEC media managers to track program status in relation to the established goals, objectives, and performance indicators. This will help them keep abreast of their program areas, identify shortfalls early, and facilitate the timely development of needed policy changes and budget/POM modifications.

Media Program Management (Performance) Indicators

Each media program area AESAP outlines management indicators that are used to monitor and track progress in achieving stated goals and objectives, identify accomplishments and difficulties, and focus on areas where the program may need to be modified. To be useful, indicators should

- help to answer the questions: what is the quality of the environment? what is the Army doing to improve the quality of the environment? where are the areas with the greatest potential for environmental risk reduction?
- be capable of showing trends over time and space;
- be understandable to nontechnical people who may have to interpret them;
- maximize the use of existing or readily-obtainable information; and
- be objective and measurable.

In some media program areas, it was noted that many of the management indicators cannot realistically be tracked. For example, an indicator under the endangered species program area is "the percentage of installations that have completed or initiated informal consultation with the USFWS and/or National Marine Fisheries Service to determine the presence or likely presence of Federally-listed or proposed listed species on installation lands." Aside from its general vagueness, it is unclear how this information could be tracked, or whether such consultation is needed or even desired in the first place. A much more useful indicator might be the number of endangered species incidents that resulted in a restriction on training activities, or perhaps the ratio of informal (desirable) to formal (undesirable) consultations with these agencies.

Beyond this, it was not clear whether media managers or their ODEP counterparts were actually tracking performance against the indicators or if data was readily available from ACTS, ECAS, the RCS 1383, or some other source that would facilitate such tracking. For example, the pesticide media manager must be able to track pesticide applicator certification status and quantities of pesticides applied by active ingredient (DoD measures of merit). However, present data bases do not incorporate these data elements. In turn, this results in the conduct of separate data calls that consume resources.

The Army will conduct a comprehensive review of all media program management indicators to ensure that they are realistic, measurable, and meet the other basic requirements outlined above. Once this has been done, existing data bases will be reviewed and updated as appropriate to ensure that the requisite data elements are incorporated.

Pollution Prevention and Environmental Program Funding Policy

Despite the increased emphasis on pollution prevention, Army installations are not funding their pollution prevention programs at effective levels. Ironically, this situation has resulted in part from the current Army environmental must-fund policy and its associated RCS RCS 1383 reporting system. By the time all must-fund environmental projects and other mission-essential requirements have been funded, the typical installation has few resources left to apply toward the heretofore lower priority prevention projects that "go beyond compliance." This is particularly acute at installations operating under the Defense Business Operating Fund, which must include capital and operating costs for such projects in the rates it charges its customers for services. Capital investments in pollution prevention equipment and process changes tend to inflate these rates, which may make them less competitive over the short term. This, in turn, may reduce the incentive for large investments in process improvement.

In addition to the problems described above, there is little help available from other likely funding sources, such as RDT&E or acquisition pools. Essentially, the Army has no techbase (6.2/6.3) funding in pollution prevention; and obvious disincentives exist in systems acquisition to fund pollution prevention research and development. Program Managers are concerned with developing and fielding new weapons systems, which is, after all, their primary mission. Given the limited resources available to them to accomplish that mission, realistically, they cannot address pollution prevention issues much beyond their application to the specific systems under development. They are simply not in a position to look at prevention from a Total Army perspective. The situation as described is not consistent with Army and national policy to increase emphasis on pollution prevention while reducing emphasis on pollution control.

Given current and outyear budget realities, it is unlikely that significant new appropriations will be made to existing environmental accounts. This means that there will be little new impetus for commanders and program managers to

develop and implement pollution prevention activities or projects. The only feasible way to resolve this dilemma is to find an alternative funding source.

The alternative funding issue has been explored in depth by USAEC/ODEP with the conclusion that the Army should consider establishing a Pollution Prevention Investment Fund. Such a fund would ideally provide installation commanders a source of investment dollars separate from the environmental compliance accounts. Submitted projects would compete for available funding based upon projected payback periods, return on investment, and relative degree of environmental benefit. The Pollution Abatement and Prevention Analysis model developed by the Army Concepts Analysis Agency could be used to facilitate project prioritization and ensure that limited funds are wisely spent.

The Army will continue to investigate the feasibility of establishing such a fund, to include seeking support (and perhaps even partial funding on a trial basis) from the Deputy Under Secretary of Defense for Environmental Security under the new ENVEST initiative. Additionally, the Army will explore alternatives to revise its existing must-fund policy to allow installation commanders more flexibility in deciding how environmental funds will be spent.

Glossary

ACSIM	=	Assistant Chief of Staff for Installation Management
ACTS	=	Army Compliance Tracking System
AEPI	=	Army Environmental Policy Institute
AESAP	=	Army Environmental Strategy Action Plan
AETMP	=	Army Environmental Training Master Plan
BRAC	=	base realignment and closure
CAA	=	Clean Air Act
CCMS	=	Committee on the Challenges of Modern Society
CERCLA	=	Comprehensive Environmental Response, Compensation, and Liability Act
CERL	=	Construction Engineering Research Laboratory
CWA	=	Clean Water Act
DBOF	=	Defense Business Operating Fund
DERA	=	Defense Environmental Restoration Account
DESCIM	=	Defense Environmental Security Corporate Information Management
DLA	=	Defense Logistics Agency
ECAS	=	Environmental Compliance Assessment System
ECCPPP	=	Environmental Compliance, Conservation, and Pollution Prevention Program
ENF	=	enforcement action
EO	=	Executive Order
EPCRA	=	Emergency Planning and Community Right-to-Know Act

ESA	=	Endangered Species Act
FEE	=	functional estimating equation
FFCA	=	Federal Facilities Compliance Act
FGS	=	Final Governing Standards
FOTW	=	Federally-Owned Treatment Works
GIS	=	Geographic Information System
HM	=	hazardous material
HMIS	=	Hazardous Material Information System
HQDA	=	Headquarters, Department of the Army
HSMS	=	Hazardous Substances Management System
HW	=	hazardous waste
ICAP	=	installation corrective action plan
ICUZ	=	Installation Compatible Use Zones
ITAM	=	Integrated Training Area Management
IPR	=	In-Progress Review
LCAAP	=	Lake City Army Ammunition Plant
MACOM	=	major command
MBtu	=	thousand British thermal units
MOA	=	memorandum of agreement
NAS	=	National Aerospace Standard
NCA	=	Noise Control Act
NDCEE	=	National Defense Center for Environmental Excellence
NEPA	=	National Environmental Policy Act
NOV	=	notice of violation

OB/OD	=	open burning/open detonation
ODC	=	ozone depleting compounds
ODEP	=	Office of the Director of Environmental Programs
O&M	=	operations and maintenance
OMB	=	Office of Management and Budget
P2	=	pollution prevention
PAPA	=	Pollution Abatement and Prevention Analysis
PCB	=	polychlorinated biphenyl
PM	=	Program Manager
POM	=	Program Objective Memorandum
PPIF	=	Pollution Prevention Investment Fund
PPOA	=	pollution prevention opportunity assessment
RCRA	=	Resource Conservation and Recovery Act
RCW	=	red-cockaded woodpecker
RDT&E	=	research, development, test, and evaluation
SAD	=	Sacramento Army Depot
SCS	=	Soil and Conservation Service
SDWA	=	Safe Drinking Water Act
SEEC	=	Senior Executive Environmental Council
SELC	=	Senior Environmental Leadership Conference
SOFA	=	Status of Forces Agreement
TAD	=	Tobyhanna Army Depot
TIPPP	=	Tidewater Interagency Pollution Prevention Program
TM	=	technical manual

TNA	=	training needs analysis
TRADOC	=	Training and Doctrine Command
TRI	=	Toxic Release Inventory
TSCA	=	Toxic Substances Control Act
TSD	=	treatment, storage, and disposal
TWI	=	Training-With-Industry Program
USACE	=	U.S. Army Corps of Engineers
USAEC	=	U.S. Army Environmental Center
USAFISA	=	U.S. Army Force Integration Support Activity
USAREUR	=	U.S. Army, Europe
USACHPPM	=	U.S. Army Center for Health Promotion and Preventive Medicine
USD(A&T)	=	Under Secretary of Defense (Acquisition and Technology)
USEPA	=	U.S. Environmental Protection Agency
USFWS	=	U.S. Fish and Wildlife Service
UST	=	underground storage tank
WWTP	=	wastewater treatment plant

APPENDIX A

Notices of Violation: Historical Trends and FY94 Baseline Data Charts

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NOVs RECEIVED BY REGULATING AUTHORITY: FY94

Total: 290

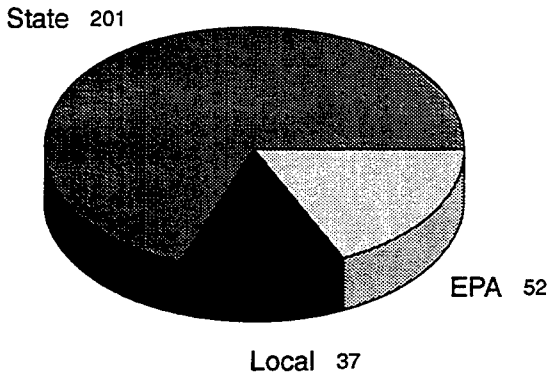


Figure A-1

NOVs RECEIVED BY REGULATING AUTHORITY

FY90 to FY94

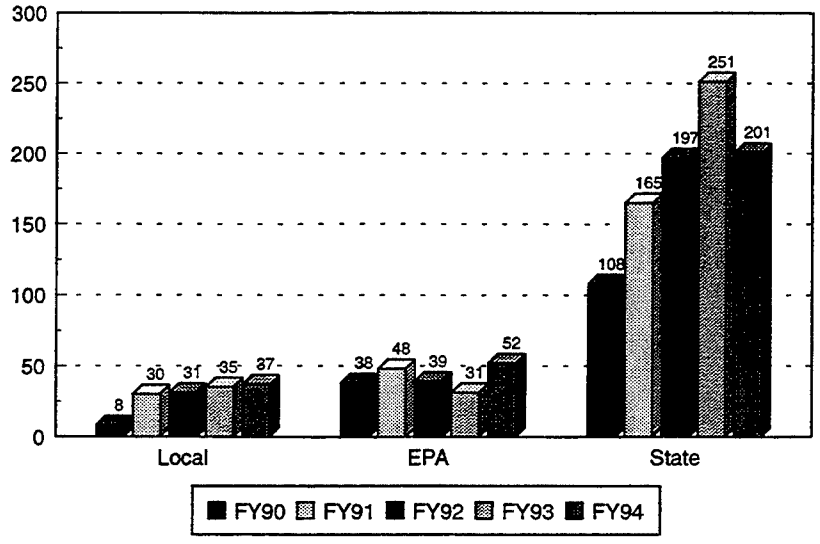


Figure A-2

STATE-ISSUED NOVs BY LAW

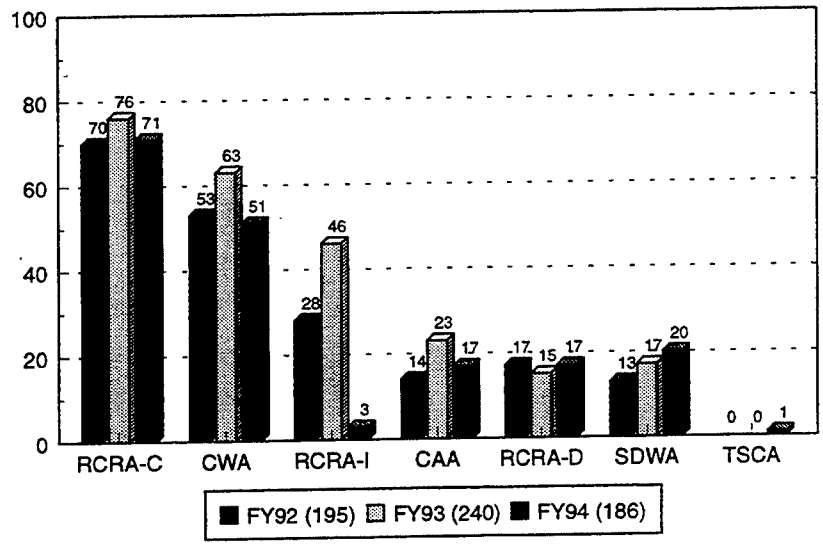


Figure A-3

TOP FIVE ENFORCEMENT STATES

Number of NOVs

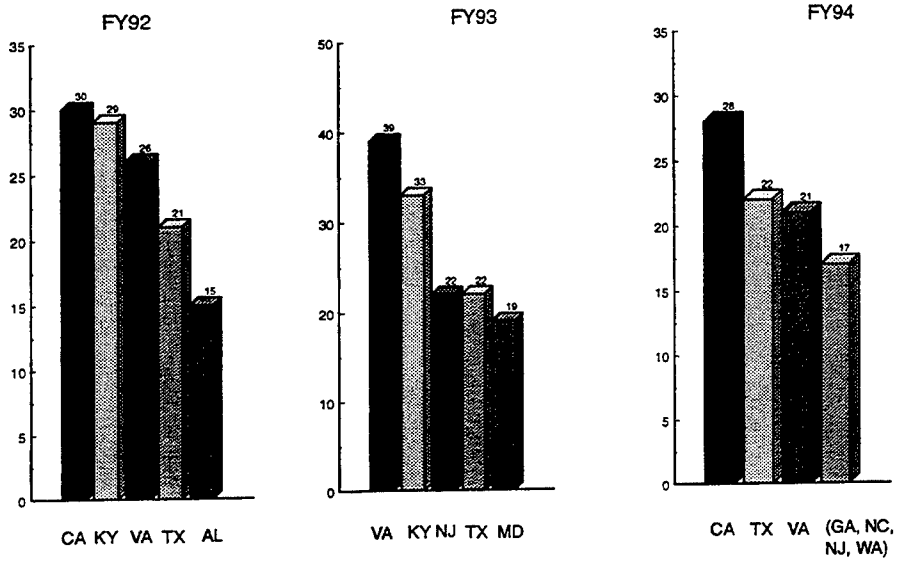


Figure A-4

TOP FIVE ENFORCEMENT STATES

Number of NOVs vs. Installations for FY94

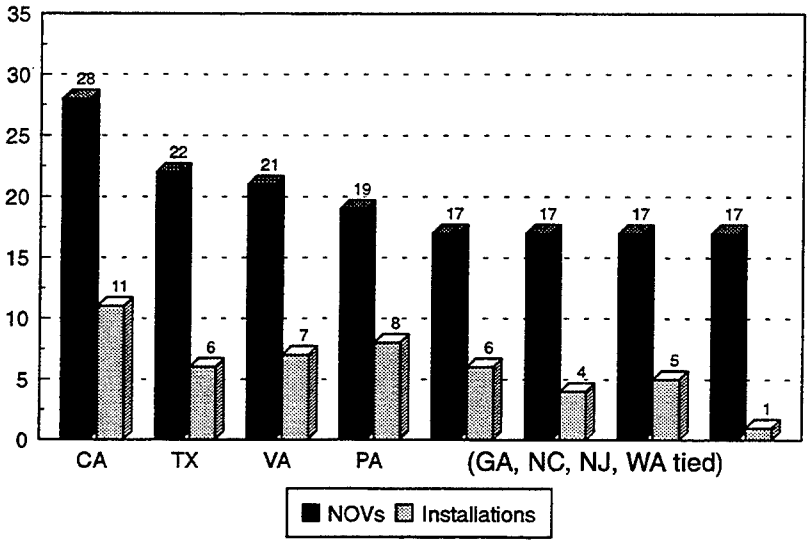


Figure A-5

USEPA-ISSUED NOVs BY REGION

FY92 to FY94

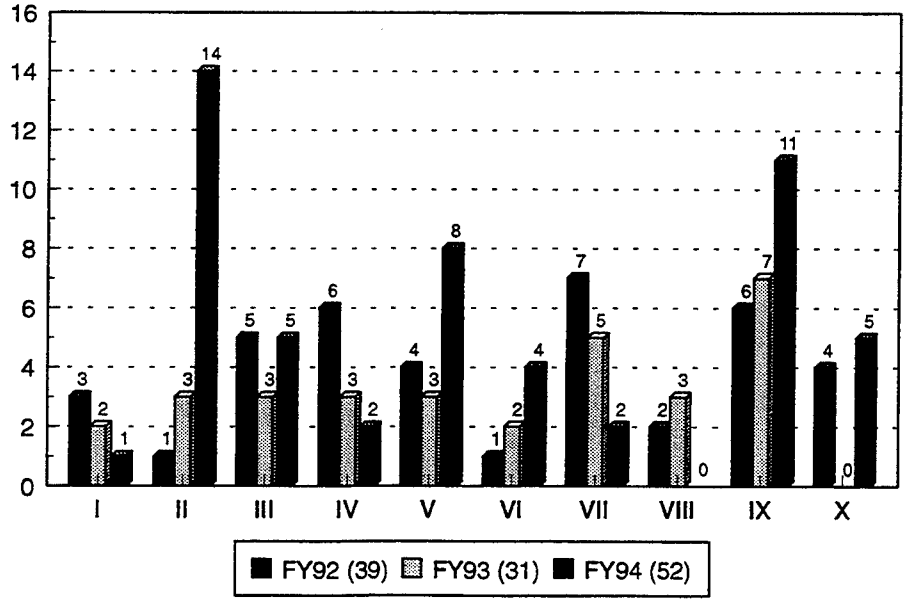


Figure A-6

USEPA-ISSUED NOVs BY LAW
FY92 to FY94

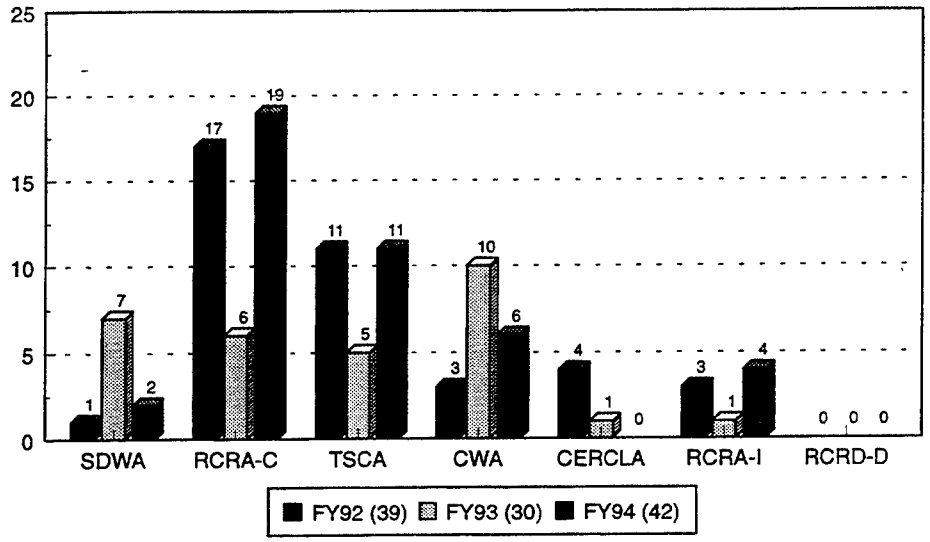


Figure A-7

ARMY-WIDE NOVs BY LAW
FY92 to FY94

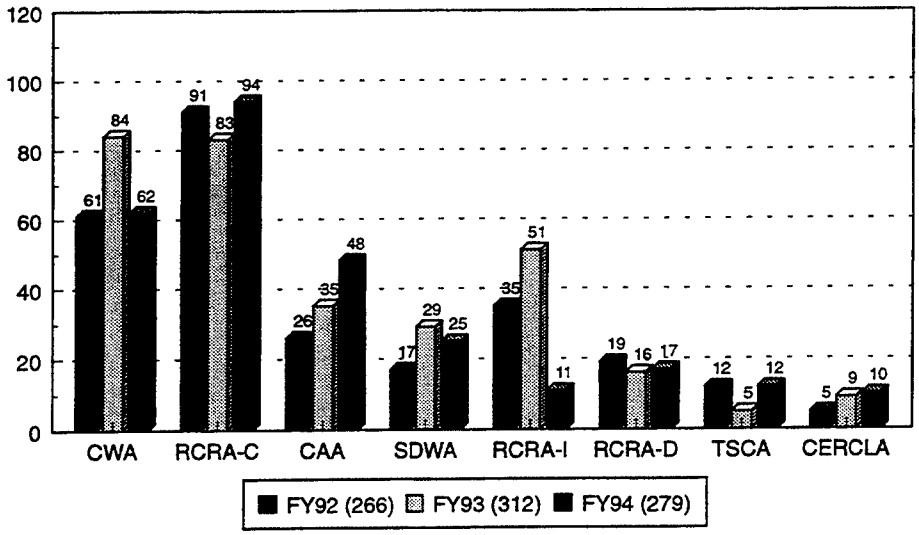
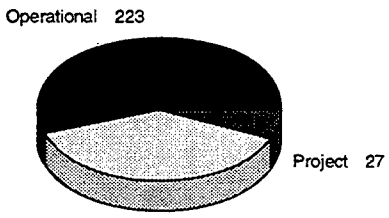
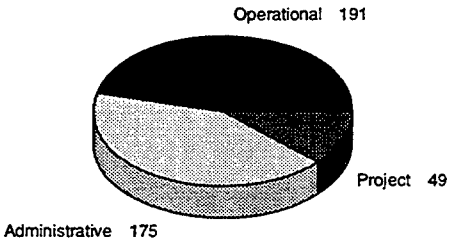


Figure A-8

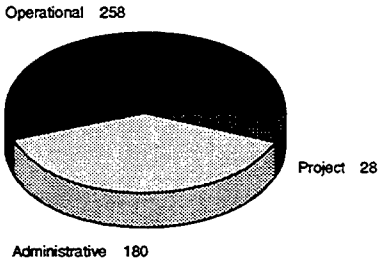
RCRA-C FINDINGS
FY92 to FY94



FY92 (403)



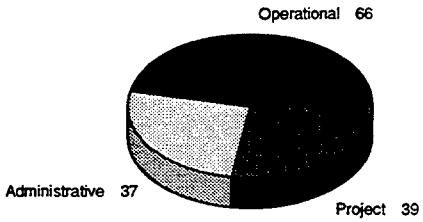
FY93 (415)



FY94 (466)

Figure A-9

CWA FINDINGS
FY92 to FY94



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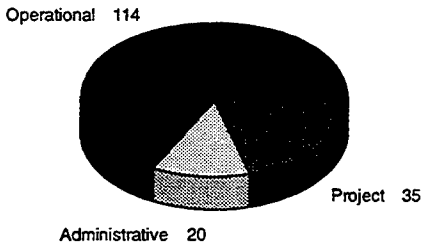

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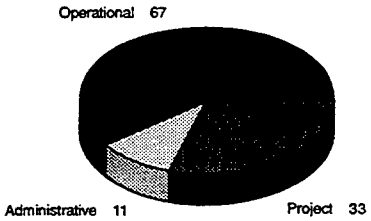
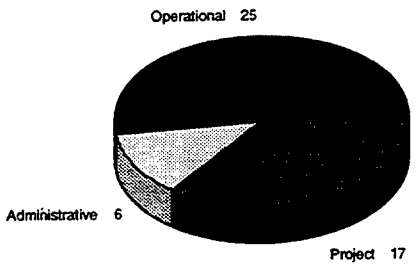


FY94 (111)

Figure A-10

RCRA-I FINDINGS
FY92 to FY94



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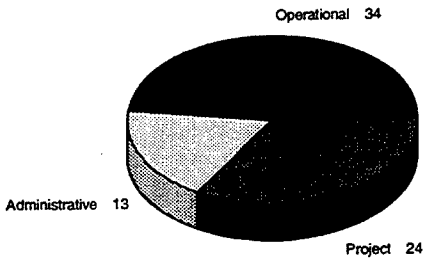
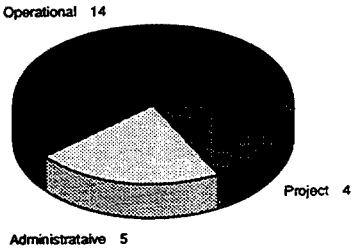


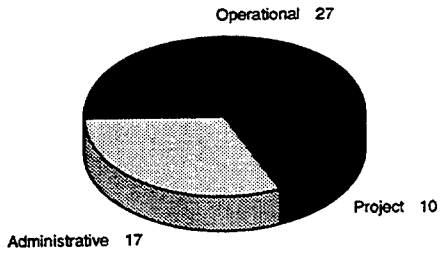
FY93 (71)



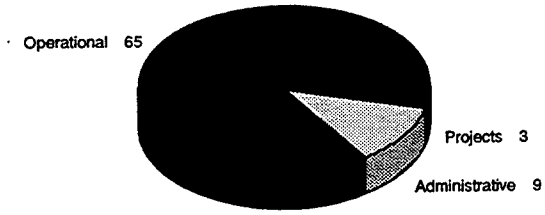
FY94 (23)

Figure A-11

CAA FINDINGS
FY92 to FY94



FY92 (54)



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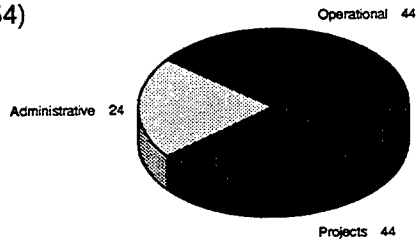
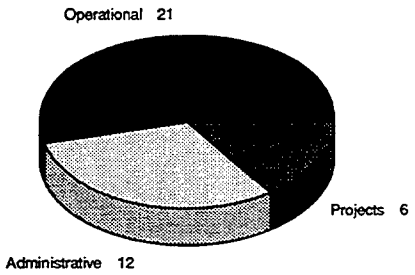


FY94 (112)

Figure A-12

RCRA-D FINDINGS
FY92 to FY94



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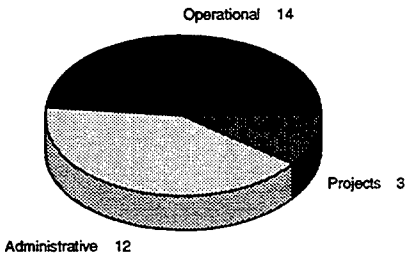

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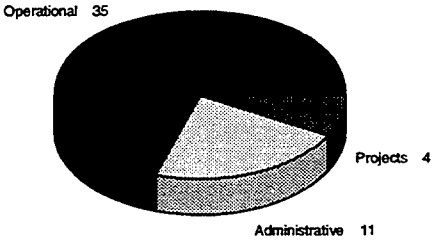
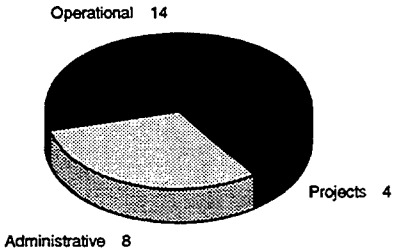


FY94 (50)

Figure A-13

SDWA FINDINGS
FY92 to FY94



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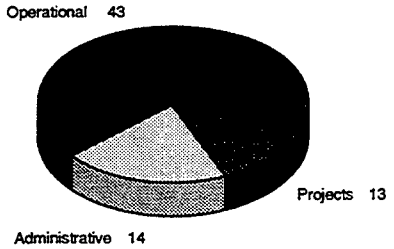

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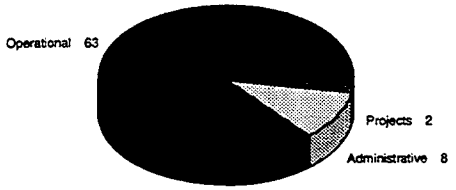
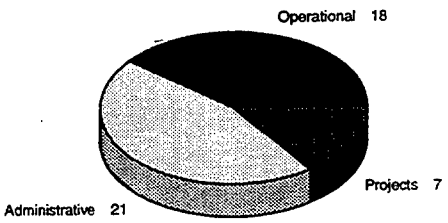


FY94 (73)

Figure A-14

TSCA FINDINGS
FY92 to FY94



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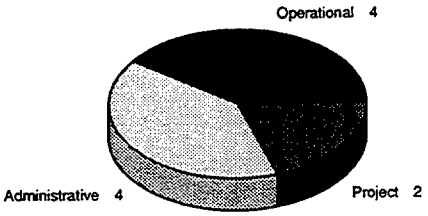

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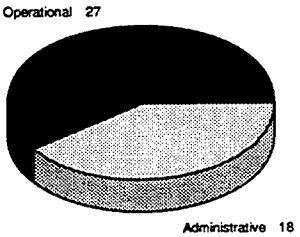


FY94 (45)

Figure A-15

NOVs/FINDINGS RECEIVED: FY94

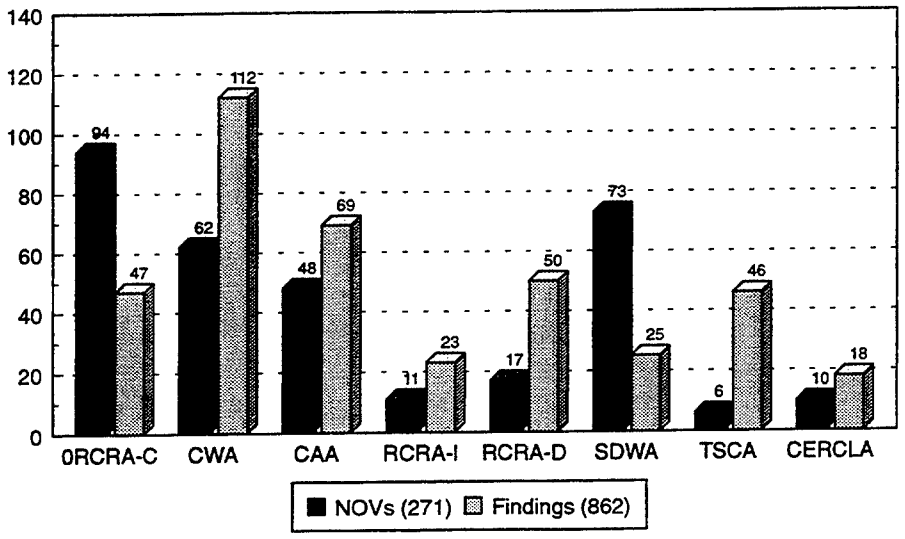


Figure A-16

TOTAL FINDINGS BY TYPE
FY92 to FY94

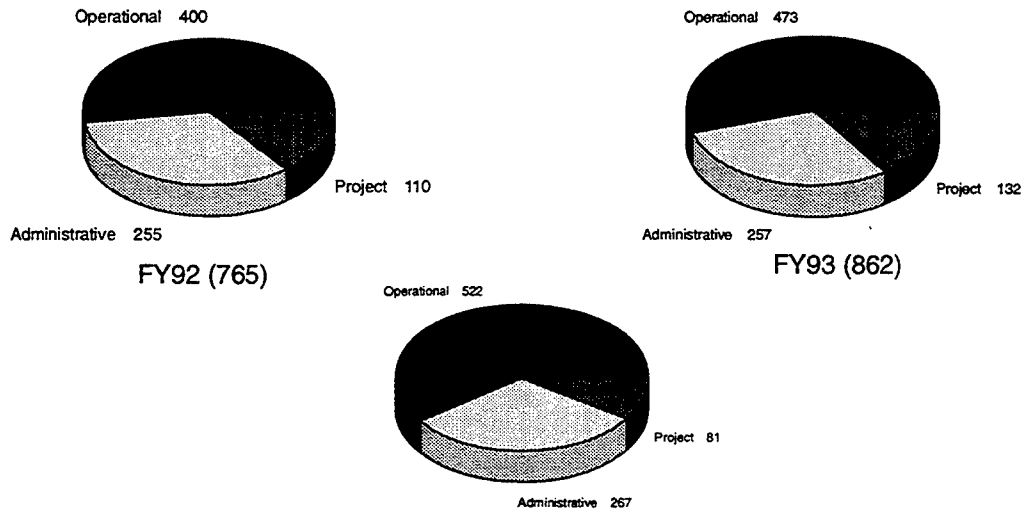


Figure A-17

ADMINISTRATIVE FINDINGS BY LAW
FY92 to FY94

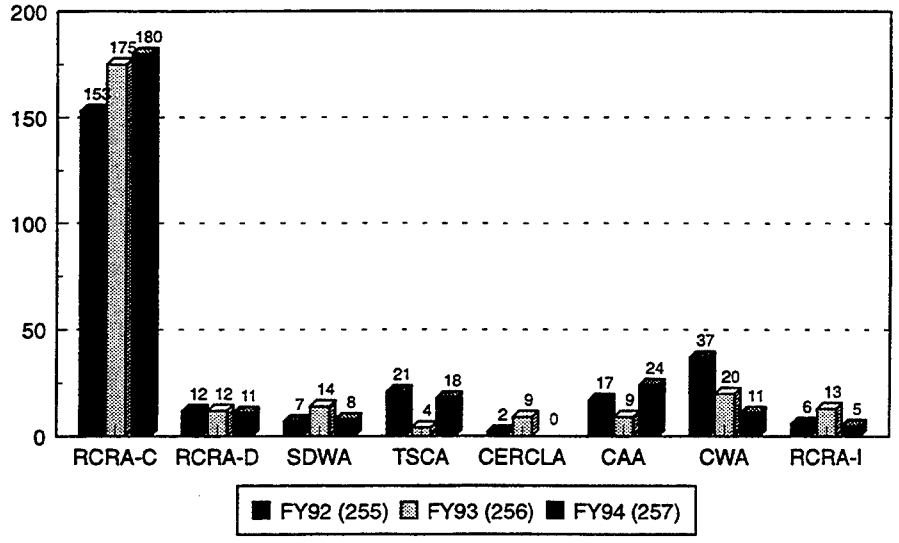


Figure A-18

OPERATIONAL FINDINGS BY LAW
FY92 to FY94

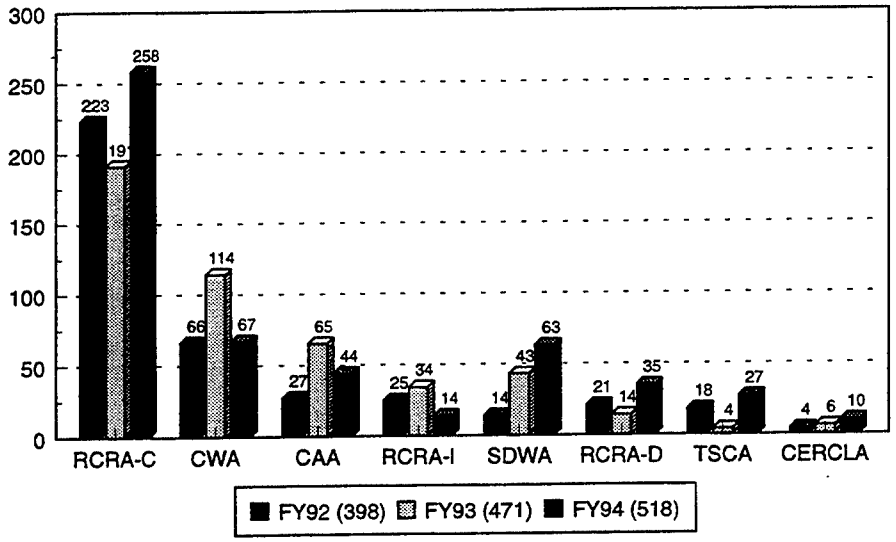


Figure A-19

PROJECT FINDINGS BY LAW
FY92 to FY94

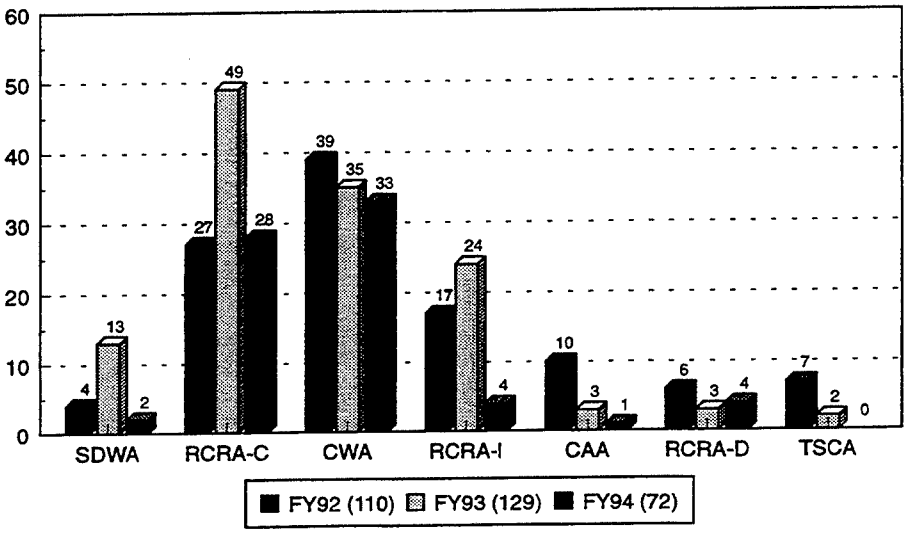


Figure A-20

NOVs RECEIVED BY MACOM
FY92 to FY94

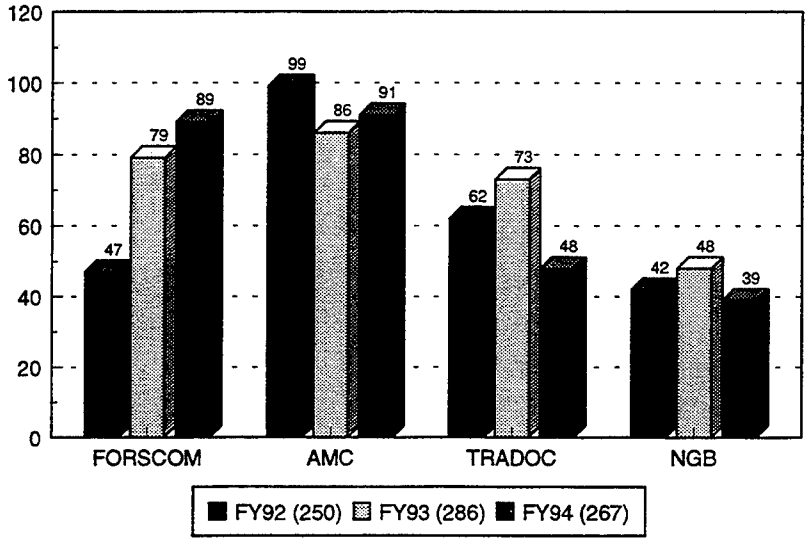


Figure A-21

NOVs vs. INSTALLATIONS: FY92 to FY94
FORSCOM, AMC, TRADOC

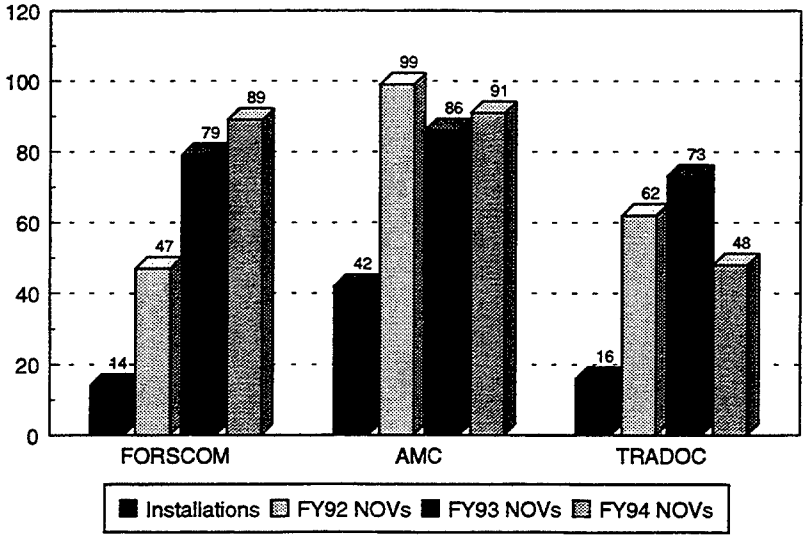


Figure A-22

RCRA-C NOVs BY MACOM
FY92 to FY94

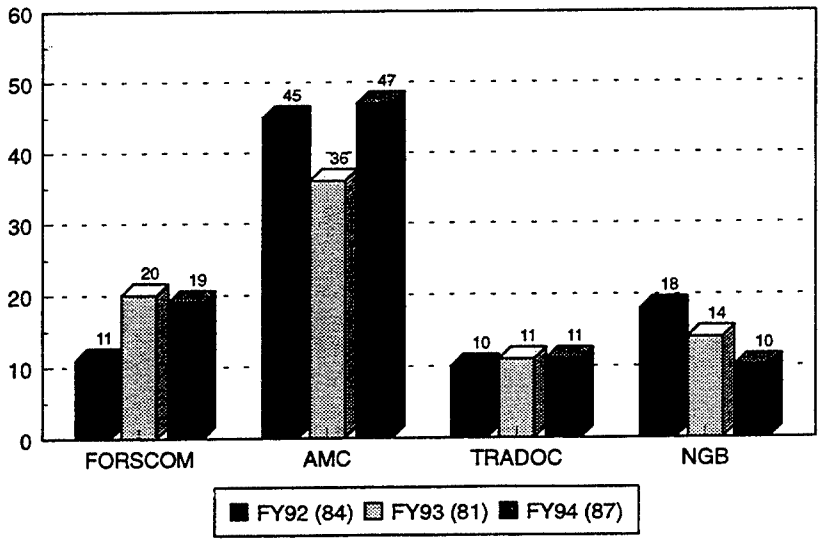


Figure A-23

CWA NOVs BY MACOM
FY92 to FY94

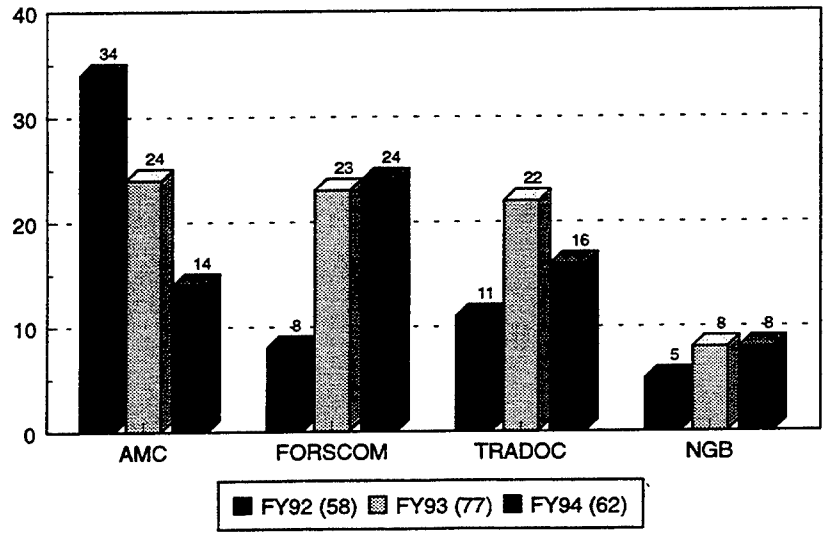


Figure A-24

RCRA-I NOVs BY MACOM
FY92 to FY94

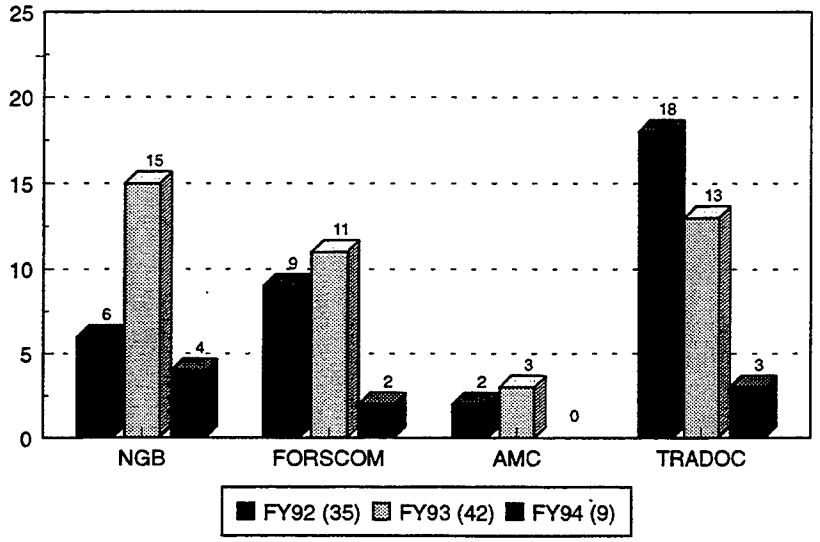


Figure A-25

CAA NOVs BY MACOM
FY92 to FY94

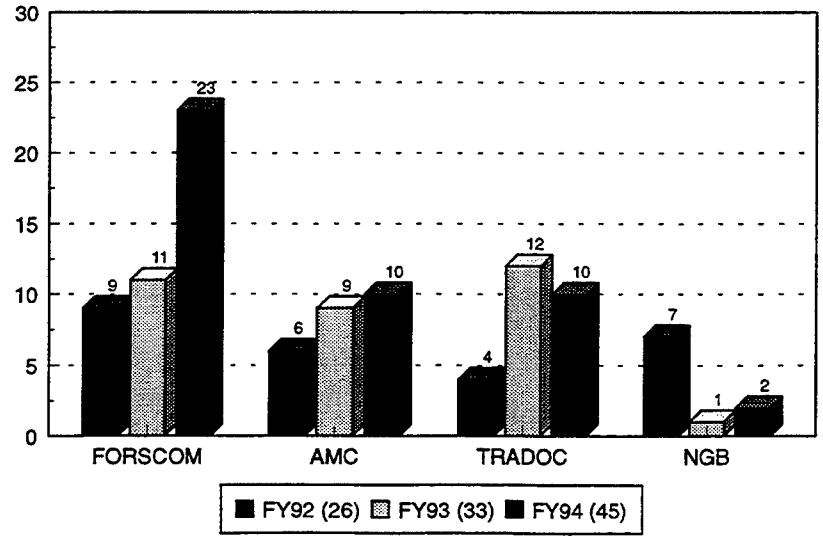


Figure A-26

SDWA NOVs BY MACOM
FY92 to FY94

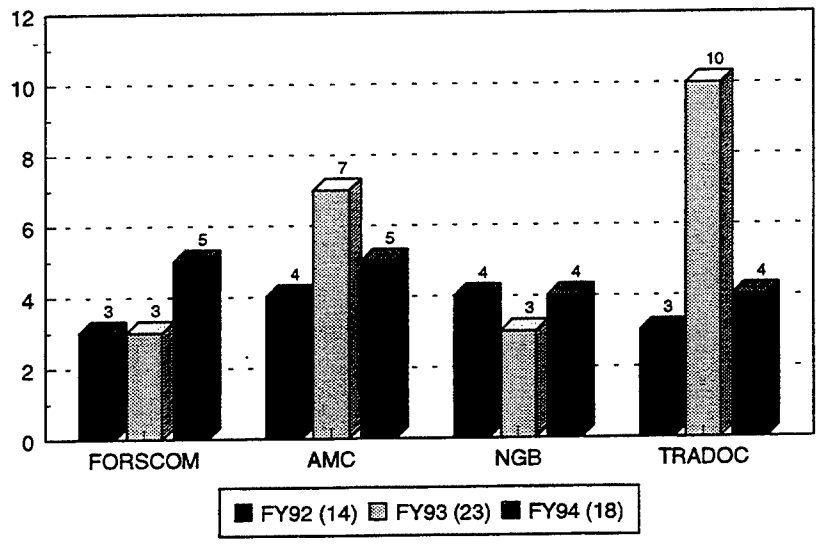


Figure A-27

FORSCOM NOVs RECEIVED BY LAW
FY92 to FY94

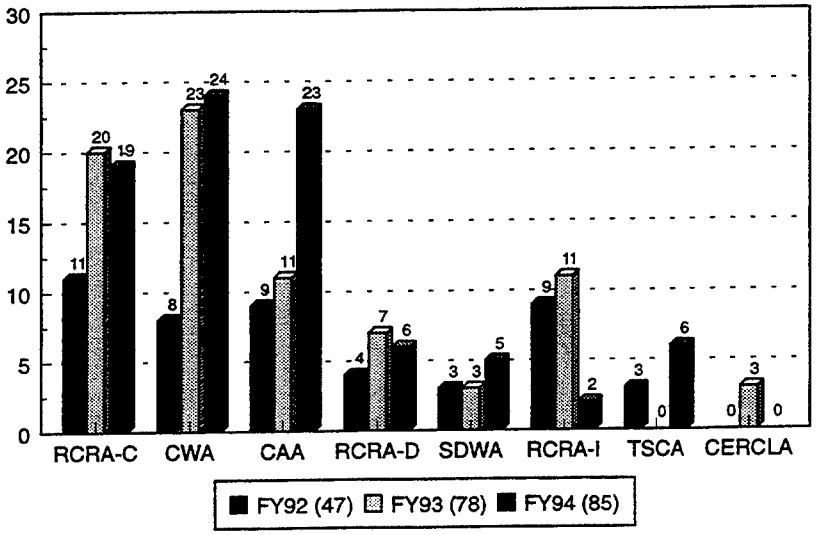


Figure A-28

AMC NOVs RECEIVED BY LAW
FY92 to FY94

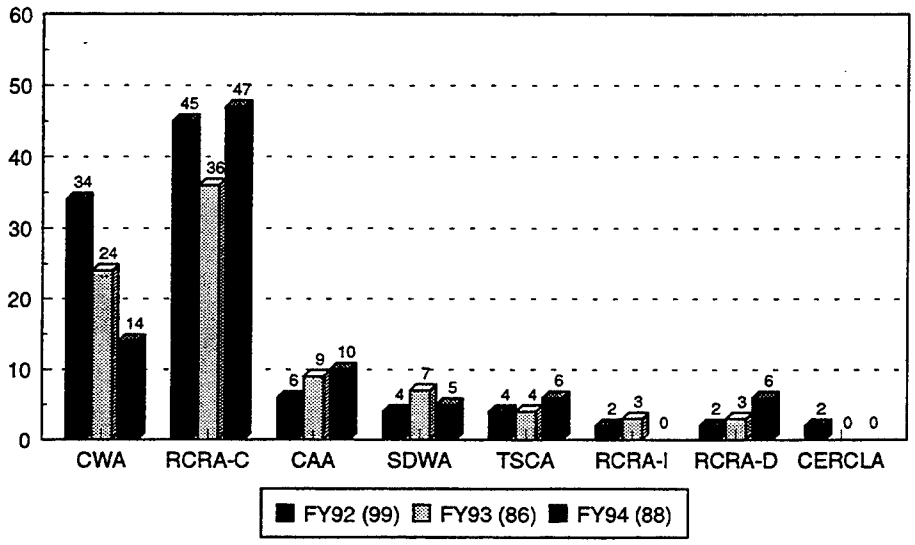


Figure A-29

TRADOC NOVs RECEIVED BY LAW
FY92 to FY94

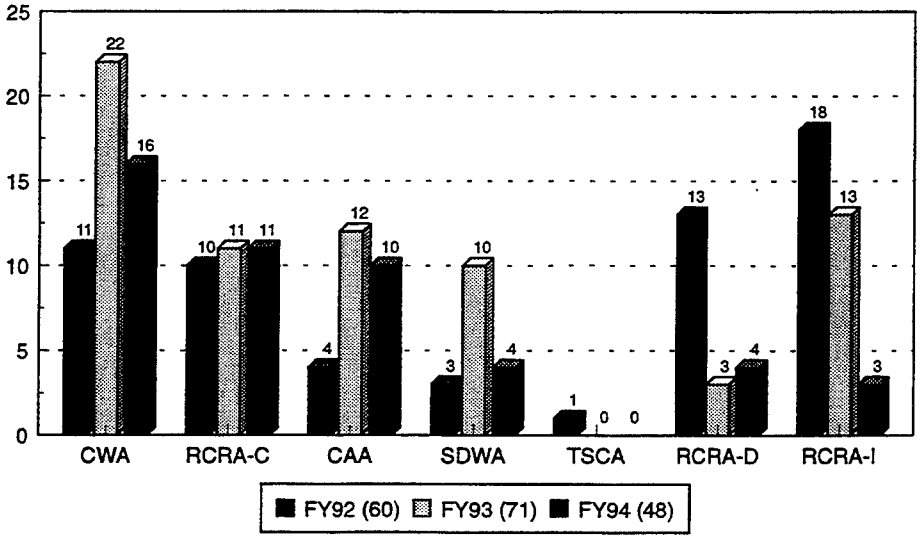


Figure A-30

NGB NOVs RECEIVED BY LAW
FY92 to FY94

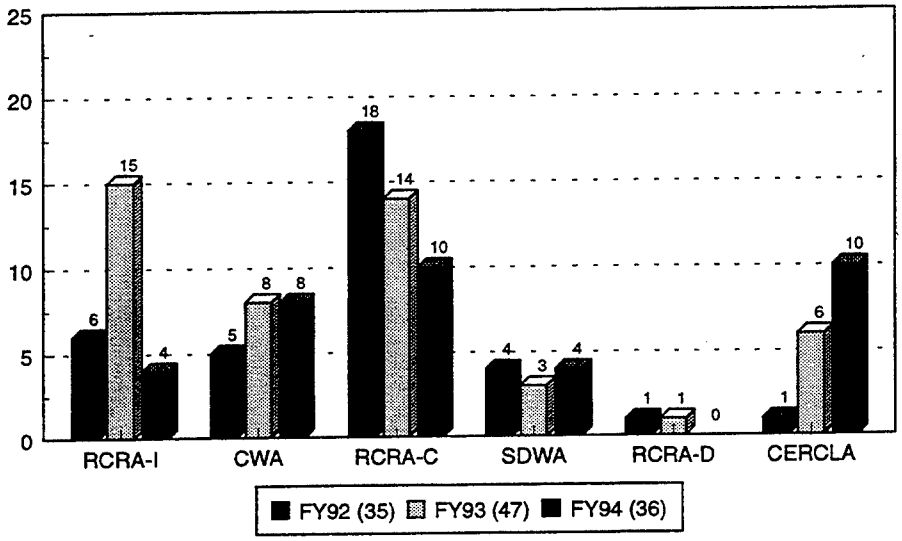


Figure A-31

TOP THREE INSTALLATIONS FOR NOVs
FORSCOM: FY94

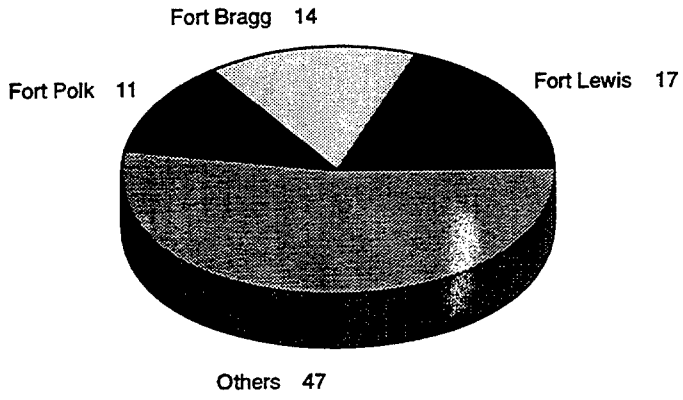


Figure A-32

TOP THREE INSTALLATIONS FOR NOVs
AMC: FY94

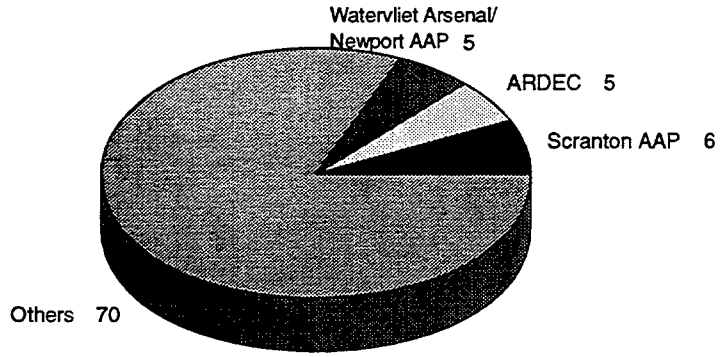


Figure A-33

TOP THREE INSTALLATIONS FOR NOVs
TRADOC: FY94

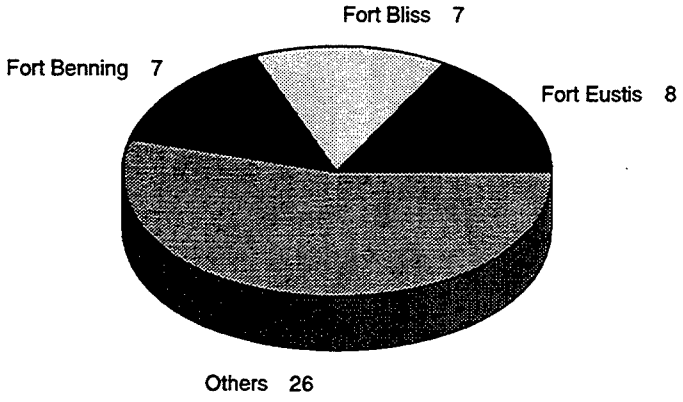
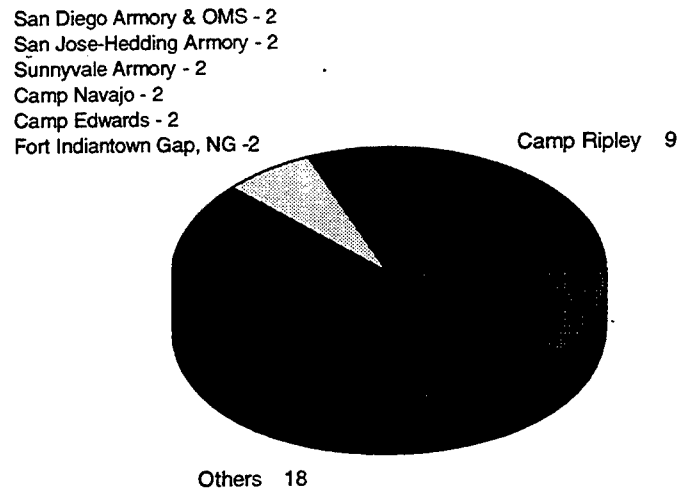


Figure A-34

INSTALLATIONS WITH MOST NUMBER OF NOVs
NGB: FY94



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APPENDIX B

Environmental Compliance Assessment System: Historical Trends and FY94 Baseline Data Charts

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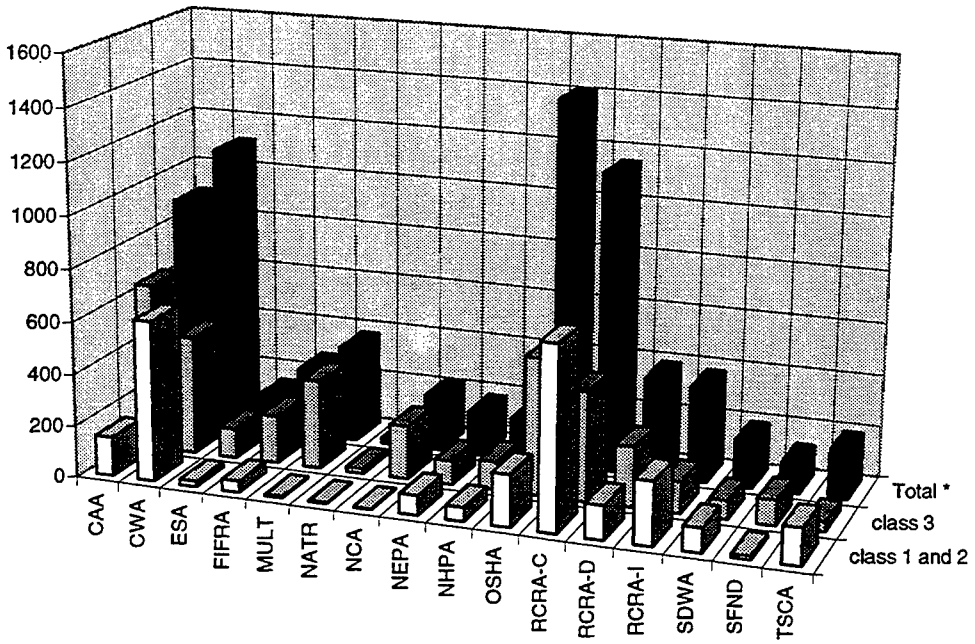
Environmental Compliance Assessment System (ECAS)
Findings for FY92 to FY94
Total Army (Active, Reserve, National Guard) ECAS Findings by Media and Class



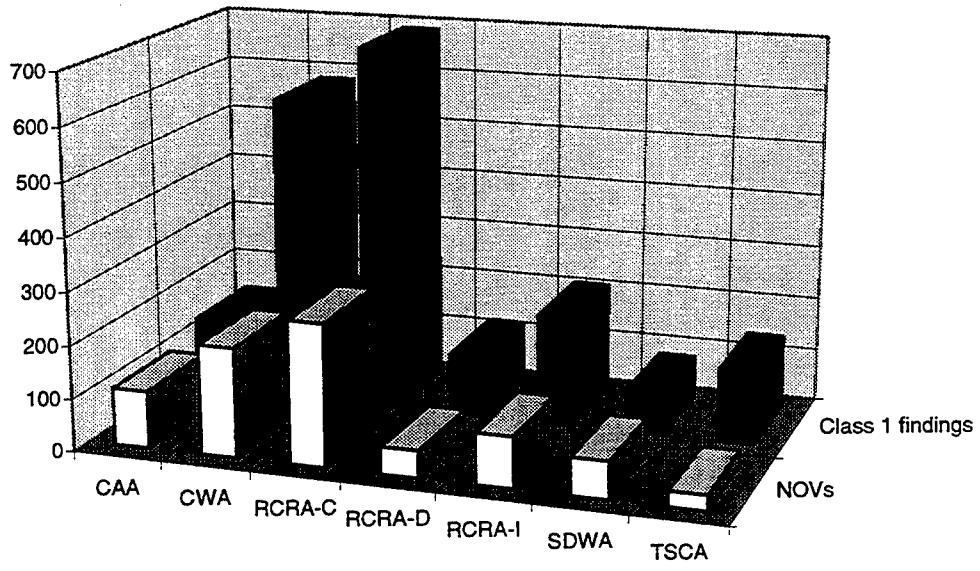
* Total includes classes 1, 2, 3, health and safety and positive findings.

Key to Acronyms:

CAA	Clean Air Act
CWA	Clean Water Act
ESA	Endangered Species Act
FIFRA	Federal Insecticide, Fungicide and Rodenticide Act
MULTI	Multi-Media
NATR	Natural Resources
NCA	Noise Control Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
OSHA	Occupational Safety and Health Act
RCRA-C	Resource Conservation and Recovery Act (Hazardous Waste)
RCRA-D	Resource Conservation and Recovery Act (Solid Waste Management)
RCRA-I	Resource Conservation and Recovery Act (Underground Storage Tanks)
SDWA	Safe Drinking Water Act
SFND	Superfund
TSCA	Toxic Substances Control Act

Figure B-1

Relationship Between Class-1 Audit Findings and NOV Issues



Media	NOVs	Class 1 findings
CAA	109	140
CWA	207	582
RCRA-C	268	690
RCRA-D	52	118
RCRA-I	97	209
SDWA	71	82
TSCA	29	138

Figure B-2

ECAS Findings for FY92 to FY94
(all media included)

Code	Description	Findings
73	Forms, documents, plans, manuals, procedures, inadequate/incomplete	2,044
44	Storage/accumulation issues (time, volume)	750
42	Records/files/data submissions (incomplete/late)	583
45	General O & M failures - housekeeping items such as use of defective containers, ...	352
43	Labeling/placard deficiencies	341
63	Hazardous waste treatment, storage or disposal	317
33	Training: inadequate/not done	281
61	Facility design or capabilities	266
72	Security and safety	213
21	Sampling, analysis, monitoring errors/failures	200
71	Failure to submit required reports	138
46	Faulty missing equipment - Inoperative, poorly designed	123
62	Monitoring/detection/control systems	105
49	Inspections/engineering certification	96
41	Unpermitted/unauthorized/unregistered activity/equipment	94
64	Underground storage tank	84
48	Nonlisted/restricted waste activities	68
54	Contamination from spill/leak/discharge - not cleaned up	60
35	Inadequate number of personnel	55
51	Unauthorized discharge/disposal	51
52	Leak/spill from container/UST	46
55	Procedural error causing spill or pollution	33
47	Manifest/transport problems	30
84	Late with closure milestones	30
31	Uncertified personnel	25
34	Operator training (not environmental staff)	14
13	SDWA and drinking water standards violations	13
86	Late with permit/plan/schedule/other milestone	10
53	Bypass or overflow	9
17	Emission limits, fuel use, miscellaneous	8
32	Inadequate supervision certification	7
11	Volatile organic compound	6
75	Failure to respond to regulatory authority notice	5
14	Failure to provide required excellence notifications	3
15	Inadequate levels of chemical concentrations	3
82	Late in achieving compliance agreement milestone	3
85	Not IAW permit/plan/schedule/other legal requirements	3
16	Violations of NPDES permit conditions and pretreatment requirements	2
57	Spills, etc.. not reported	2
83	Not IAW closure plans	1

Figure B-3

ECAS Finding Corrective Actions

Code Description	Code Count
Procedural modification	4,195
One-time effort - usually in response to lack of documentation	692
Fix/repair/maintain	522
Equipment	368
Training	314
Manpower/personnel	68
Capital spending	55
School/certification	22
Unknown	13

All ECAS Corrective Actions

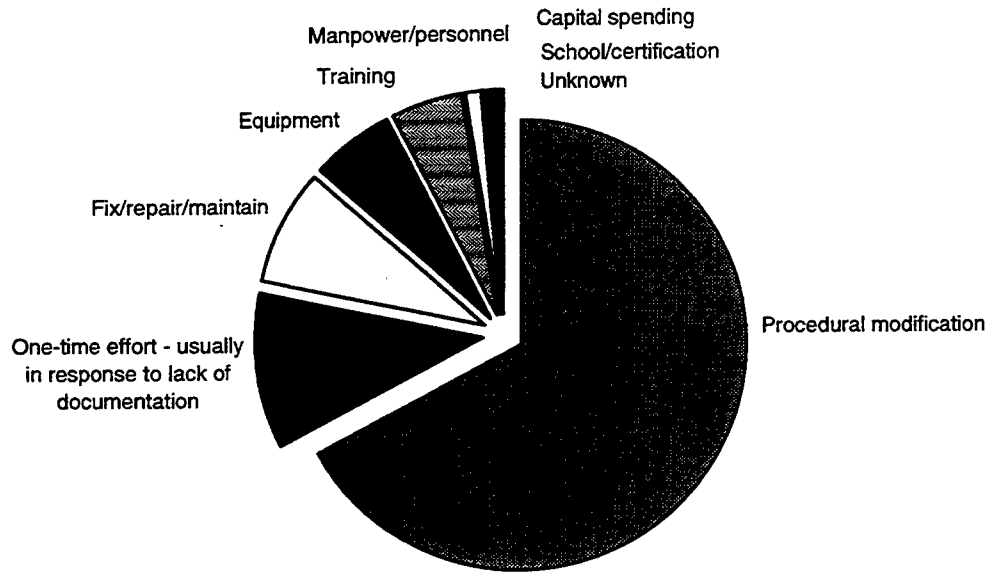


Figure B-4

Major Problem Areas for Class 1, 2, and 3; ECAS Clean Air Act (CAA) Findings

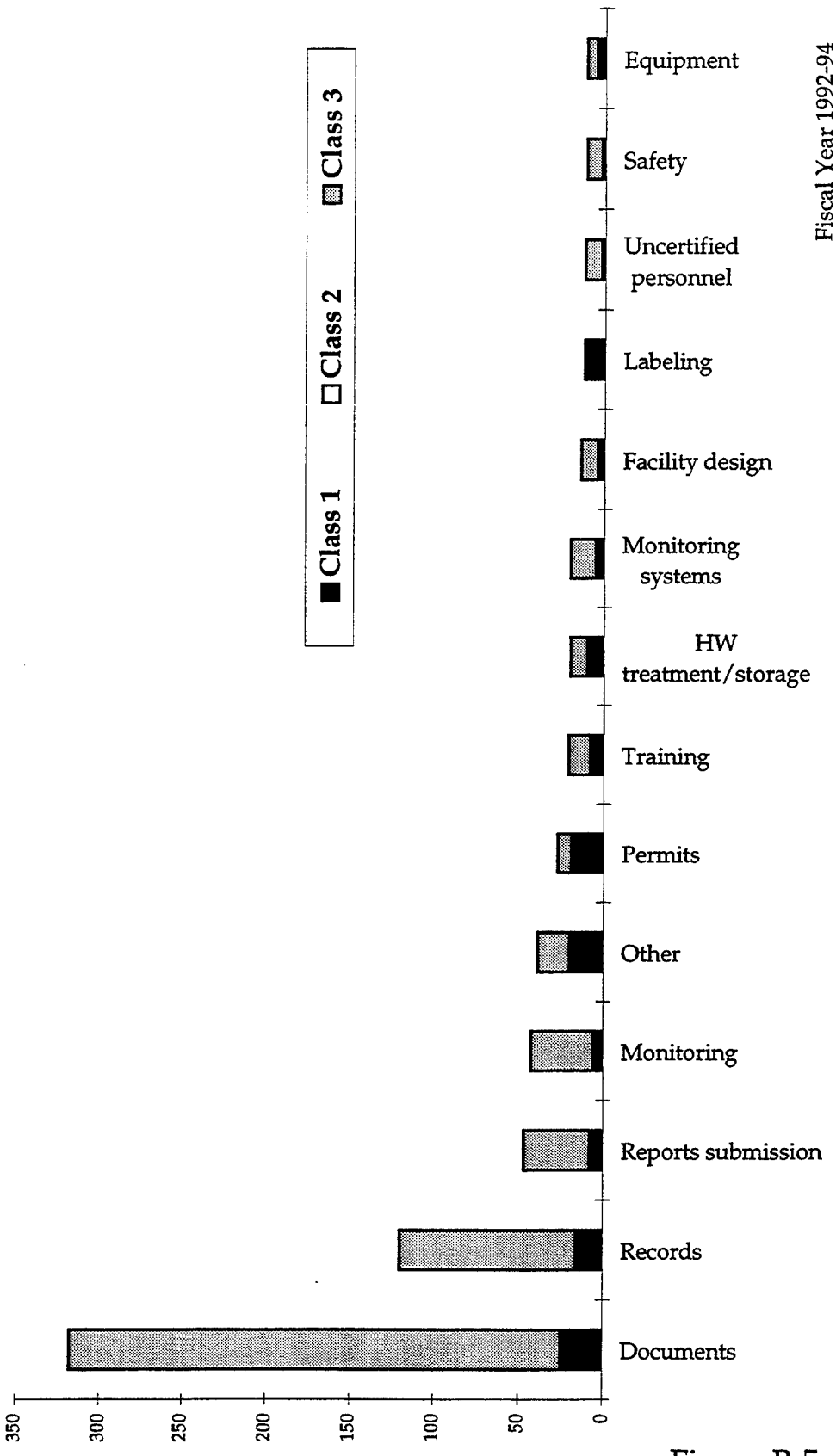


Figure B-5

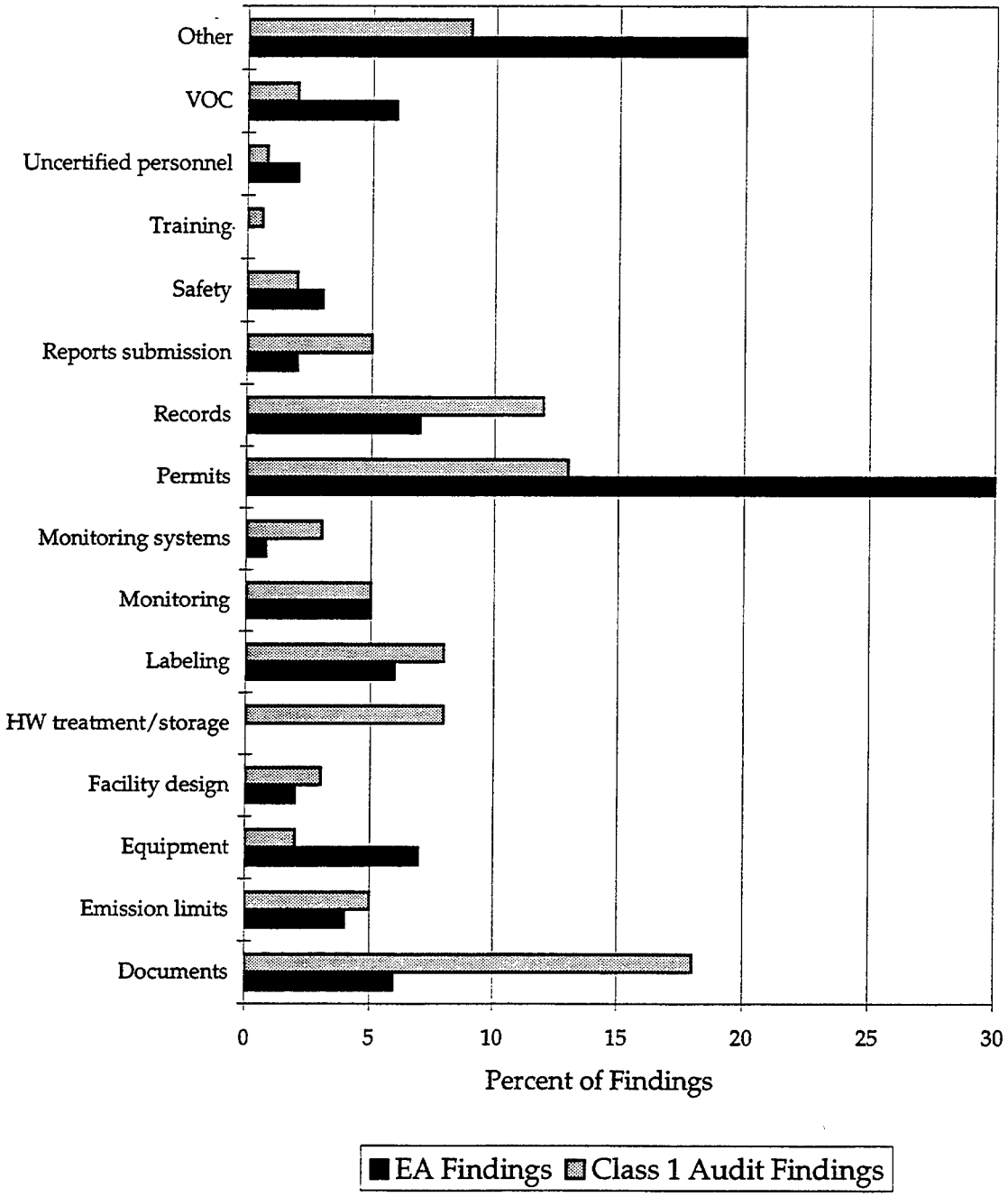
ECAS Findings for FY92 to FY94
Clean Air Act *

Code	Description	Findings
73	Forms, documents, plans, manuals, procedures, inadequate/incomplete	339
42	Records/files/data submissions (incomplete/late)	129
21	Sampling, analysis, monitoring errors/failures	48
71	Failure to submit required reports	48
41	Unpermitted/unauthorized/unregistered activity/equipment	29
45	General O & M failures - housekeeping items such as use of defective containers, ...	26
33	Training: inadequate/not done	23
49	Inspections/engineering certification	21
62	Monitoring/detection/control systems	20
63	Hazardous waste treatment, storage or disposal	20
43	Labeling/placard deficiencies	17
61	Facility design or capabilities	17
72	Security and safety	15
46	Faulty missing equipment - Inoperative, poorly designed	13
31	Uncertified personnel	12
86	Late with permit/plan/schedule/other milestone	9
17	Emission limits, fuel use, miscellaneous	8
44	Storage/accumulation issues (time, volume)	6
11	Volatile organic compound	5
47	Manifest/transport problems	2
16	Violations of NPDES permit conditions and pretreatment requirements	1
52	Leak/spill from container/UST	1
85	Not IAW permit/plan/schedule/other legal requirements	1

* These findings include classes 1, 2, 3, and health and safety.

Figure B-6

Percentage of Problem Areas of Enforcement Actions and ECAS Audit CAA Findings



Fiscal Year 1992-94

Figure B-7

ECAS Finding Corrective Actions
CAA

Code Description	Code Count
Procedural modification	380
One-time effort - usually in response to lack of documentation	308
Fix/repair/maintain	53
Equipment	21
Training	33
Manpower/personnel	-
Capital spending	-
School/certification	-
Unknown	-

Clean Air Act Corrective Actions

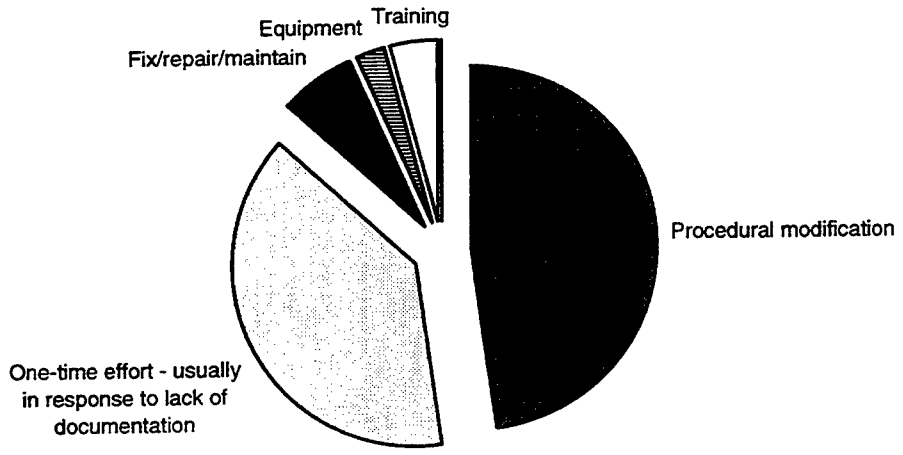


Figure B-8

Major Problem Areas for Class 1, 2, and 3; ECAS Clean Water Act (CWA) Findings

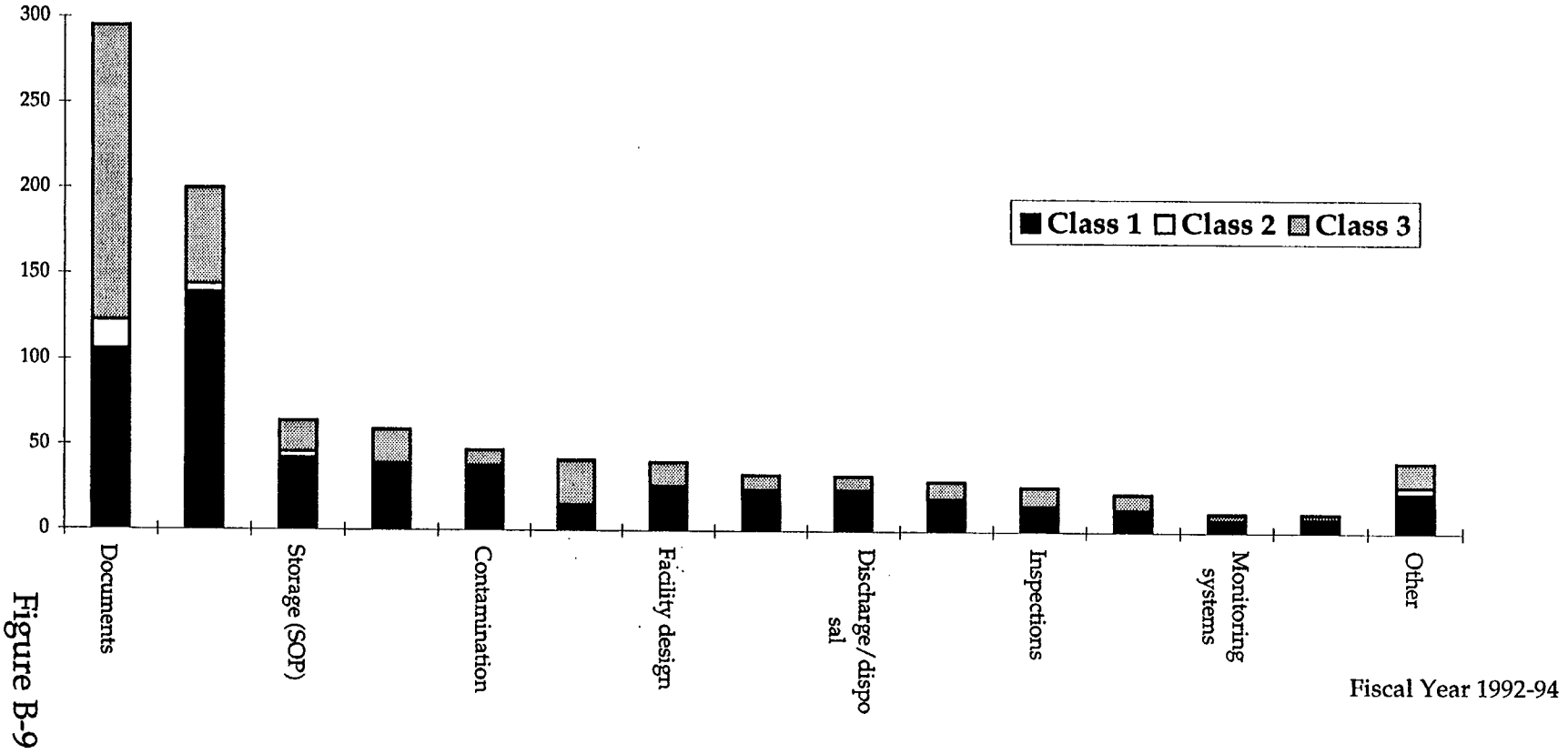


Figure B-9

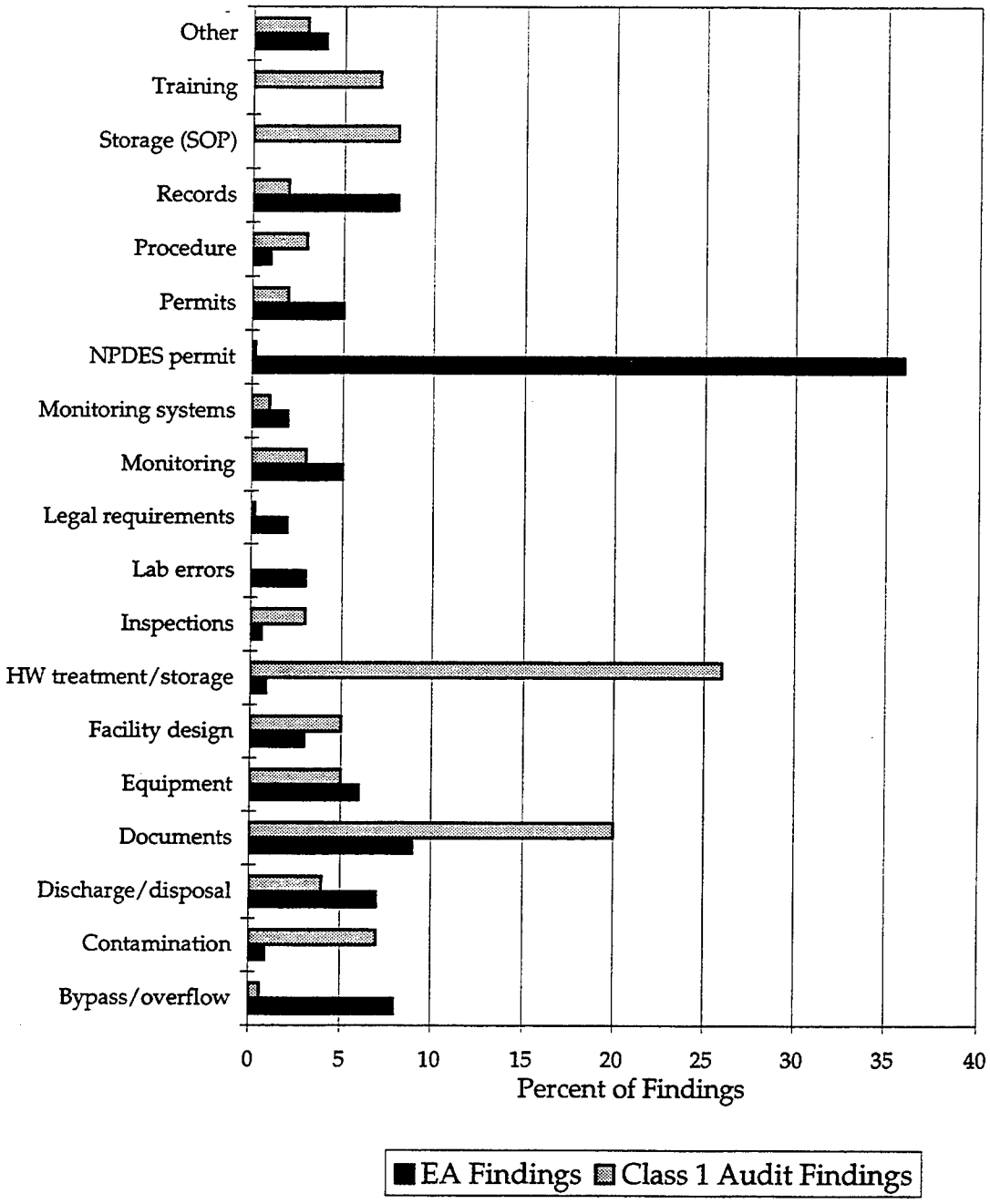
ECAS Findings for FY92 to FY94
Clean Water Act *

Code	Description	Findings
73	Forms, documents, plans, manuals, procedures, inadequate/incomplete	297
63	Hazardous waste treatment, storage or disposal	204
44	Storage/accumulation issues (time, volume)	64
33	Training: inadequate/not done	61
45	General O & M failures - housekeeping items such as use of defective containers, ...	60
54	Contamination from spill/leak/discharge - not cleaned up	47
61	Facility design or capabilities	42
21	Sampling, analysis, monitoring errors/failures	41
46	Faulty missing equipment - Inoperative, poorly designed	33
51	Unauthorized discharge/disposal	33
55	Procedural error causing spill or pollution	30
49	Inspections/engineering certification	27
42	Records/files/data submissions (incomplete/late)	22
41	Unpermitted/unauthorized/unregistered activity/equipment	11
62	Monitoring/detection/control systems	11
72	Security and safety	9
53	Bypass or overflow	8
43	Labeling/placard deficiencies	4
71	Failure to submit required reports	4
75	Failure to respond to regulatory authority notice	4
31	Uncertified personnel	3
64	Underground storage tank	3
57	Spills, etc.. not reported	2
15	Inadequate levels of chemical concentrations	1
16	Violations of NPDES permit conditions and pretreatment requirements	1
32	Inadequate supervision certification	1
35	Inadequate number of personnel	1
48	Nonlisted/restricted waste activities	1
85	Not IAW permit/plan/schedule/other legal requirements	1

* These findings include classes 1, 2, 3, and health and safety.

Figure B-10

Percentage of Problem Areas of Enforcement Actions and ECAS Audit CWA Findings



Fiscal Year 1992-94

Figure B-11

ECAS Finding Corrective Actions
CWA

Code Description	Code Count
Procedural modification	549
One-time effort - usually in response to lack of documentation	156
Fix/repair/maintain	163
Equipment	54
Training	71
Manpower/personnel	-
Capital spending	7
School/certification	22
Unknown	9

Clean Water Act Corrective Actions

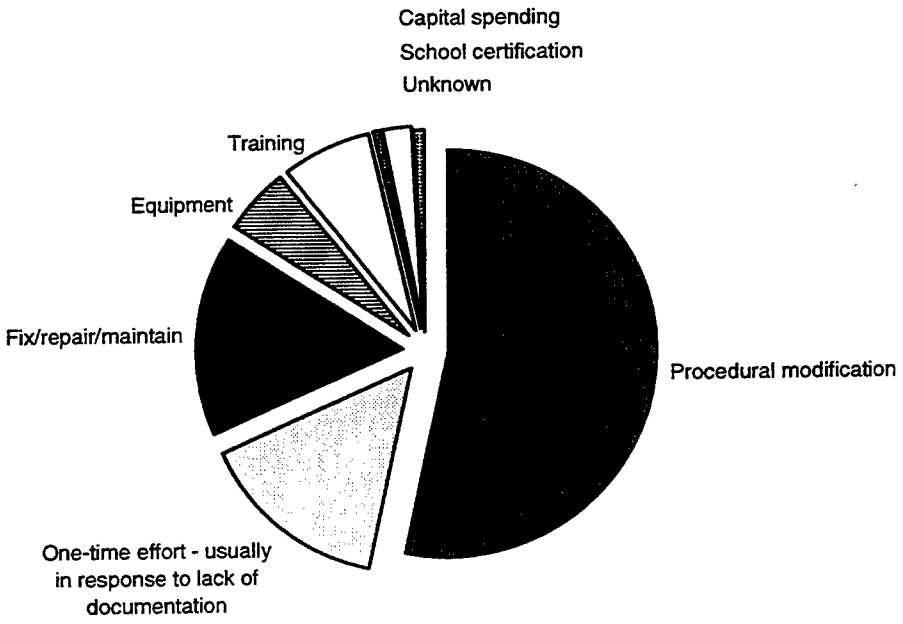


Figure B-12

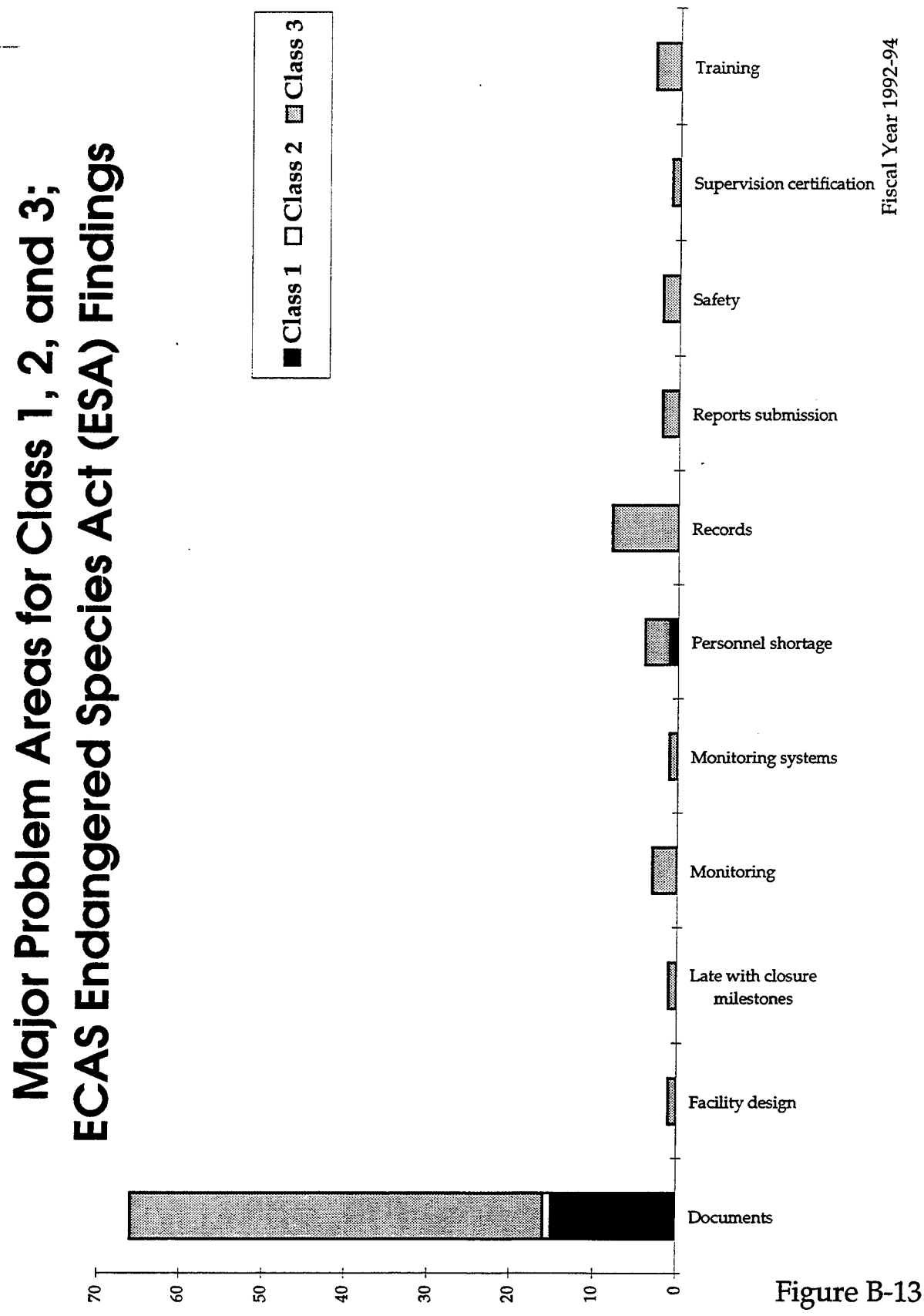

Major Problem Areas for Class 1, 2, and 3;
ECAS Endangered Species Act (ESA) Findings
Class 1
Class 2
Class 3
Training
Supervision certification
Safety
Reports submission
Records
Personnel shortage
Monitoring systems
Monitoring
Late with closure milestones
Facility design
Documents
70
60
50
40
30
20
10
0
Fiscal Year 1992-94

Figure B-13

ECAS Findings for FY92 to FY94
Endangered Species Act *

Code	Description	Findings
73	Forms, documents, plans, manuals, procedures, inadequate/incomplete	66
42	Records/files/data submissions (incomplete/late)	8
45	General O & M failures - housekeeping items such as use of defective containers, ...	8
35	Inadequate number of personnel	4
21	Sampling, analysis, monitoring errors/failures	3
33	Training: inadequate/not done	3
71	Failure to submit required reports	2
72	Security and safety	2
32	Inadequate supervision certification	1
61	Facility design or capabilities	1
62	Monitoring/detection/control systems	1
84	Late with closure milestones	1

* These findings include classes 1, 2, 3, and health and safety.

Figure B-14

ECAS Finding Corrective Actions
ESA

Code Description	Code Count
Procedural modification	-
One-time effort - usually in response to lack of documentation	-
Fix/repair/maintain	-
Equipment	-
Training	-
Manpower/personnel	-
Capital spending	-
School/certification	-
Unknown	-

Figure B-15

Major Problem Areas for Class 1 and 3;
ECAS FIFRA Findings
Class 1
Class 3
Other
Labeling
Records
HW
treatment/storage
Equipment
Storage (SOP)
Documents
50
45
40
35
30
25
20
15
10
5
0
Fiscal Year 1992-94

Figure B-16

ECAS Findings for FY92 to FY94
FIFRA *

Code	Description	Findings
73	Forms, documents, plans, manuals, procedures, inadequate/incomplete	47
46	Faulty missing equipment - Inoperative, poorly designed	38
44	Storage/accumulation issues (time, volume)	34
42	Records/files/data submissions (incomplete/late)	32
63	Hazardous waste treatment, storage or disposal	28
43	Labeling/placard deficiencies	18
45	General O & M failures - housekeeping items such as use of defective containers, ...	15
34	Operator training (not environmental staff)	9
31	Uncertified personnel	7
41	Unpermitted/unauthorized/unregistered activity/equipment	5
61	Facility design or capabilities	5
33	Training: inadequate/not done	2
35	Inadequate number of personnel	2
54	Contamination from spill/leak/discharge - not cleaned up	2
32	Inadequate supervision certification	1
49	Inspections/engineering certification	1
52	Leak/spill from container/UST	1
71	Failure to submit required reports	1

* These findings include classes 1, 2, 3, and health and safety.

Figure B-17

ECAS Finding Corrective Actions
FIFRA

Code Description	Code Count
Procedural modification	152
One-time effort - usually in response to lack of documentation	-
Fix/repair/maintain	34
Equipment	32
Training	9
Manpower/personnel	16
Capital spending	6
School/certification	-
Unknown	-

FIFRA Corrective Actions

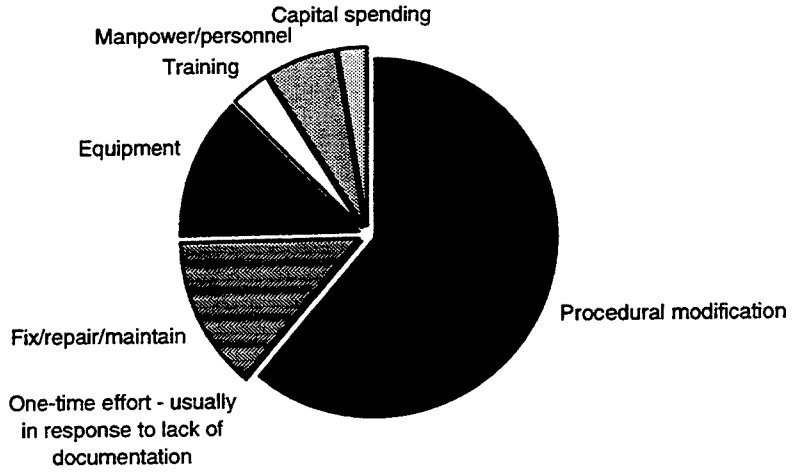


Figure B-18

Major Problem Areas for Class 1, 2, and 3;
ECAS Multi-Media Findings
Class 1
Class 3
Other
Reports submission
Personnel shortage
Records
Training
Documents
140
120
100
80
60
40
20
0
Fiscal Year 1992-94

Figure B-19

ECAS Findings for FY92 to FY94
Multi-Media *

Code	Description	Findings
73	Forms, documents, plans, manuals, procedures, inadequate/incomplete	140
33	Training: inadequate/not done	56
42	Records/files/data submissions (incomplete/late)	44
35	Inadequate number of personnel	37
71	Failure to submit required reports	26
21	Sampling, analysis, monitoring errors/failures	4
43	Labeling/placard deficiencies	3
46	Faulty missing equipment - Inoperative, poorly designed	3
61	Facility design or capabilities	3
34	Operator training (not environmental staff)	2
44	Storage/accumulation issues (time, volume)	2
31	Uncertified personnel	1
45	General O & M failures - housekeeping items such as use of defective containers, ...	1
72	Security and safety	1
84	Late with closure milestones	1

* These findings include classes 1, 2, 3, and health and safety.

Figure B-20

ECAS Finding Corrective Actions
Multi-Media

Code Description	Code Count
Procedural modification	227
One-time effort - usually in response to lack of documentation	-
Fix/repair/maintain	2
Equipment	1
Training	56
Manpower/personnel	39
Capital spending	-
School/certification	-
Unknown	-

Multi-Media Corrective Actions

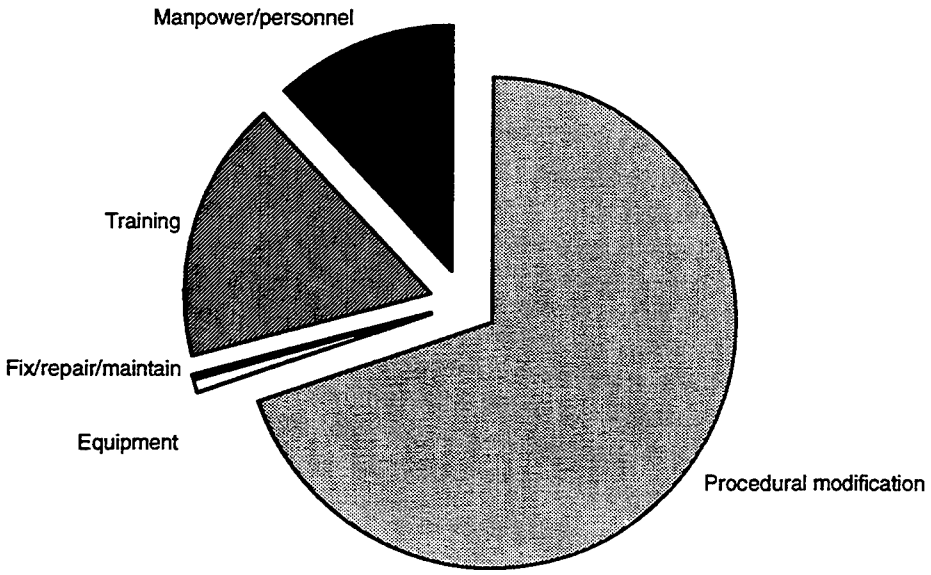


Figure B-21

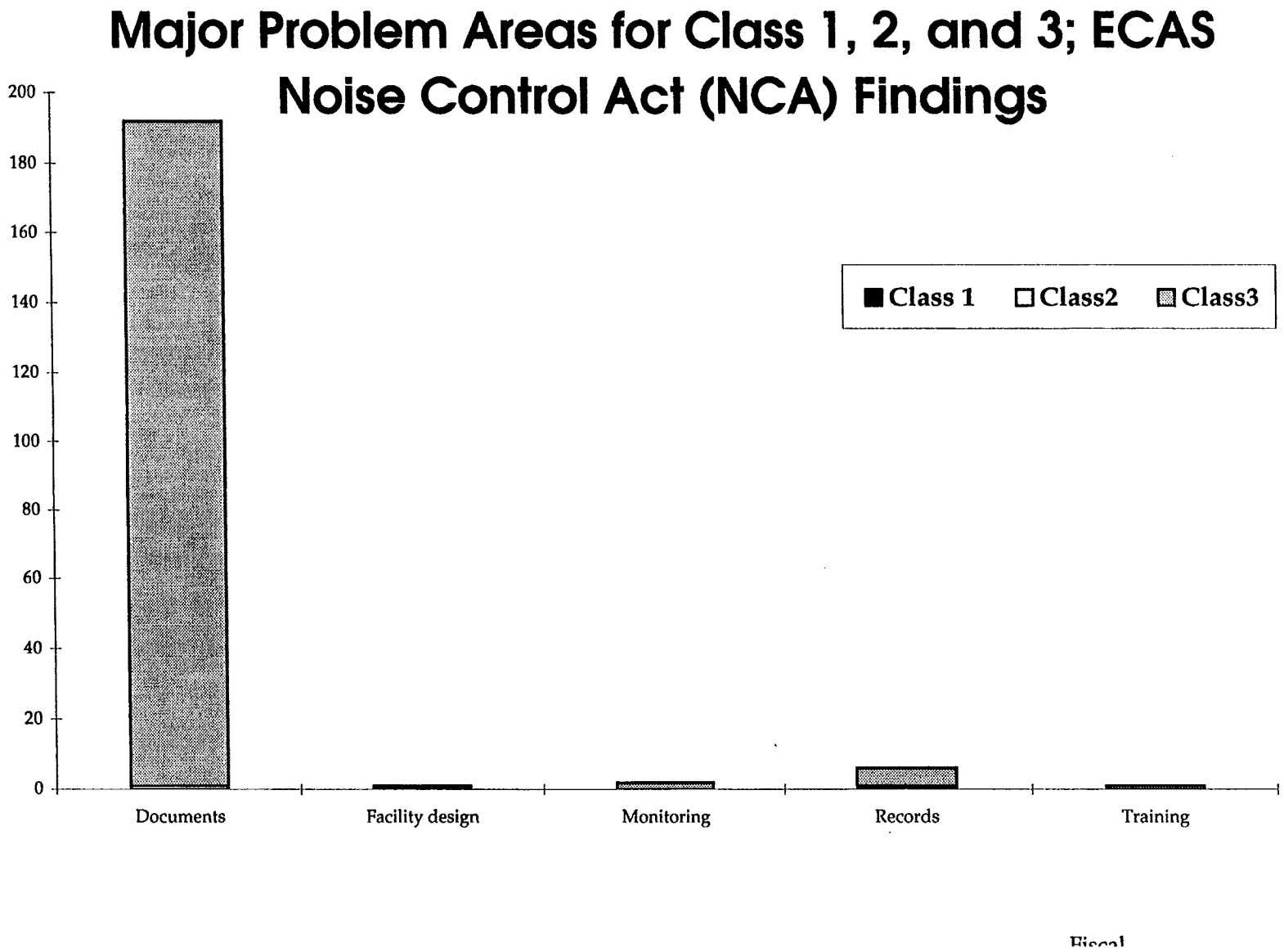

Major Problem Areas for Class 1, 2, and 3; ECAS Noise Control Act (NCA) Findings
200
180
160
140
120
100
80
60
40
20
0
Class 1
Class2
Class3
Documents
Facility design
Monitoring
Records
Training
Fiscal

Figure B-22

ECAS Findings for FY92 to FY94
Noise Control Act *

Code	Description	Findings
73	Forms, documents, plans, manuals, procedures, inadequate/incomplete	194
42	Records/files/data submissions (incomplete/late)	6
21	Sampling, analysis, monitoring errors/failures	2
33	Training: inadequate/not done	1
61	Facility design or capabilities	1

* These findings include classes 1, 2, 3, and health and safety.

Figure B-23

ECAS Finding Corrective Actions
NCA

Code Description	Code Count
Procedural modification	200
One-time effort - usually in response to lack of documentation	-
Fix/repair/maintain	1
Equipment	-
Training	1
Manpower/personnel	-
Capital spending	-
School/certification	-
Unknown	-

Noise Control Act Corrective Actions

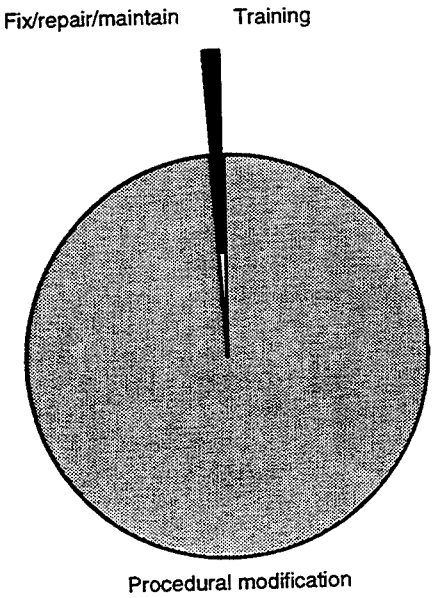
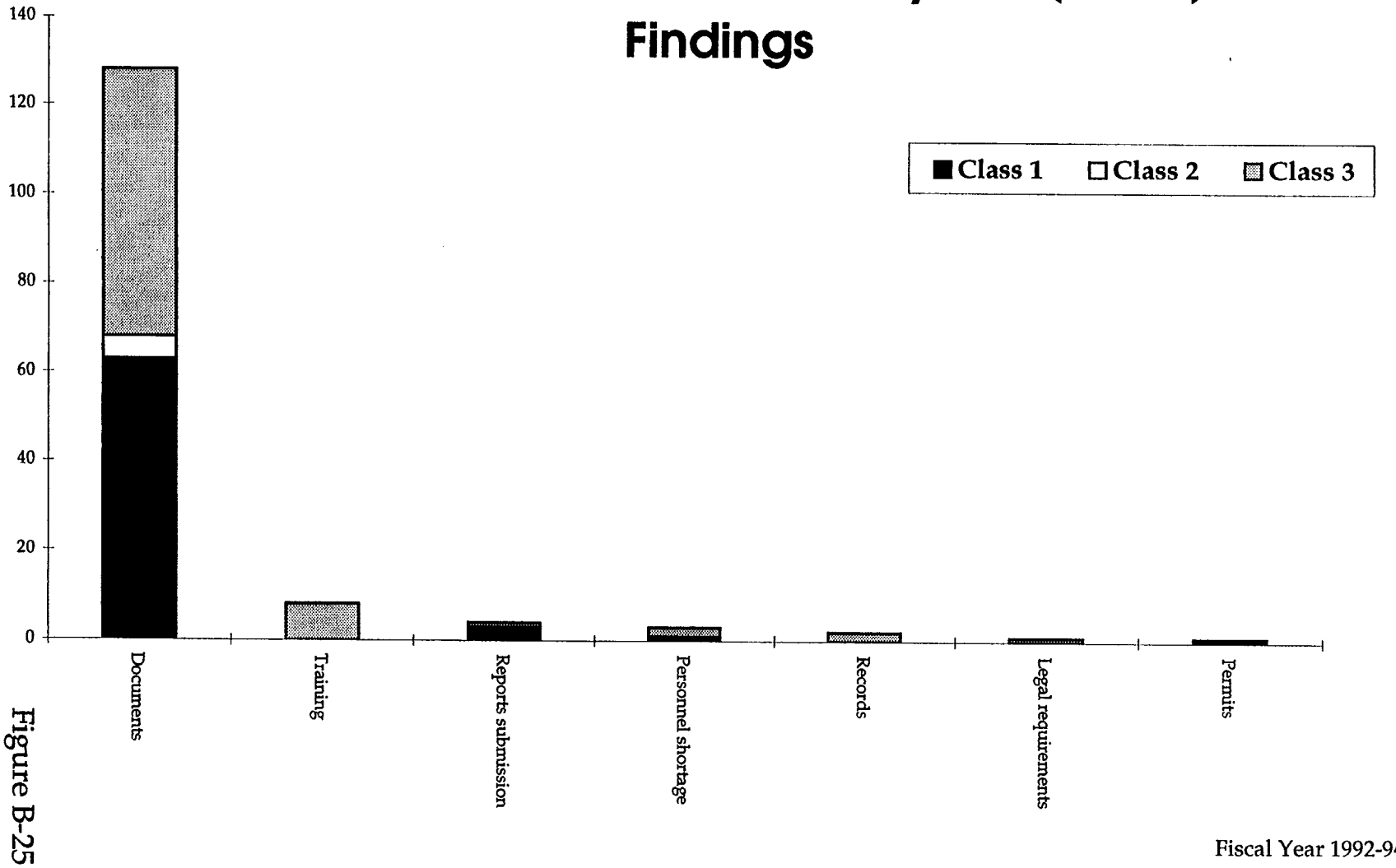


Figure B-24

Major Problem Areas for Class 1, 2, and 3; ECAS National Environmental Policy Act (NEPA) Findings



Fiscal Year 1992-94

Figure B-25

ECAS Findings for FY92 to FY94
NEPA *

Code	Description	Findings
73	Forms, documents, plans, manuals, procedures, inadequate/incomplete	129
33	Training: inadequate/not done	8
71	Failure to submit required reports	4
35	Inadequate number of personnel	3
42	Records/files/data submissions (incomplete/late)	2
41	Unpermitted/unauthorized/unregistered activity/equipment	1
45	General O & M failures - housekeeping items such as use of defective containers, ...	1
85	Not IAW permit/plan/schedule/other legal requirements	1

* These findings include classes 1, 2, 3, and health and safety.

Figure B-26

ECAS Finding Corrective Actions
NEPA

Code Description	Code Count
Procedural modification	136
One-time effort - usually in response to lack of documentation	1
Fix/repair/maintain	-
Equipment	-
Training	7
Manpower/personnel	3
Capital spending	5
School/certification	-
Unknown	-

NEPA Corrective Actions

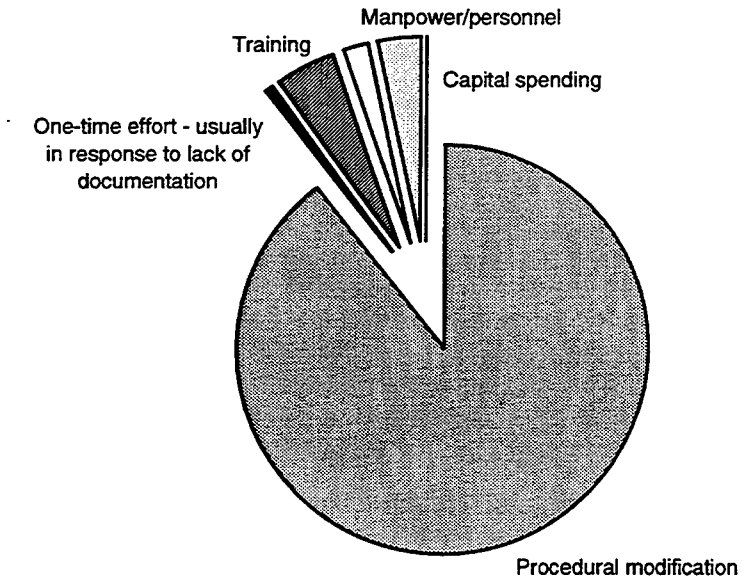
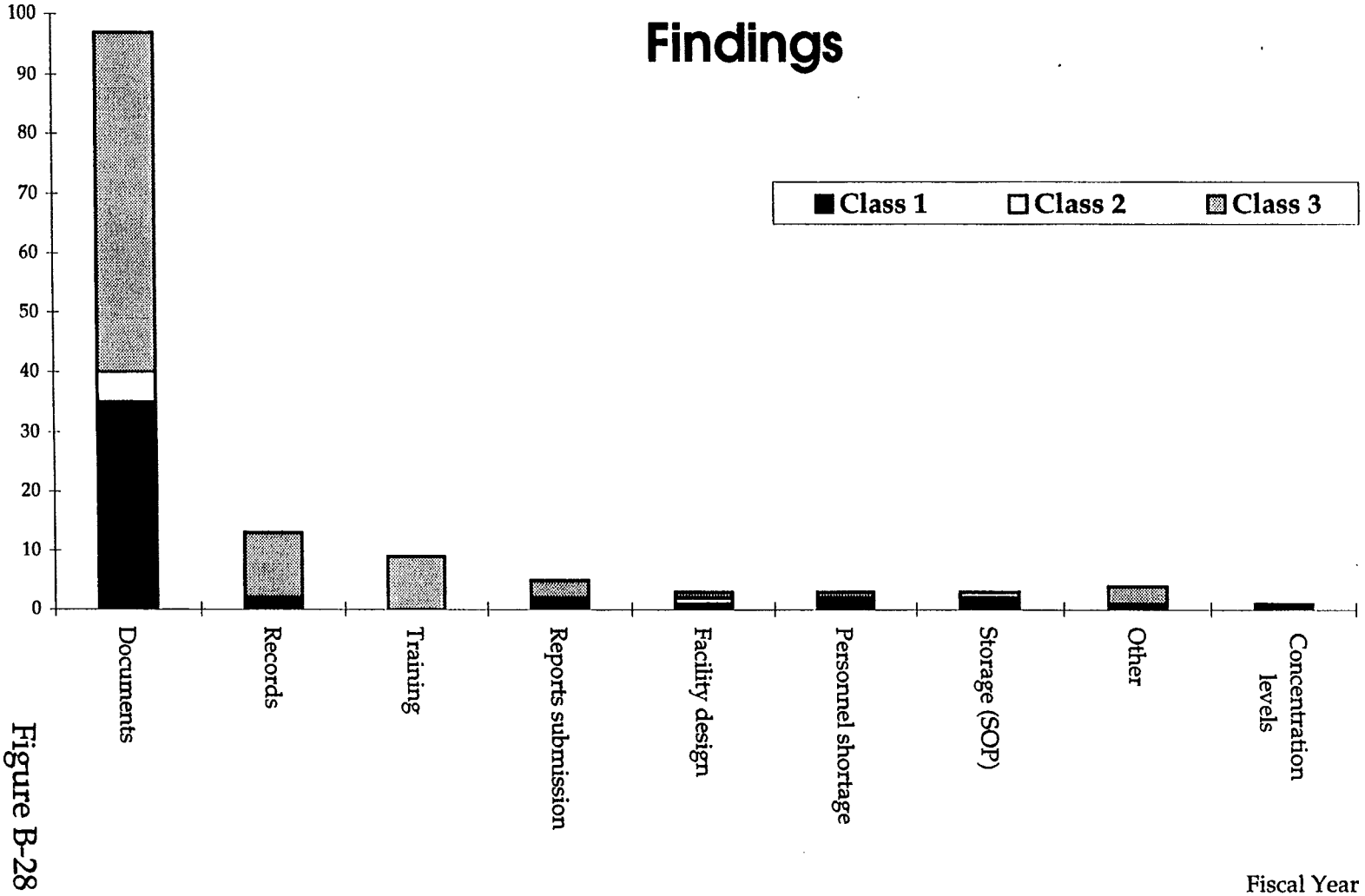


Figure B-27

Major Problem Areas for Class 1, 2, and 3; ECAS Natural Historic Preservation Act (NHPA) Findings



Fiscal Year 1992-94

Figure B-28

ECAS Findings for FY92 to FY94
NHPA *

Code	Description	Findings
73	Forms, documents, plans, manuals, procedures, inadequate/incomplete	97
42	Records/files/data submissions (incomplete/late)	13
33	Training: inadequate/not done	9
45	General O & M failures - housekeeping items such as use of defective containers, ...	7
71	Failure to submit required reports	5
35	Inadequate number of personnel	3
44	Storage/accumulation issues (time, volume)	3
61	Facility design or capabilities	3
82	Late in achieving compliance agreement milestone	2
15	Inadequate levels of chemical concentrations	1
31	Uncertified personnel	1

* These findings include classes 1, 2, 3, and health and safety.

Figure B-29

ECAS Finding Corrective Actions
NHPA

Code Description	Code Count
Procedural modification	118
One-time effort - usually in response to lack of documentation	-
Fix/repair/maintain	5
Equipment	-
Training	9
Manpower/personnel	4
Capital spending	8
School/certification	-
Unknown	3

National Historic Preservation Act Corrective Actions

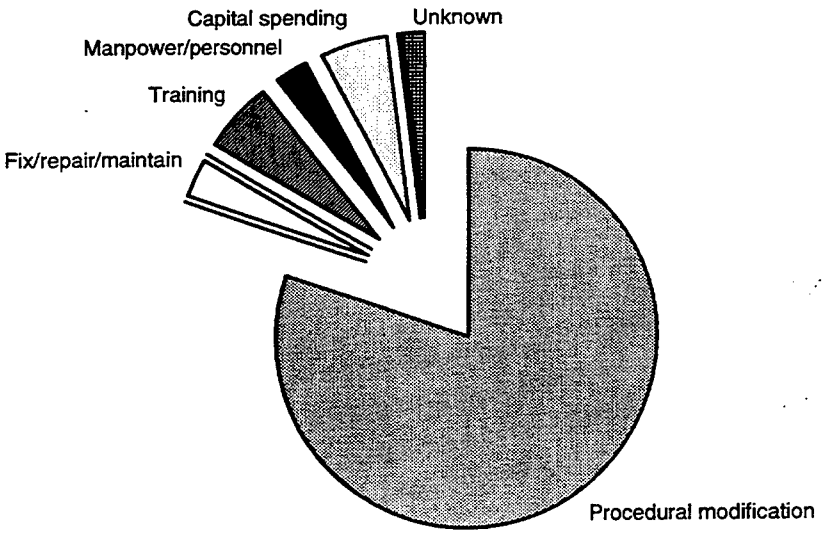
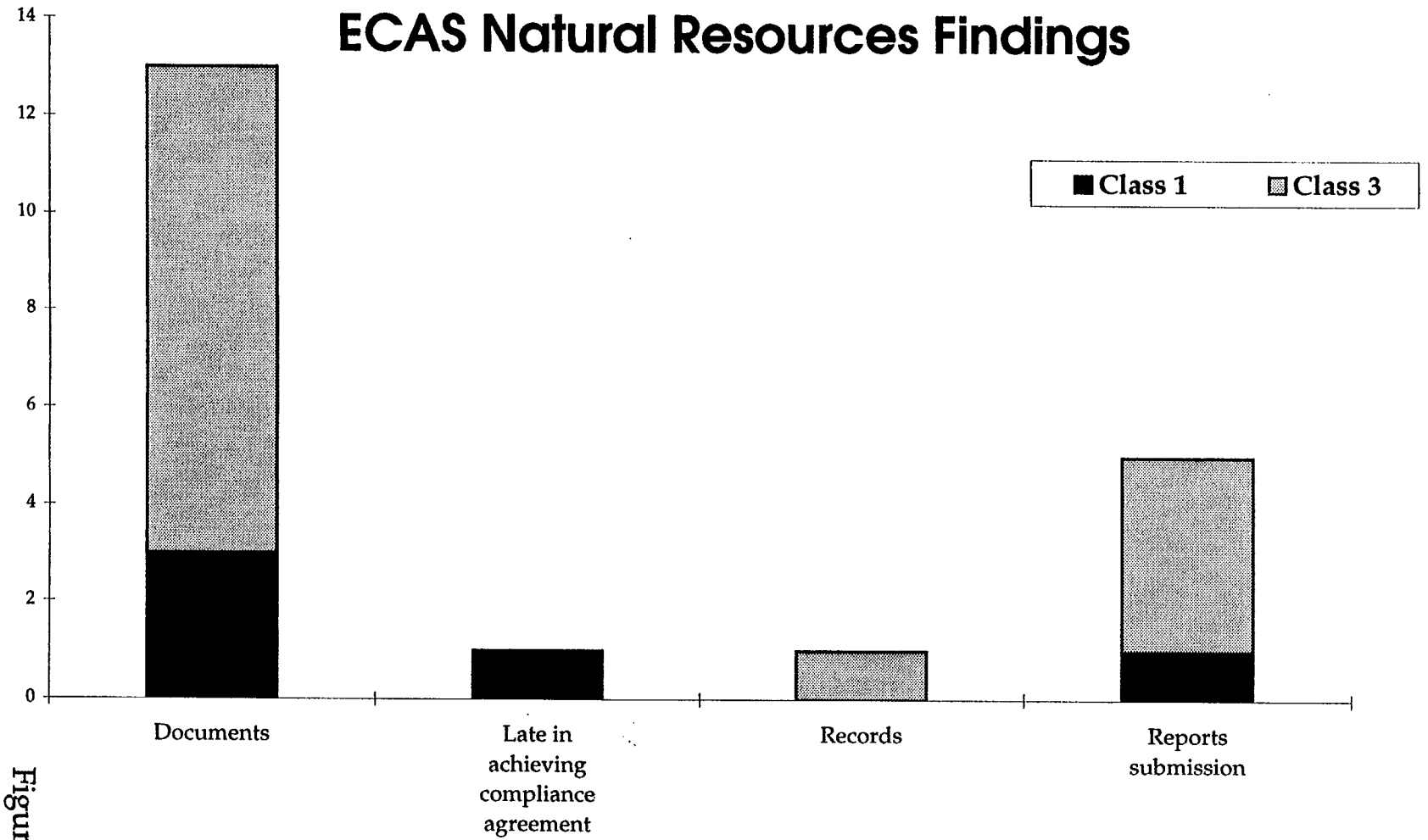


Figure B-30

Major Problem Areas for Class 1 and 3; ECAS Natural Resources Findings



Fiscal Year 1992-94

Figure B-31

ECAS Findings for FY92 to FY94
Natural Resources *

Code	Description	Findings
73	Forms, documents, plans, manuals, procedures, inadequate/incomplete	13
71	Failure to submit required reports	5
45	General O & M failures - housekeeping items such as use of defective containers, ...	4
42	Records/files/data submissions (incomplete/late)	1
82	Late in achieving compliance agreement milestone	1

* These findings include classes 1, 2, 3, and health and safety.

Figure B-32

ECAS Finding Corrective Actions
Natural Resources

Code Description	Code Count
Procedural modification	21
One-time effort - usually in response to lack of documentation	-
Fix/repair/maintain	3
Equipment	-
Training	-
Manpower/personnel	-
Capital spending	-
School/certification	-
Unknown	-

Natural Resources Corrective Actions

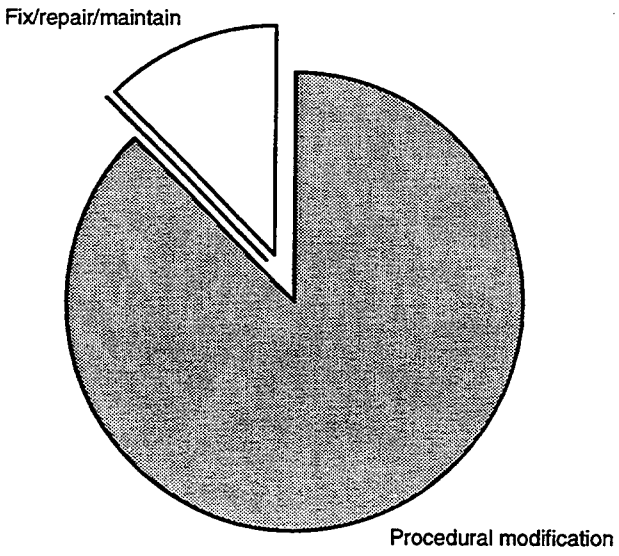
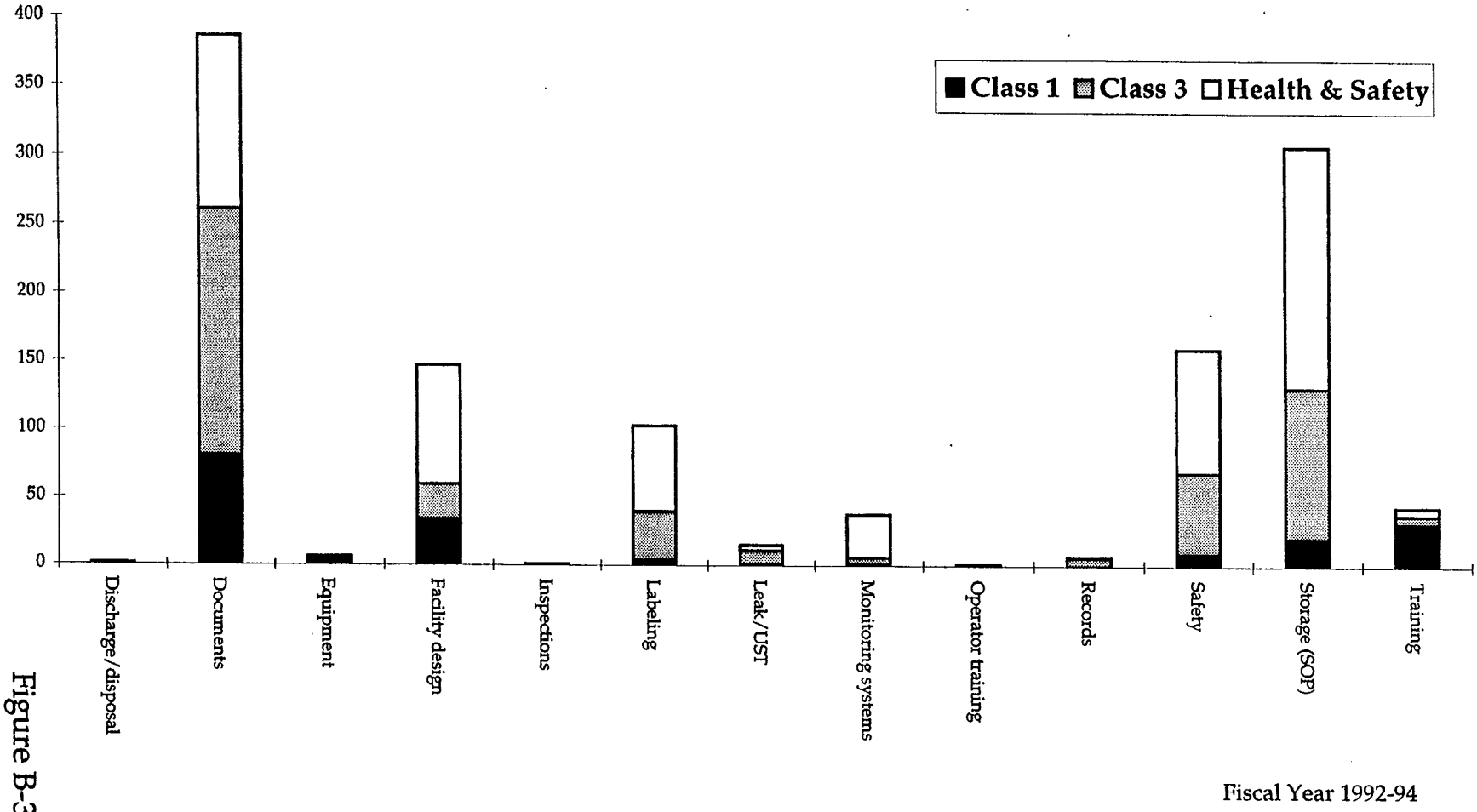


Figure B-33

Major Problem Areas for Class 1, 3, and Health and Safety ECAS OSHA Findings



Fiscal Year 1992-94

Figure B-34

ECAS Findings for FY92 to FY94
OSHA *

Code	Description	Findings
73	Forms, documents, plans, manuals, procedures, inadequate/incomplete	386
44	Storage/accumulation issues (time, volume)	308
72	Security and safety	160
61	Facility design or capabilities	147
43	Labeling/placard deficiencies	103
45	General O & M failures - housekeeping items such as use of defective containers, ...	54
33	Training: inadequate/not done	45
62	Monitoring/detection/control systems	38
52	Leak/spill from container/UST	15
42	Records/files/data submissions (incomplete/late)	7
46	Faulty missing equipment - Inoperative, poorly designed	6
34	Operator training (not environmental staff)	1
49	Inspections/engineering certification	1
51	Unauthorized discharge/disposal	1

* These findings include classes 1, 2, 3, and health and safety.

Figure B-35

ECAS Finding Corrective Actions
OSHA

Code Description	Code Count
Procedural modification	944
One-time effort - usually in response to lack of documentation	25
Fix/repair/maintain	154
Equipment	112
Training	51
Manpower/personnel	1
Capital spending	-
School/certification	-
Unknown	-

OSHA Corrective Actions

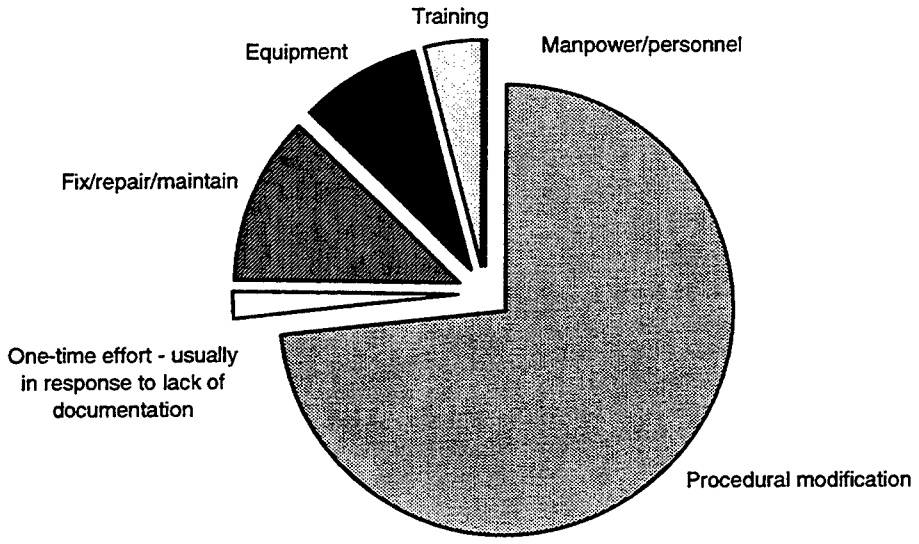


Figure B-36

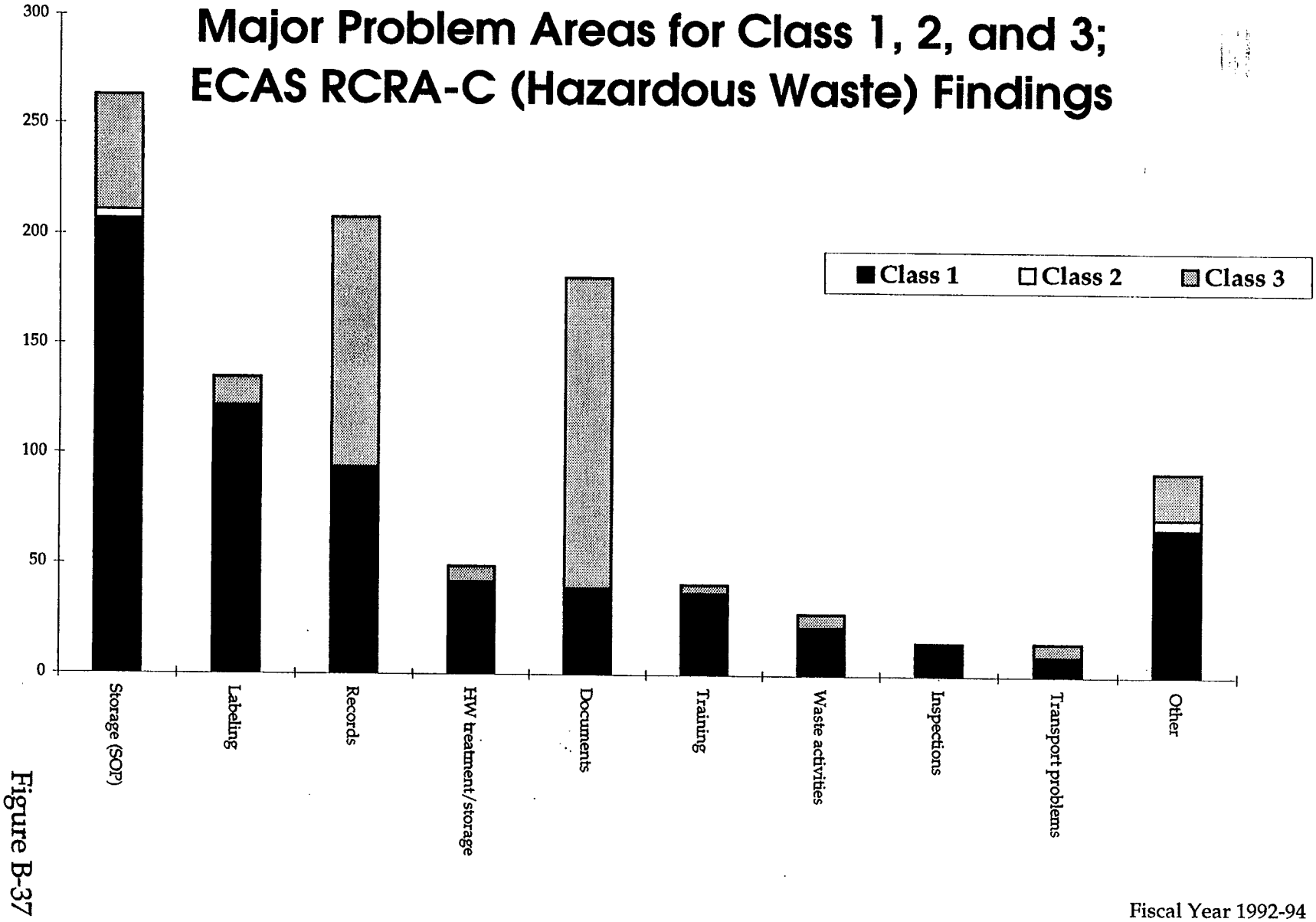

Major Problem Areas for Class 1, 2, and 3;
ECAS RCRA-C (Hazardous Waste) Findings
300
250
200
150
100
50
0
Class 1
Class 2
Class 3
Storage (SOP)
Labeling
Records
HW treatment/storage
Documents
Training
Waste activities
Inspections
Transport problems
Other
Fiscal Year 1992-94

Figure B-37

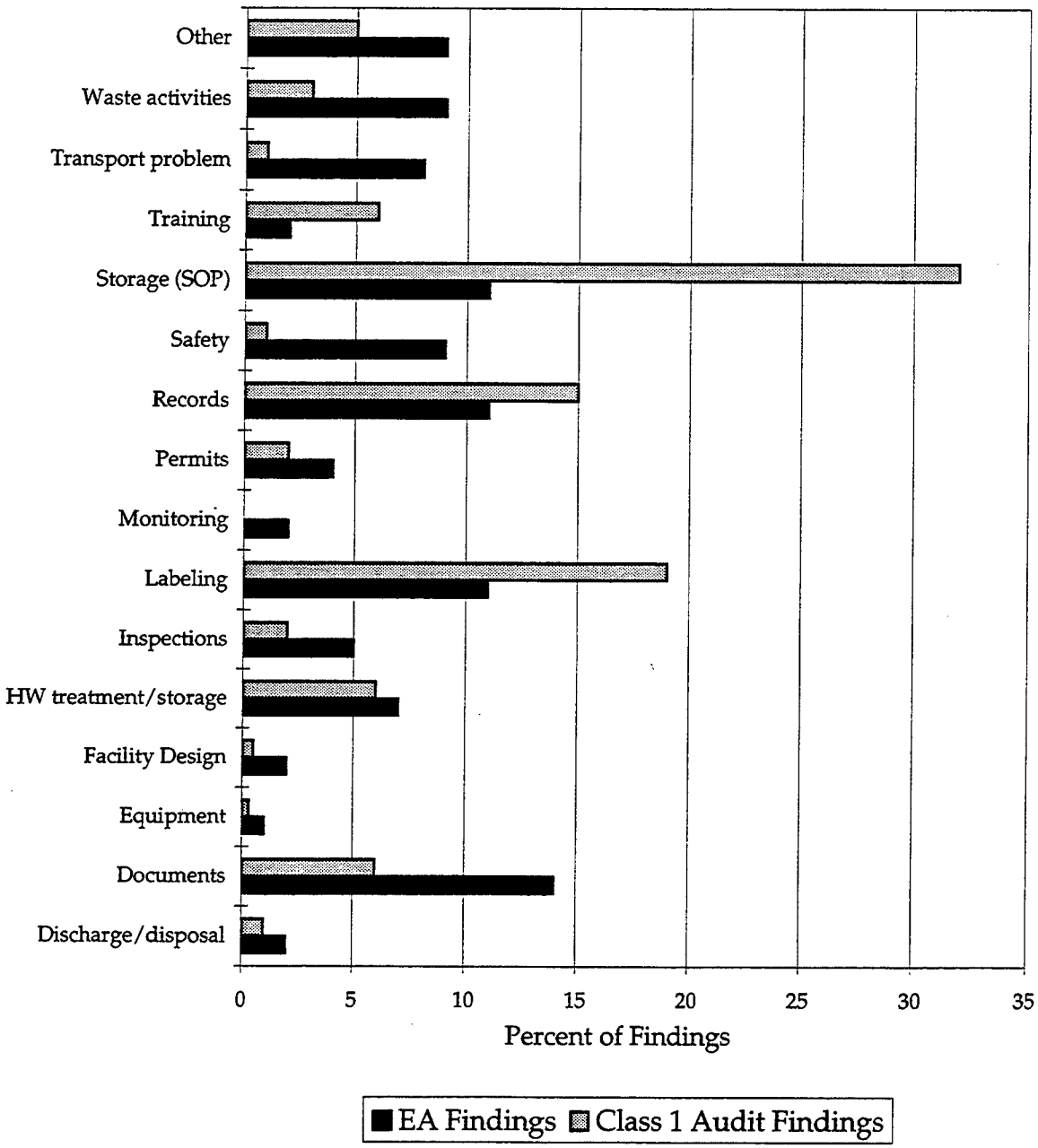
ECAS Findings for FY92 to FY94
RCRA-C (Hazardous Waste) *

Code	Description	Findings
44	Storage/accumulation issues (time, volume)	263
42	Records/files/data submissions (incomplete/late)	210
73	Forms, documents, plans, manuals, procedures, inadequate/incomplete	182
43	Labeling/placard deficiencies	135
63	Hazardous waste treatment, storage or disposal	49
33	Training: inadequate/not done	41
45	General O & M failures - housekeeping items such as use of defective containers, ...	36
48	Nonlisted/restricted waste activities	28
49	Inspections/engineering certification	16
47	Manifest/transport problems	15
41	Unpermitted/unauthorized/unregistered activity/equipment	14
71	Failure to submit required reports	13
51	Unauthorized discharge/disposal	10
72	Security and safety	9
54	Contamination from spill/leak/discharge - not cleaned up	6
64	Underground storage tank	6
35	Inadequate number of personnel	5
62	Monitoring/detection/control systems	5
46	Faulty missing equipment - Inoperative, poorly designed	4
52	Leak/spill from container/UST	4
14	Failure to provide required exceedance notifications	3
32	Inadequate supervision certification	3
55	Procedural error causing spill or pollution	3
61	Facility design or capabilities	3
15	Inadequate levels of chemical concentrations	1
31	Uncertified personnel	1
53	Bypass or overflow	1
75	Failure to respond to regulatory authority notice	1
83	Not IAW closure plans	1

* These findings include classes 1, 2, 3, and health and safety.

Figure B-38

Percentage of Problem Areas of Enforcement Actions and ECAS Audit RCRA-C (Hazardous Waste) Findings



Fiscal Year 1992-94

Figure B-39

ECAS Finding Corrective Actions
RCRA-C (Hazardous Waste)

Code Description	Code Count
Procedural modification	825
One-time effort - usually in response to lack of documentation	97
Fix/repair/maintain	34
Equipment	24
Training	60
Manpower/personnel	4
Capital spending	5
School/certification	
Unknown	

RCRA-C Corrective Actions

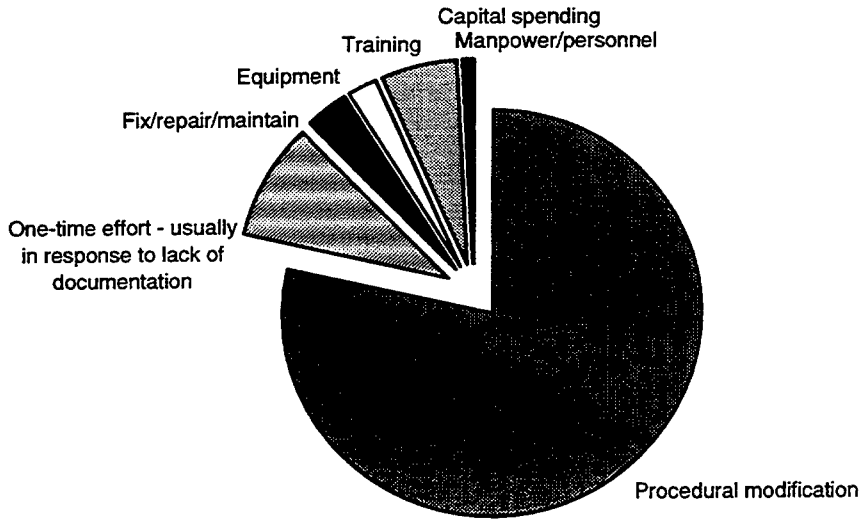
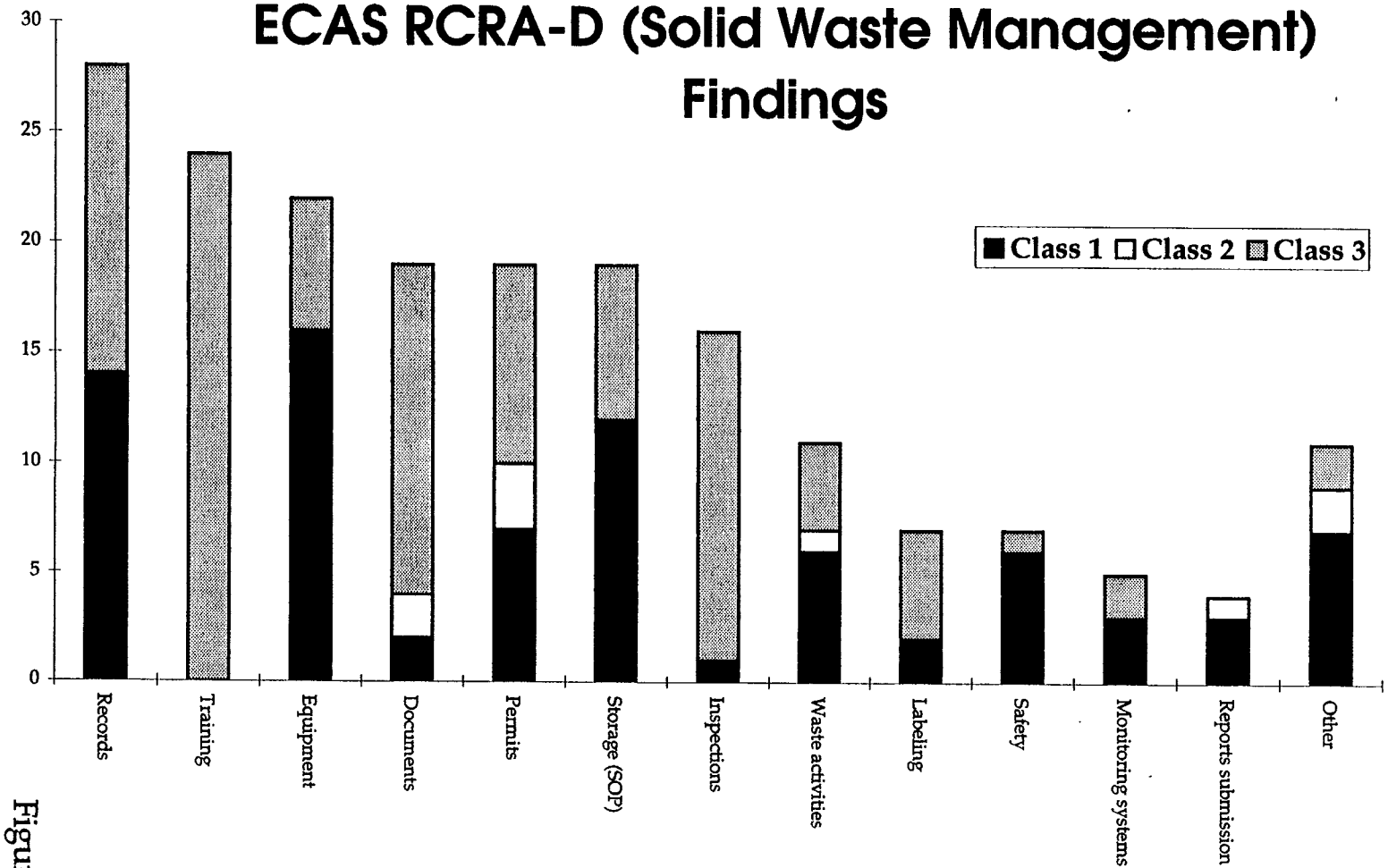


Figure B-40

Major Problem Areas for Class 1, 2, and 3; ECAS RCRA-D (Solid Waste Management) Findings



Fiscal Year 1992-94

Figure B-41

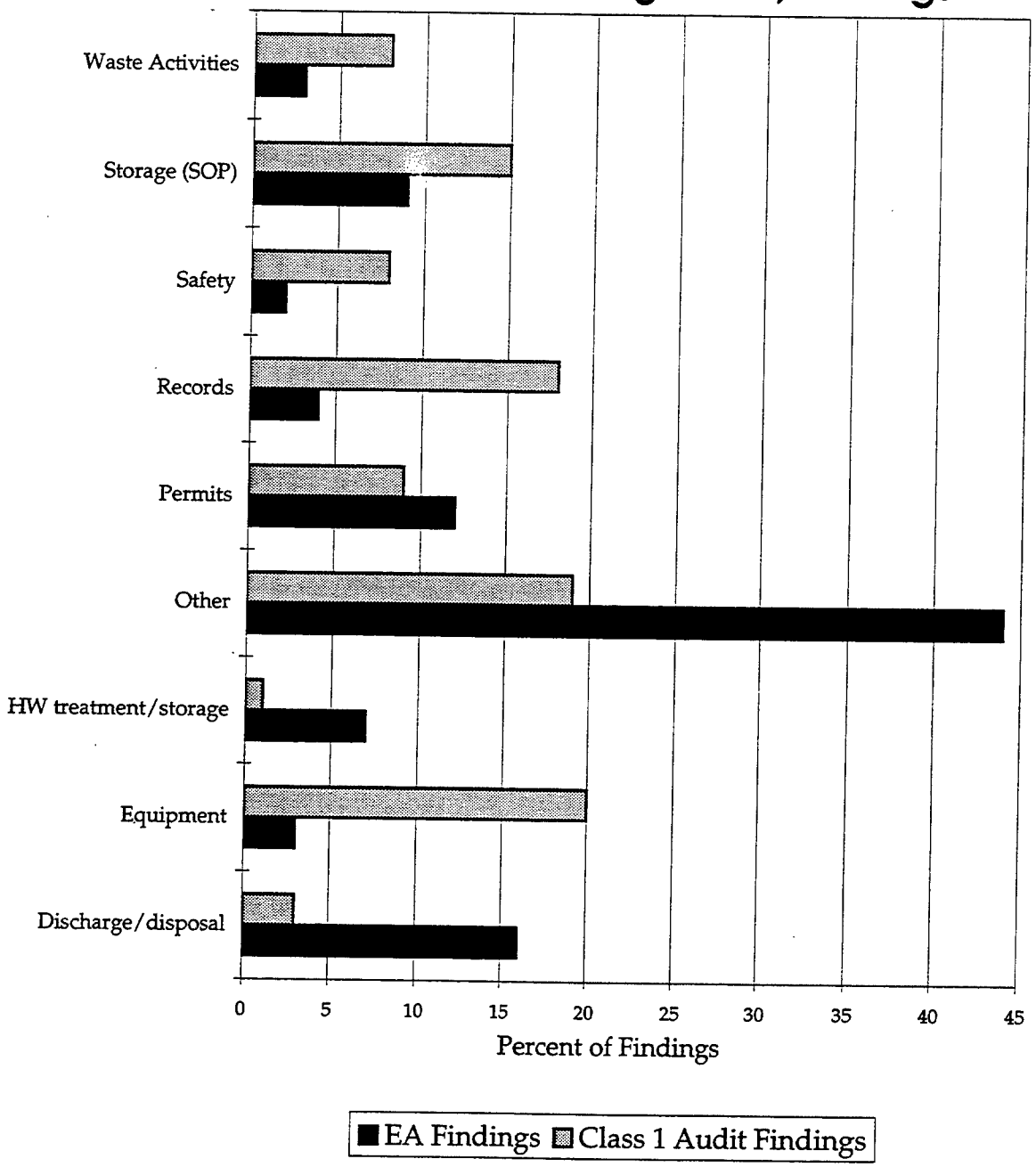
ECAS Findings for FY92 to FY94
RCRA-D (Solid Waste Management) *

Code	Description	Findings
45	General O & M failures - housekeeping items such as use of defective containers, ...	122
42	Records/files/data submissions (incomplete/late)	28
33	Training: inadequate/not done	25
46	Faulty missing equipment - Inoperative, poorly designed	23
41	Unpermitted/unauthorized/unregistered activity/equipment	19
44	Storage/accumulation issues (time, volume)	19
73	Forms, documents, plans, manuals, procedures, inadequate/incomplete	19
49	Inspections/engineering certification	16
48	Nonlisted/restricted waste activities	11
72	Security and safety	8
43	Labeling/placard deficiencies	7
62	Monitoring/detection/control systems	5
63	Hazardous waste treatment, storage or disposal	4
71	Failure to submit required reports	4
34	Operator training (not environmental staff)	2
51	Unauthorized discharge/disposal	2
61	Facility design or capabilities	2
21	Sampling, analysis, monitoring errors/failures	1
47	Manifest/transport problems	1
52	Leak/spill from container/UST	1

* These findings include classes 1, 2, 3, and health and safety.

Figure B-42

Percentage of Problem Areas of Enforcement Actions and ECAS Audit RCRA-D (Solid Waste Management) Findings



Fiscal Year 1992-94

Figure B-43

ECAS Finding Corrective Actions
RCRA-D (Solid Waste Management)

Code	Description	Code Count
	Procedural modification	178
	One-time effort - usually in response to lack of documentation	76
	Fix/repair/maintain	7
	Equipment	12
	Training	15
	Manpower/personnel	-
	Capital spending	2
	School/certification	-
	Unknown	-

RCRA-D Corrective Actions

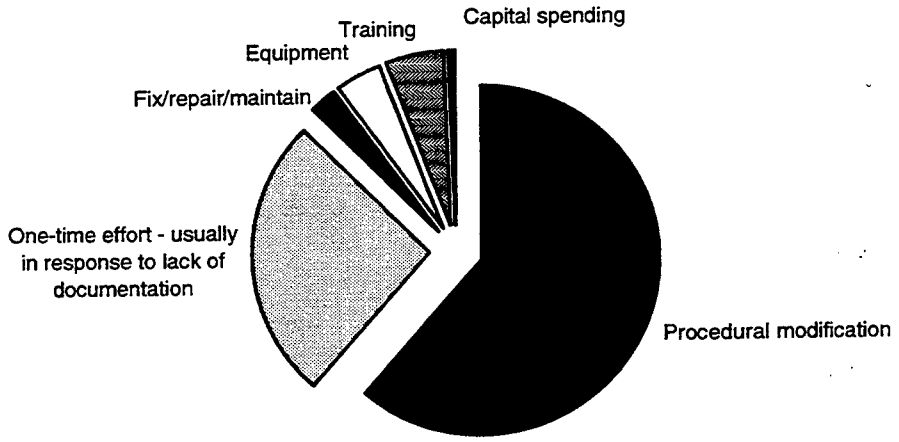
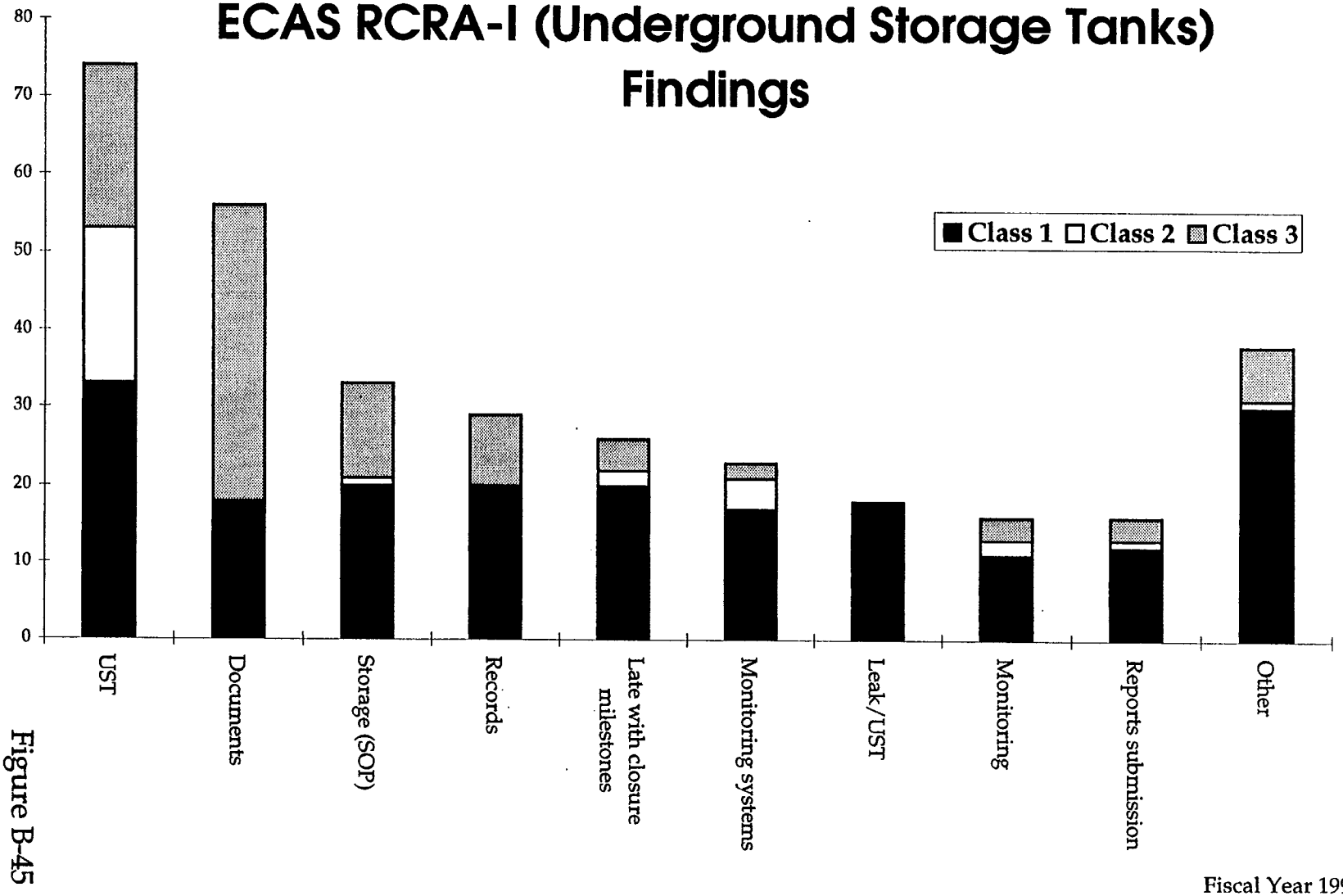


Figure B-44

Major Problem Areas for Class 1, 2, and 3; ECAS RCRA-I (Underground Storage Tanks) Findings



Fiscal Year 1992-94

Figure B-45

ECAS Findings for FY92 to FY94
RCRA-I (Underground Storage Tanks) *

Code	Description	Findings
64	Underground storage tank	75
73	Forms, documents, plans, manuals, procedures, inadequate/incomplete	56
44	Storage/accumulation issues (time, volume)	33
42	Records/files/data submissions (incomplete/late)	29
84	Late with closure milestones	26
62	Monitoring/detection/control systems	23
52	Leak/spill from container/UST	18
21	Sampling, analysis, monitoring errors/failures	16
71	Failure to submit required reports	16
45	General O & M failures - housekeeping items such as use of defective containers, ...	15
41	Unpermitted/unauthorized/unregistered activity/equipment	14
63	Hazardous waste treatment, storage or disposal	8
49	Inspections/engineering certification	7
43	Labeling/placard deficiencies	4
51	Unauthorized discharge/disposal	3
32	Inadequate supervision certification	1
33	Training: inadequate/not done	1
72	Security and safety	1

* These findings include classes 1, 2, 3, and health and safety.

Figure B-46

Percentage of Problem Areas of Enforcement Actions and ECAS Audit RCRA-I (Underground Storage Tanks) Findings

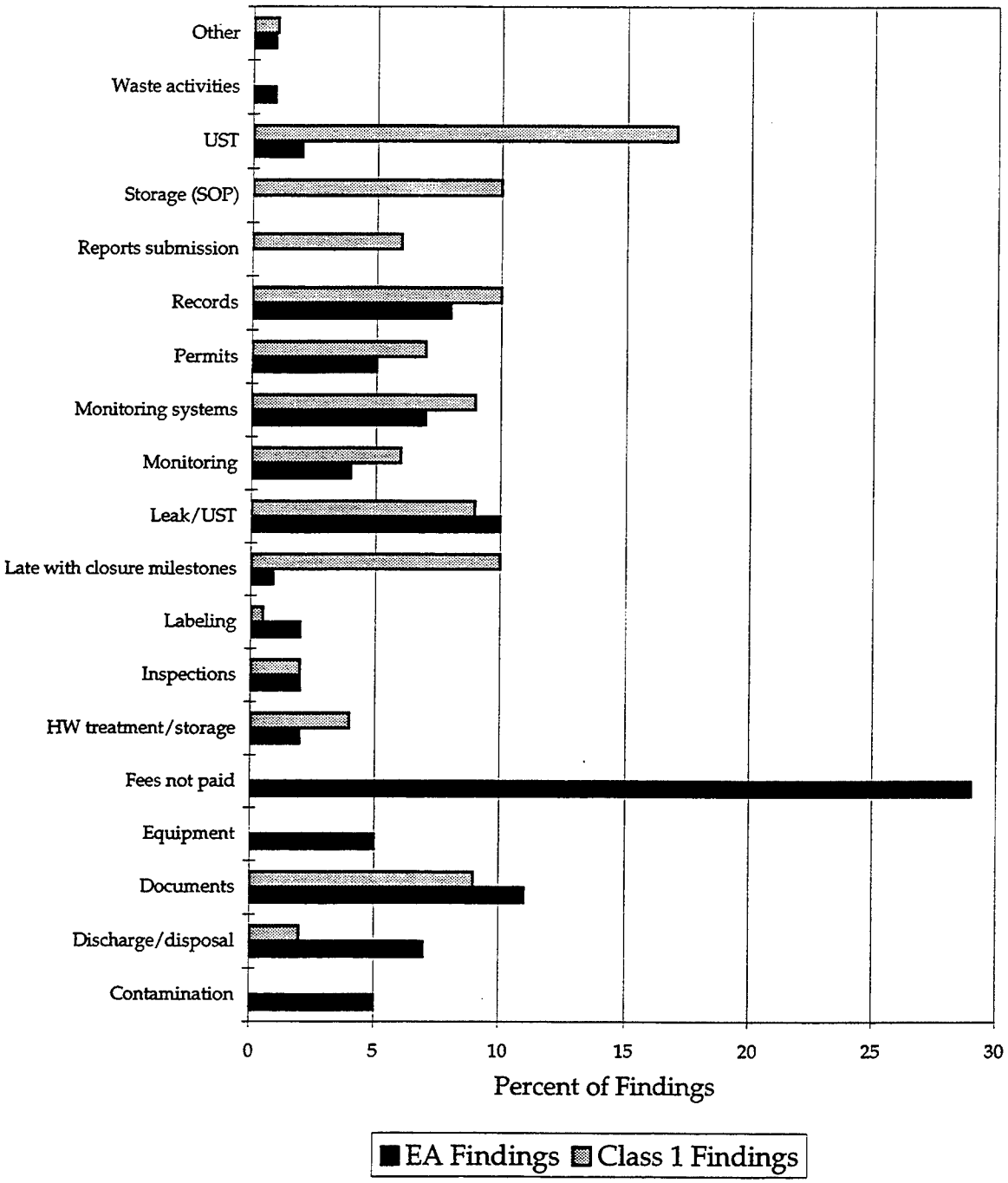


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Figure B-47

ECAS Finding Corrective Actions
RCRA-I (Underground Storage Tanks)

Code Description	Code Count
Procedural modification	180
One-time effort - usually in response to lack of documentation	26
Fix/repair/maintain	43
Equipment	143
Training	1
Manpower/personnel	543
Capital spending	17
School/certification	-
Unknown	1

RCRA-I Corrective Actions

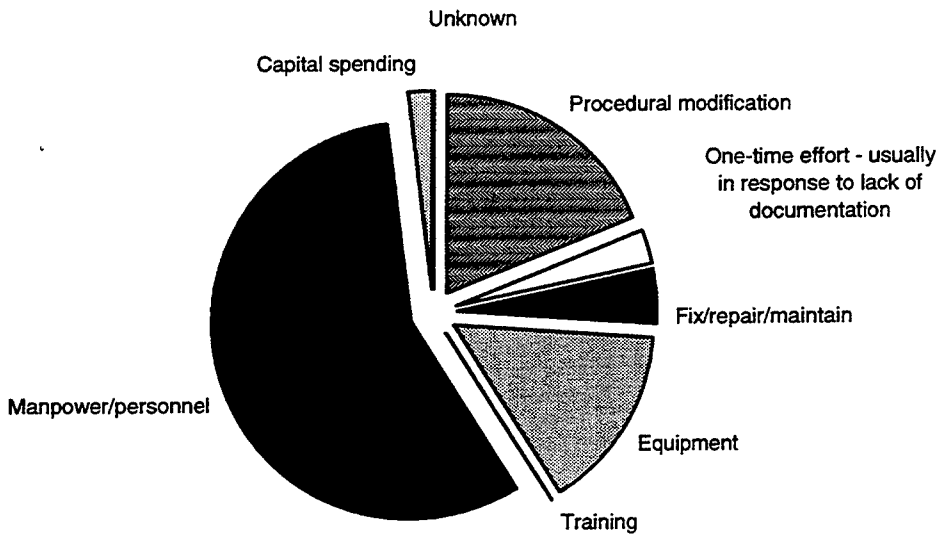

Figure B-48

Major Problem Areas for Class 1, 2, and 3; ECAS Safe Drinking Water Act (SDWA) Findings

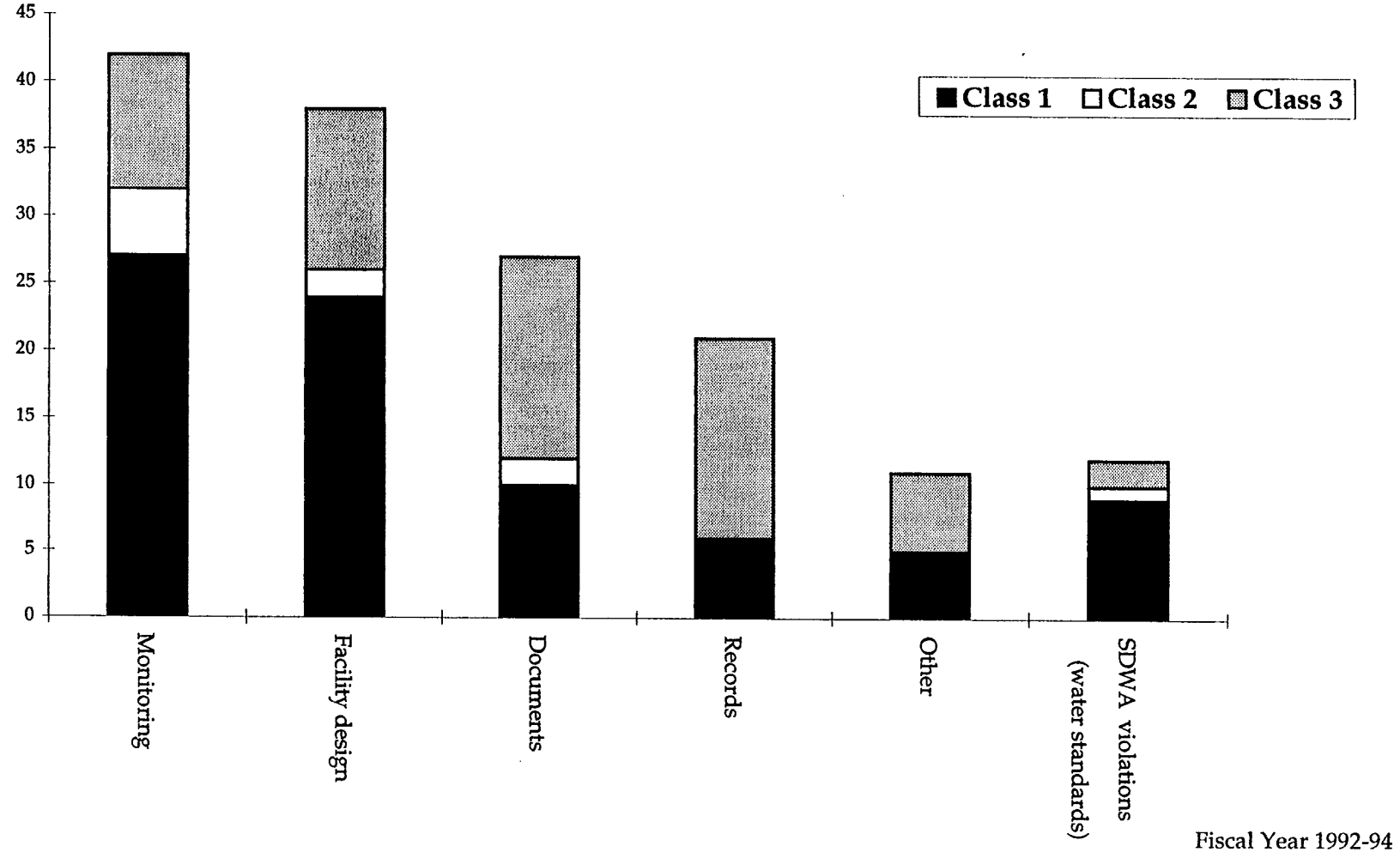

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Figure B-49

ECAS Findings for FY92 to FY94
SDWA *

Code	Description	Findings
21	Sampling, analysis, monitoring errors/failures	50
61	Facility design or capabilities	38
73	Forms, documents, plans, manuals, procedures, inadequate/incomplete	29
42	Records/files/data submissions (incomplete/late)	21
13	SDWA and drinking water standards violations	13
33	Training: inadequate/not done	2
62	Monitoring/detection/control systems	2
71	Failure to submit required reports	2
11	Volatile organic compound	1
41	Unpermitted/unauthorized/unregistered activity/equipment	1
43	Labeling/placard deficiencies	1
45	General O & M failures - housekeeping items such as use of defective containers, ...	1
46	Faulty missing equipment - Inoperative, poorly designed	1
51	Unauthorized discharge/disposal	1

* These findings include classes 1, 2, 3, and health and safety.

Figure B-50

Percentage of Problem Areas of Enforcement Actions and ECAS Audit SDWA Findings

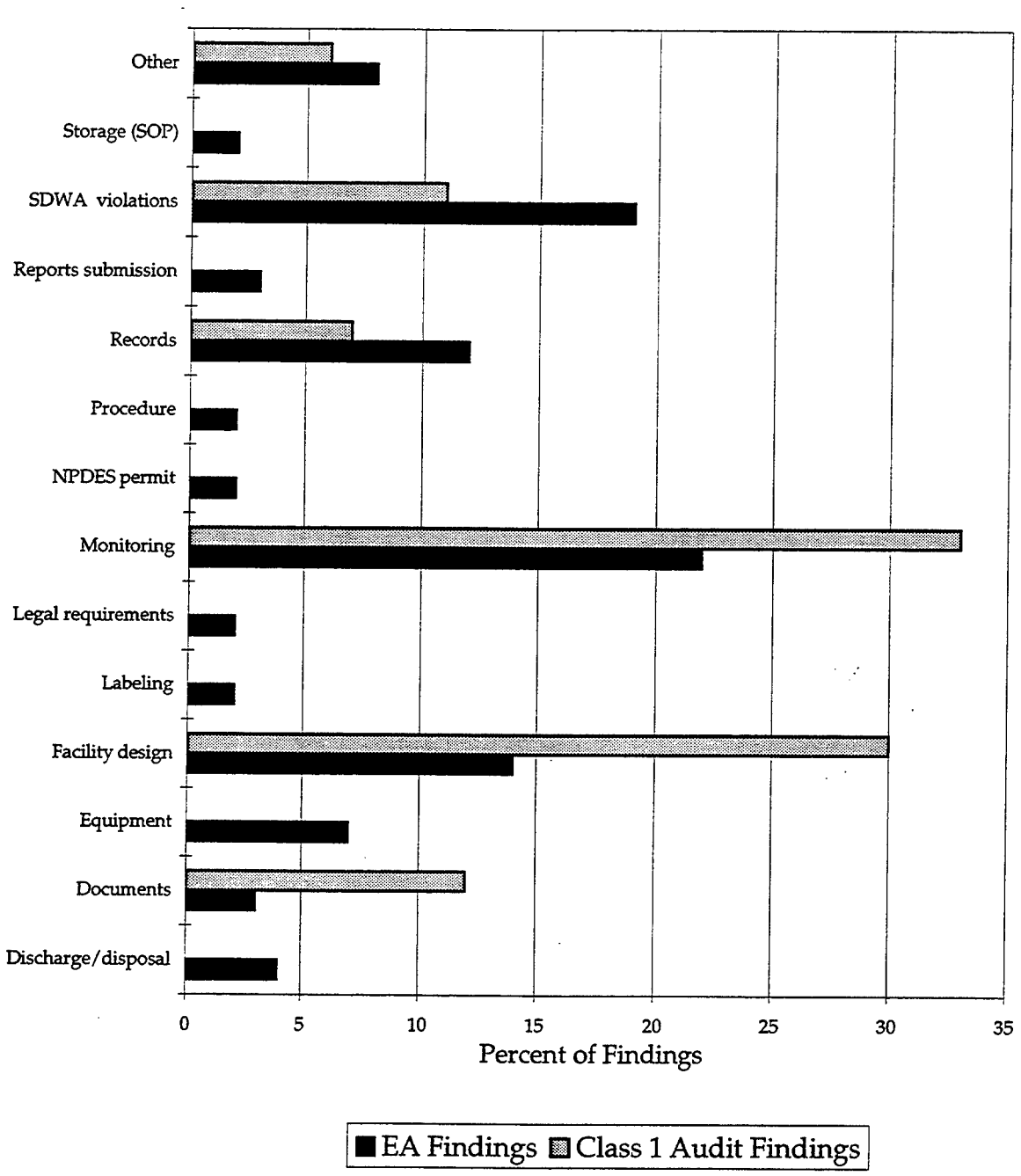

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Figure B-51

ECAS Finding Corrective Actions
SDWA

Code Description	Code Count
Procedural modification	113
One-time effort - usually in response to lack of documentation	-
Fix/repair/maintain	17
Equipment	26
Training	2
Manpower/personnel	-
Capital spending	5
School/certification	-
Unknown	-

Safe Drinking Water Act Corrective Actions

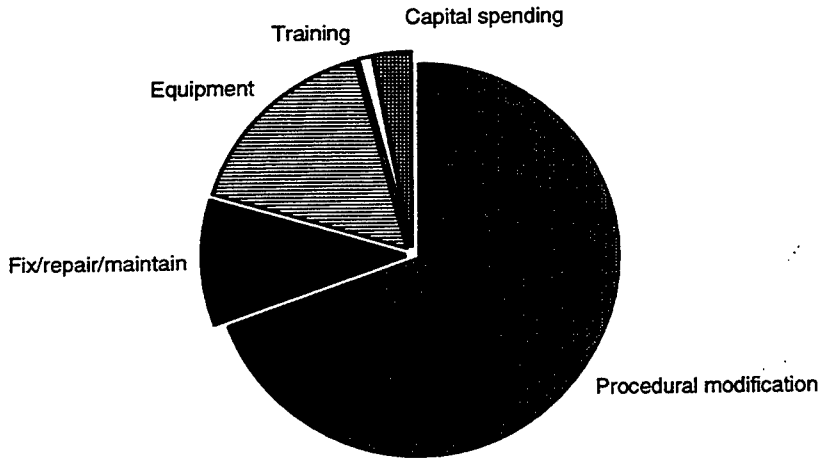
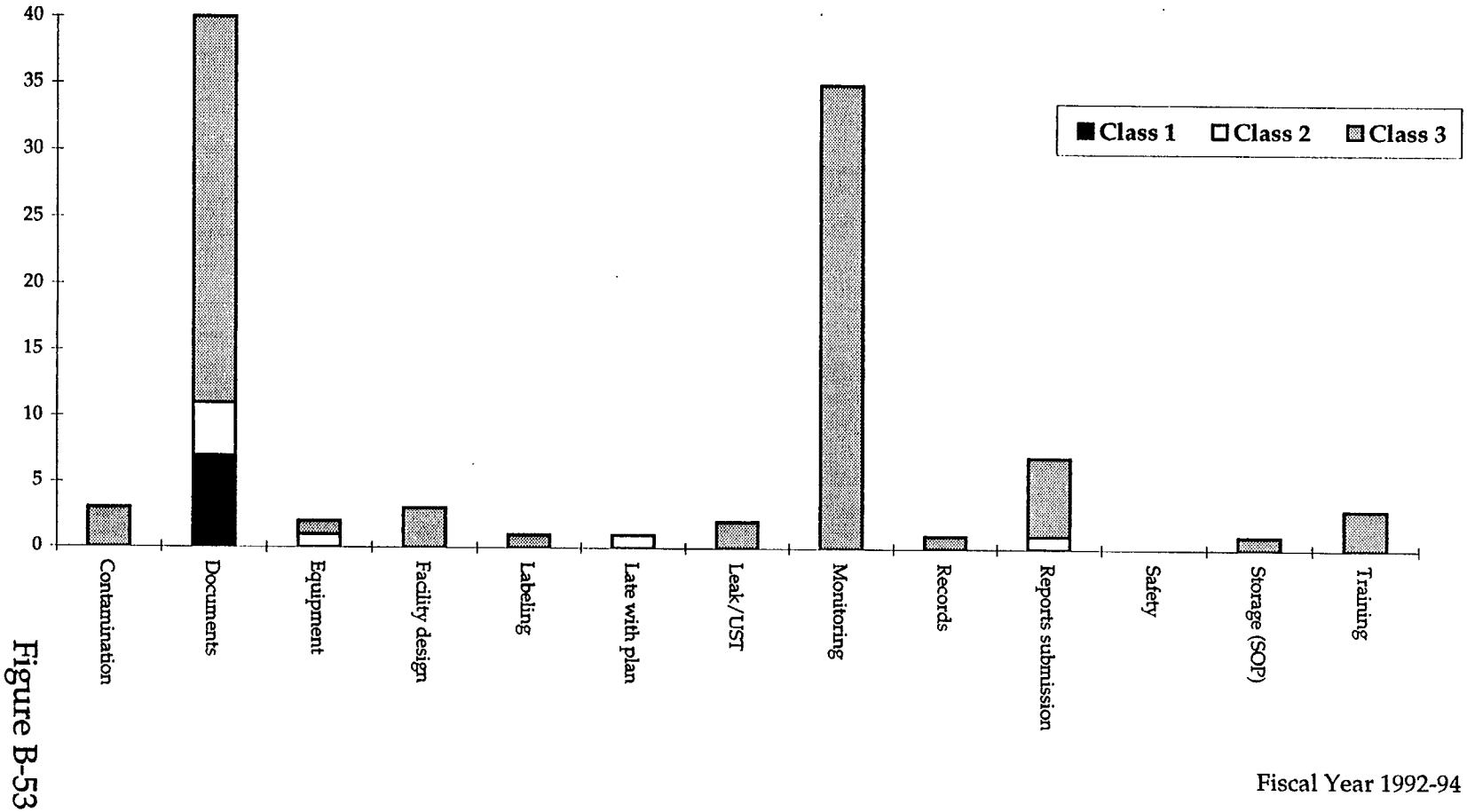


Figure B-52

Major Problem Areas for Class 1, 2, and 3; ECAS Superfund Findings



Fiscal Year 1992-94

Figure B-53

ECAS Findings for FY92 to FY94
Superfund *

Code	Description	Findings
73	Forms, documents, plans, manuals, procedures, inadequate/incomplete	41
21	Sampling, analysis, monitoring errors/failures	35
71	Failure to submit required reports	7
33	Training: inadequate/not done	3
54	Contamination from spill/leak/discharge - not cleaned up	3
61	Facility design or capabilities	3
44	Storage/accumulation issues (time, volume)	2
46	Faulty missing equipment - Inoperative, poorly designed	2
52	Leak/spill from container/UST	2
42	Records/files/data submissions (incomplete/late)	1
43	Labeling/placard deficiencies	1
72	Security and safety	1
86	Late with permit/plan/schedule/other milestone	1

* These findings include classes 1, 2, 3, and health and safety.

Figure B-54

ECAS Finding Corrective Actions
Superfund

Code Description	Code Count
Procedural modification	-
One-time effort - usually in response to lack of documentation	-
Fix/repair/maintain	-
Equipment	-
Training	-
Manpower/personnel	-
Capital spending	-
School/certification	-
Unknown	-

Figure B-55

Major Problem Areas for Class 1, 2, and 3; ECAS Toxic Substances Control Act (TSCA) Findings

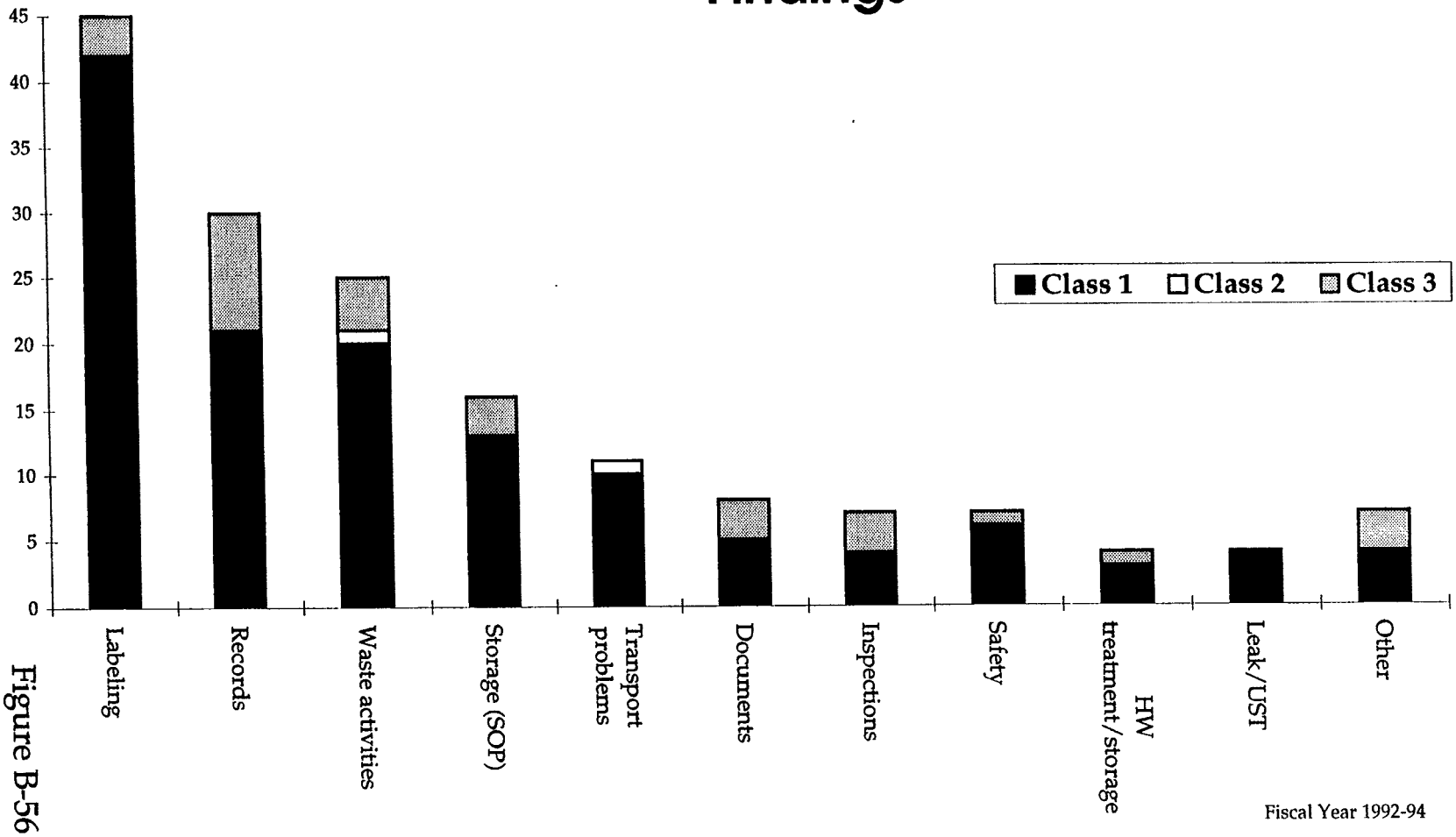


Figure B-56

ECAS Findings for FY92 to FY94
TSCA *

Code	Description	Findings
43	Labeling/placard deficiencies	48
42	Records/files/data submissions (incomplete/late)	30
48	Nonlisted/restricted waste activities	28
44	Storage/accumulation issues (time, volume)	16
47	Manifest/transport problems	12
73	Forms, documents, plans, manuals, procedures, inadequate/incomplete	9
49	Inspections/engineering certification	7
72	Security and safety	7
52	Leak/spill from container/UST	4
63	Hazardous waste treatment, storage or disposal	4
45	General O & M failures - housekeeping items such as use of defective containers, ...	2
54	Contamination from spill/leak/discharge - not cleaned up	2
84	Late with closure milestones	2
33	Training: inadequate/not done	1
51	Unauthorized discharge/disposal	1
61	Facility design or capabilities	1
71	Failure to submit required reports	1

* These findings include classes 1, 2, 3, and health and safety.

Figure B-57

Percentage of Problem Areas of Enforcement Actions and ECAS Audit TSCA Findings

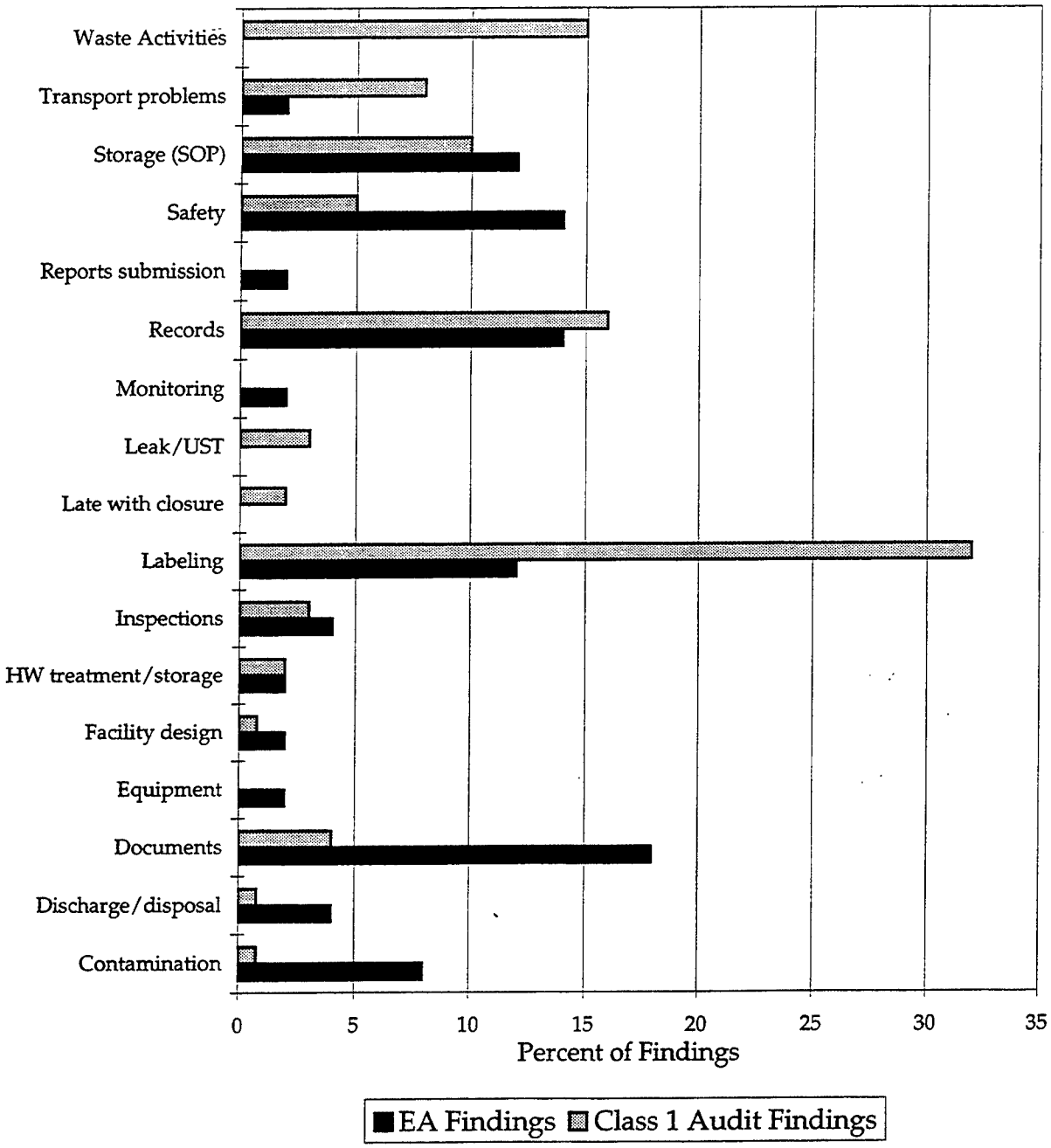


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Figure B-58

ECAS Finding Corrective Actions
TSCA

Code Description	Code Count
Procedural modification	164
One-time effort - usually in response to lack of documentation	-
Fix/repair/maintain	5
Equipment	2
Training	1
Manpower/personnel	-
Capital spending	-
School/certification	-
Unknown	-

Toxic Substances Control Act Corrective Actions

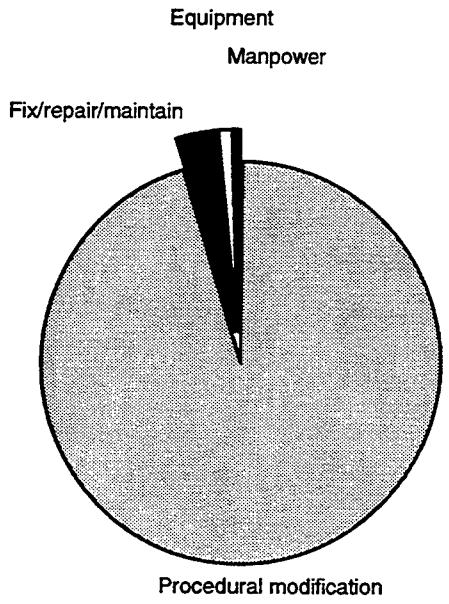

Figure B-59