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A Survey of Environmental Issues in the Civilian Aviation Industry

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ABSTRACT

The civilian aviation industry is increasingly being required to comply with the myriad environmental laws currently in force. To gain a better understanding of the types of environmental issues that are being dealt with in the industry, a survey of consulting firms specializing in environmental work at airports was undertaken. The consulting firms were contacted by telephone and asked to answer a specific set of qualitative and quantitative questions from a survey questionnaire. The results of the survey indicated that the majority of the environmental work at civilian aviation facilities is conducted under the National Environmental Policy Act (NEPA) in the form of Environmental Impact Statements (EISs) and environmental audits. Work conducted under the Clean Water Act (CWA) was found to be the second--most important type of work according to the survey participants. Third-- and fourth--most important environmental work indicated was work under the Clean Air Act (CAA) and the Emergency Planning and Community Right--to--Know Act (EPCRA). Other environmental issues were indicated as significant by less than 10 percent of the respondents.

INTRODUCTION

Since the beginning of the industrial era, around the turn of the century, and until just after the middle of this century, industrial activities were carried out by various private and government entities with little concern for the impact that these operations had on the environment. Priorities were different during this time period and industry was mainly concerned with making a profit or providing for the national defense. Contributing to this seeming lack of concern for the environment was a general lack of understanding of the negative impacts from industry and limited knowledge of natural systems. Due to a handful of high profile sites with serious soil and groundwater contamination problems that came to light in the 1960s and 1970s, Love Canal and Times Beach to name the most infamous, increasing public awareness has been directed at the various environmental issues facing modern society. The most sweeping result of this increased awareness has been the passage of a large body of legislation which has created an entire industry of its own. This legislation, beginning in the 1960s and continuing through the 1970s and 1980s, has brought environmental issues to the forefront of national and global consciousness.

One industry that has received somewhat less attention concerning environmental issues until recently is the aviation industry. The reason for this is partly because of the higher priority of other sectors of industry, namely some defense related activities and other sites that pose an imminent threat to human health or the environment, and partly because of aviation's key role in the infrastructure of modern society and a resulting reluctance to cripple the industry with expensive and time consuming environmental programs. Until fairly recently the main environmental issues facing the aviation industry have been the problems of air and noise pollution at major air terminals. However, the industry is now being drawn into the environmental issue mainstream and is faced with complying with a host of existing, and possibly proposed environmental laws.

In order to gain insight into the types of issues that are requiring the most attention within the civilian aviation industry, a limited telephone survey was undertaken. Consulting firms specializing in environmental work within the civilian aviation industry were selected as the survey group. A more detailed description of the survey group is provided in a subsequent section of this paper.

BACKGROUND OF APPLICABLE ENVIRONMENTAL LAWS

As mentioned in the introduction section, the aviation industry is being steadily drawn into environmental issues because of the enactment of the many environmental laws, regulations, and statutes (all hereafter referred to as laws). The system of environmental laws is very diverse and complex. Compliance with these laws can be a great challenge to anyone who is legally bound to follow them. In short, the environmental law system is best defined as an organized way of using all of the laws in our legal system to minimize, prevent, punish or remedy the consequences of actions which damage or threaten the environment or public health and safety (Sullivan 1995). Following is a brief summary of the process by which these laws are created.

The primary legislative body behind most of the environmental laws is the federal government. Environmental laws begin by the introduction of a bill into either the U.S. House of Representatives or U.S. Senate. The bill is then referred to a committee for study and investigation where it is either recommended for passage or killed. When out of committee, the bill is debated in the respective house and if passed then becomes an act. In the environmental field, the House and Senate generally pass different bills, and a conference of House and Senate representatives is needed to resolve the differences. After passage in both houses the act is sent to the office of the president for signing or veto. After an act is signed into law the agency charged with administration of these laws is the U. S. Environmental Protection Agency (USEPA or EPA). The EPA has the ultimate authority for development and promulgation of regulations under the various laws. Regulations may also be promulgated by an executive agency through an executive order issued by the President.

In recent years the EPA has begun to delegate authority for enforcement of the respective environmental laws to the individual state environmental agencies. States may also promulgate their own laws as long as they are at least as stringent as those of the EPA. In many cases these state--specific laws are actually more stringent than those of the EPA.

Numerous environmental laws directly apply, or potentially apply, to operations within the civilian aviation industry. A brief discussion of these laws is appropriate so that the reader has a familiarity with them. Following is a list of the primary environmental laws with a subsequent brief description taken from Sullivan (1995), and Watson and Burnett (1993) of each.

National Environmental Policy Act (NEPA) of 1969, Public Law 91--190. The National Environmental Policy Act of 1969 is a classic document for establishing policies and national goals for the protection of the environment at large. This document represents the first stand on the part of the United States to protect the environment. Its primary impact stems from its goal of requiring industry to consider, for the first time, the impact that the activities had on the environment. This was primarily accomplished through a licensing that also required Environmental Impact Statements (EISs) to be prepared for major projects.

Theses EISs must address such basic issues as the environmental cost versus benefit of proposed projects, the ideal siting of proposed facilities in an attempt to minimize adverse impacts to the environment, and the proposed use of best available technology to minimize the risk of accidents and adverse impacts associated with routine operation of facilities.

Federal Water Pollution Control Act of 1972, and Clean Water Act Amendments of 1977, Public Laws 92--500 and 95--217, respectively. The objective of this Act and its amendments relate mainly to the cleanup and preservation of surface water quality. The primary goals of this Act were:

1. To restore the nation's rivers and lakes to a sufficiently safe quality for swimming and other recreational uses and for the protection of fish and wildlife; and
2. To eliminate discharge of pollutants into the nation's navigable waters.

An important part of the Act (Section 208) relates to waste management, especially with regard to the liquid--component waste discharges from urban--industrial areas and includes treating and disposing of all residential and industrial waste.

Safe Drinking Water Act (SDWA) of 1974, and 1986 Amendments, Public Law 93--523. The main objective of this Act is to ensure that pub-

lic drinking water supply systems meet minimum national standards for the protection of public health using cost as a consideration. This law specifically addresses groundwater and highlights three main areas:

1. Compliance with water quality standards;
2. Regulation of Underground Injection (Deep--Well Injection); and
3. Designation and Protection of Sole--Source Aquifers. Besides state statutes and/or county ordinances designed to provide increasing protection with time to public supply wellfields, negative incentives also exist in the form of provisions for withholding federal--assistance funding from projects sited within designated well--protection zones.

Resource Conservation and Recovery Act (RCRA) of 1976, and the Hazardous and Solid Waste Amendments (HSWA) of 1984, Public Laws 94--580 and 98--616, respectively. These laws are very complex and far--reaching. Their primary goal is the protection of the environment from accidental or unregulated discharges, spills, releases, and/or seepage infiltration from:

1. Hazardous substances and/or wastes, particularly at treatment, storage and disposal (TSD) facilities (RCRA Subtitle C);
2. Nonhazardous wastes (other solid waste) where emphasis is on upgrading municipal waste disposal facilities (RCRA Subtitle D); and
3. Leaking underground storage tanks (LUST) (HSWA Subtitle I).

The provisions applying to LUST (40 CFR 280) provide market for much of the consulting work currently in progress. Furthermore, various subparts of the law are concerned with different aspects of the LUST issue.

RCRA's primary objective is to regulate the use, handling and disposal of hazardous substances and, in turn, to prevent the contamination of groundwater. Considering this objective, RCRA requires a rigorous tracking and manifesting procedure of hazardous waste to prevent the mysterious disappearance of wastes as has happened in the past.

In addition, the Act introduces strict new requirements of the users of hazardous substances (generators of hazardous wastes), and the disposers of hazardous wastes.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) of 1980, Public Law 96--510, and Superfund Amendments and Reauthorization Act (SARA) of 1986. The main objective of CERCLA and SARA is the remediation of

sites where contamination has already occurred at some time in the past. The main emphasis is placed on contaminated earth materials and groundwater. However, the powers of the Act also extend to the prevention of hazardous releases to air and surface water.

Under this Act the EPA was required to establish what is known as the National Priorities List (NPL) of existing sites that would be cleaned up first. The NPL has been completed and sites are removed and added to the list regularly.

Although the primary function of CERCLA is to address sites with existing problems, prevention of new incidents of contamination is achieved largely by provisions under the Act.

1. The obligation of both private industry and government organizations to report spills and leaks of hazardous substances to the EPA or the Coast Guard;
2. The obligation of water--supply facilities to do routine water--quality testing and report the presence of specified contaminants;
3. The liability written into the Act whereby the buyer of a property or, in the case of foreclosure, a lending facility such as a bank, may be responsible for the cleanup of the site; and
4. The deterrent posed to industry by way of the prohibitive costs associated with potential cleanup actions.

The Superfund Amendments to CERCLA (SARA) in 1986 retained the original emphasis under CERCLA, but provided additional funding and direction for attaining these objectives.

Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), Public Law 92--516, and Amendments, and Toxic Substances Control Act (TSCA) of 1976 and Amendments, Public Law 97--129. The primary objectives of these acts are to regulate the production and use of a variety of chemicals that may contaminate groundwater either through:

1. Normal use in the case of pesticides and fungicides; or
2. Accidental leaks, spills, misuse of, and/or disposal in the case of other toxic substances.

Clean Air Act (CAA) 1967 with amendments in 1970, 1977, and 1990. Over the past two decades, the Clean Air Act (CAA) has evolved from a set of principles designed to generally guide states in controlling sources of air pollution (the 1967 Air Quality Act), to a series of detailed control requirements (the 1970, 1977, and 1990 Amendments to the Act) that the federal government implements and the states administer. The CAA regulatory programs have traditionally fallen into three categories,

with a fourth category added by a 1990 Congressional amendment. The categories are:

1. Air Quality Regulation
2. New Source Programs
3. Specific Pollution Problems
4. The Operating Permit Program

Emergency Planning and Community Right--to--Know Act (Title III of SARA, 1986). On October 17, 1986, the Superfund Amendments and Reauthorization Act of 1986 (SARA) was signed into law. One part of the SARA legislation is Title III, otherwise known as the Emergency Planning and Community Right--To--Know Act of 1986 (EPCRA). EPCRA requires states to establish a process for developing local chemical emergency preparedness programs and to receive and disseminate information on hazardous chemicals present at facilities within local communities.

EPCRA has four major components:

1. emergency planning (Sections 301--303);
2. emergency release notification (Section 304);
3. community right--to--know reporting (Sections 311--312); and
4. toxic chemical release inventory reporting (Section 313).

Federal Facility Compliance Act (1992 Amendment to RCRA, 1986). The Federal Facility Compliance Act (FFCA) of 1992 amended the Resource Conservation and Recovery Act (RCRA), the law governing the handling, transport, treatment, storage and disposal of solid and hazardous waste. Passed by Congress and signed by President Bush on October 6, 1992, the primary purpose of the amendment was to ensure that there was a complete and unambiguous waiver of sovereign immunity with regard to the imposition of administrative and civil fines and penalties against federal facilities. This allowed the state environmental agencies and the EPA to impose civil penalties and administrative fines on federal facilities under RCRA section 6001 for violations of federal, state and local solid and hazardous waste laws.

Pollution Prevention Act of 1990. The Federal Pollution Prevention Act (PPA) of 1990 establishes pollution prevention as a national objective. The PPA required the EPA to develop and implement a strategy to promote source reduction. In the Act, Congress declared that pollution prevention is the highest tier in a hierarchy of acceptable practices. The pollution that cannot be prevented should be recycled. If it is not feasible

to prevent or recycle, pollution should be treated and disposal or other release into the environment should be used as a last resort. The PPA defined pollution prevention to mean source reduction and other practices that reduce or eliminate the creation of pollutants through increased efficiency in the use of raw materials, energy, water or other resources or protection of natural resources by conservation.

Occupational Safety and Health Act (OSHA) of 1970. OSHA was enacted in December 1970. The administrative vehicle of this Act, also called OSHA (Occupational Safety and Health Administration) officially began operation in April 1971. When compared with other environmental acts, the OSHA is very simple and well drafted.

In short, the three main goals of OSHA are (1) setting of safety and health standards, (2) their enforcement through federal and state inspectors, and (3) public education and consultation.

Other laws are also likely to impact operations within the aviation industry. Laws such as those dealing with Native American issues and endangered species are likely to be considered during siting of new airports or expansion activities of existing airports. However, for the sake of brevity and to keep the survey manageable, the scope of this survey will be limited only to those operations that could potentially release hazardous waste to the air, soil, surface water, or groundwater.

REVIEW OF LITERATURE

Before commencement of this survey project a study of several information sources was completed to determine whether similar projects had already been undertaken. Information studied included periodical literature, general references, dissertation abstracts and government literature. These sources were examined mainly through computerized databases using either the Internet or CD--ROM methods. No similar studies were located in any of the literature searched. Specific sources included:

- Dissertation Abstracts International on CD--ROM
- ABI/Inform (Abstracted Business Information)
- ERIC (Education Resources Information Center, US Department of Education)
- GPO on Silver Platter (Government Printing Office)
- Periodical Abstracts on CD--ROM (UMI)
- GENISYS (On--line Public Access Catalog)
- LEXIS/NEXIS
- Air and Space Catalog: the Complete Sourcebook to Everything in the Universe (Random House)
- Guide to Federal Aviation Administration Publications (FAA)

- NASA Scientific and Technical Publications: A Catalog of Special Publications, Reference Publications, Conference Publications, and Technical Papers (NASA)
- Applied Science and Technology Index (H.W. Wilson Co.)
- Engineering Index (Engineering Information, Inc.)
- NASA Scientific and Technical Aerospace Reports (NASA Star)
- Business Periodicals Index (HW Wilson)

World--Wide Web (WWW) Resources:

- Environmental Protection Agency (http://www.epa.gov)
- Fed World Environmental Home Page (http://www.fedworld.gov/envir.html)
- Envirolink (gopher://envirolink.org/1/.Environetworks)
- Environment and Nature (http://akebouo.stanford,edulychoo/Environment_and_Nature/)
- The World--Wide Web Virtual Library: Environment Ecogopher (http://ecosys.drdr.virginia.edu/Environment.html)
- Environment Information Services on the Internet (http://www.foe.co.uk/pubsinfo/infosyst/other_services.html)

RESEARCH METHOD

The primary research method used for this study was a telephone survey. A telephone survey was chosen for several reasons. The first reason is the high response rate compared to mail surveys where they can range from as little as 2 percent to as high as 30 percent (Erdos, 1970). The second, and far most important advantage to using telephone surveys, is that it allows the surveyor to have maximum quality control over the data collection process (Lavrakas, 1993). A third major advantage to using telephone surveys is the cost efficiency of the method. Mail surveys can cost less upfront than telephone surveys, but the quality of data collected will usually far outweigh the cost benefit (Lavrakas, 1993). A fourth major advantage of telephone surveys is the speed with which data can be gathered.

The survey instrument itself (See Appendix A) was designed to allow the collection of a distinct set of data pertaining to the environmental issues discussed in the introduction. As will be discussed in the following section, many other environmental issues could have been included in this survey study. However, an attempt to include all environmental issues in this study would result in an extremely lengthy and unwieldy document, one that would be far beyond the scope of a study such as this one.

Primary emphasis was placed on determining whether individual interviewees have conducted work within each of these laws. If an interviewee indicated

an affirmative answer, an attempt was made to obtain a brief description of the work done under a particular law. This was followed by an estimate of the percentage of work that is conducted within each of the mentioned laws as compared to the entire realm of environmental work performed by the interviewee within the civilian aviation industry. The percentage data were not requested to obtain definitive quantitative data for statistical or other analysis, but rather to gather general data in order to get a general understanding for the prominent environmental issues within the civil aviation industry. One of the final questions (question Number 12) was designed to elicit information on other environmental issues that had not been specifically mentioned in the survey. Finally, the interviewees were requested to offer a prediction of which environmental issues would become less prominent and which would become more prominent in the future.

These data were again collected in order to gain some general insight into the dynamics involved between the aviation industry and environmental issues.

SURVEY GROUP

The telephone survey was conducted only on firms listed in the 1995 Airport Consultants Council (ACC) membership directory. This was done in order to keep the scope of the survey to a manageable size and to gather information from a representative group of firms that deal mainly in the aviation industry. Many other firms could have been contacted such as manufacturing firms, government agencies, and the Department of Defense. However, nearly all work concerning environmental engineering, or any other environmental issues, is usually contracted out to various consulting firms even though environmental management staff are sometimes employed by the respective clients. The main reason for this is that it is simply too expensive and time consuming to employ a large staff of personnel that is sufficiently knowledgeable in all of the pertinent environmental issues, and that has the training and equipment to carry out environmental programs. Finally, firms were selected based on whether they were heavily or solely committed to aviation type business and whether they had obvious environmental expertise as discussed in the firm descriptions in the ACC directory. A total of 35 firms were selected based on the above criteria. Out of these 35 firms, 20 participated in the interview which was conducted during the week of July 10, 1995.

RESULTS

A total of 35 firms were selected from the ACC directory. Of these 35 firms, six could not be reached, two indicated that they were not in the business, and seven indicated that they could not or would not participate in the interview for one reason or another. The remaining 20 firms participated in the survey giving a response rate of approximately 57 percent.

The statistical information from the survey questionnaires has been summarized and is shown as table 1. Table 1 shows the number of affirmative and negative responses for each law about which the interviewee was queried. Table 1 also shows the average value of the answers for the question '...what is your estimate of the percentage of the total environmental work that you do that is done under this law?' The range of these answers is also provided on table 1.

Four interviewees indicated additional issues (question 12). Two of the respondents mentioned noise abatement, one respondent mentioned wetlands studies, and one respondent mentioned underground storage work under the state--specific environmental program.

The results of question 13 are summarized on table 2; however, not all 20 participants gave responses to this question. Nine issues were identified by the interviewees as issues that they expect to gain in importance in the future. Only two issues were indicated as becoming less important.

MAJOR FINDINGS/CONCLUSIONS

As shown on table 1, the most significant environmental work within the civil aviation industry, according to the survey, appears to be conducted under NEPA. Fully 90 percent of the interviewees indicated that they do work under this law. Furthermore, this work comprises nearly three--fourths (73.8 percent) of the environmental work these firms do for the civil aviation market. The vast majority of the work done under NEPA consists of environmental audits, environmental assessments, and environmental impact statements for construction of new facilities or expansion of existing facilities. These environmental assessments are required by law anytime government funding is utilized for a project (as most of the airport projects are assisted by the Federal Airport Improvement Program [AIP]). This work under NEPA is guided by the Federal Aviation Administration (FAA) publication 50--50.4A (FAA, 1985) which is meant to emulate NEPA guidance for the aviation industry.

The NEPA work may also include aspects of the other laws used in the survey, but the environmental assessment process remains the key focus. In fact, 25.0 percent of the interviewees indicated that this type of work comprises 100 percent of their environmental work in civil aviation.

The second most significant environmental issue based on the interviews (table 1) is work conducted under the Clean Water Act (CWA). Sixty--five percent of the interviewees indicated that they do work under this law. The average percentage of environmental work conducted under this law was 16.7 percent. The majority of work under this law consists of the creation of Storm Water Pollution Prevention Plans (SWPPPs) and writing of storm water discharge permits under the National Pollutant Discharge Elimination System (NPDES). Many airports are faced with a situation where their old permits are expiring and compliance with more stringent water quality regulations is imminent. General storm water discharge is the overall concern with deicing fluid and aircraft washing opera-

tion runoff being of particular concern. Wetlands issues are also a concern under this law. This issue is especially significant where expansion of a facility or construction of a new facility is planned.

The third most significant issue from table 1 is work under the Clean Air Act (CAA) with 50.0 percent of the respondents indicating affirmative answers. The average percentage of environmental work conducted under the law was 9.4 percent. Work under this law consists of permitting of facilities for air emissions

OSHA	0	20	0	NA	NA

* One respondent did not give an estimate of percentage.

Sampling pool (n) = 20.

NA = Not Applicable

NEPA = National Environmental Policy Act

FWPCA/CWA = Federal Pollution Control Act/Clean Water Act

SDWA = Safe Drinking Water Act

RCRA = Resources Conservation and Recovery Act

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act (``Superfund")

FIFRA/TSCA = Federal Insecticide, Fungicide and Rodenticide Act/Toxic Substances Control Act

CAA = Clean Air Act

EPCRA = Emergency Planning and Community Right-to-Know Act

FFCA = Federal Facilities Compliance Act

PPA = Pollution Prevention Act

OSHA = Occupational Safety and Health Act

TABLE 2
Predictions of Change in Importance of Environmental Issues to the Civil Aviation Industry, 1995

	No. of Responses	
Environmental Issue	*More Important*	*Less Important*
Wetlands	7 (8)*	1
Air Quality and Permitting	6 (6)	0
Noise	4 (4)	0
SWPPP [1]	4 (4)	0
NPDES [2]	4 (4)	0
Water Quality	4 (4)	0
Endangered Species	2 (2)	0
Hazmat [3]	1 (1)	0
Overall Regulatory Environment	0 (2)	2

from exhaust and also from bulk fuel storage facilities.

The fourth most significant issue from table 1 is work under the Emergency Planning and Community Right--to--Know Act (EPCRA). Thirty percent of the respondents indicated that they do this type of work. This work comprises about 6.0 percent on average of their aviation environmental work. Work under this

law consists almost entirely of writing of emergency response plans for airport facilities in case of hazardous waste or fuel spills.

Ranked fifth on table 1 is work under RCRA with 10.0 percent of the respondents indicating work under this law. The average and range of the percentage of work done under this law were both 5 percent. However, only one respondent offered an estimate for this percentage. Work at civil airports under this program appears to be limited to hazardous waste management, permitting and manifesting, and also some work under the Leaking Underground Storage Tank (LUST) portion of the RCRA code. Usually, RCRA would not be an issue at civilian airports unless the facility is listed as a RCRA permitted site. This could be common in the instance where a military facility has been converted to a civilian one.

Three of the laws listed on table 1 were indicated as worked under by 5.0 percent of the respondents. These three laws are CERCLA, FIFRA/TSCA and PPA. The respondent, who indicated work under CERCLA, did not offer an estimate of percentage work under this law. For FIFRA/TSCA and PPA, the respondent indicated a percentage of 5.0 percent and 25.0 percent, respectively. The work pertaining to CERCLA was indicated as consisting of soil and groundwater remediation activities at an airport facility. As with RCRA, this law would not usually be significant unless the site is listed on the National Priority List (NPL) under CERCLA. This is usually the case at inoperative facilities with past hazardous waste activities. The work under FIFRA/TSCA and PPA was indicated as consisting of hazardous waste management and pollution prevention plans for airport facilities.

Lastly, no work was indicated as being done under the Safe Drinking Water Act (SDWA), the Federal Facilities Compliance Act (FFCA) or the Occupational Safety and Health Act (OSHA). The reason for this is probably because these acts deal with very specific issues that usually do not impact civilian airport operations directly. The SDWA applies mainly to municipal water supplies, a concern more likely for the municipality serving the airport. The FFCA would not be an issue unless an airport were a federal facility. Work under OSHA is concerned mainly with worker health and safety by preventing exposure to chemical and physical hazards. Virtually all of the interviewees contacted indicated that the liability issue prevented them from entering this market.

Other issues that were indicated in question 12 were noise issues (two respondents), additional wetlands issues (one respondent), and Underground Storage Tank (UST) and Above Ground Storage Tank (AST) work under the state--specific environmental programs (one respondent).

Table 2 summarizes the results of question 13. Since all 20 survey participants did not respond to this question, the number of participants that did respond is included in the table. Of all the issues mentioned, the issue of wetlands had the highest response rate for gaining in importance (7 out of 8 responses). This is partly due to an expected tightening of wetlands policy by the EPA. The issue with the next highest indication of gaining importance is air quality regulations and air permitting (6 out of 6 responses). This issue will be especially important in areas like southern California where strict air quality guidelines exist. The issues of noise, storm water pollution prevention plans and storm water discharge permits were all indicated as becoming more important by 4 out of 4 respondents. Noise, while not a hazardous waste issue, is expected to gain importance as urban areas encroach on airports. Storm water issues will also gain importance as water quality regulations are tightened. Water quality regulations were, in fact, indicated by two respondents as gaining significance.

Finally, endangered species issues (2 respondents) and hazardous materials handling issues (1 respondent) were indicated as issues gaining in importance. Endangered species issues, while not directly hazardous waste issues, will become important mostly because of the wetlands issues discussed earlier. Hazardous waste handling becomes an important issue when considering storm water pollution prevention plans and emergency response plans.

An overall softening of the regulatory environment was indicated by 2 respondents as becoming a less important issue. This sentiment is probably a result of the EPA Common Sense Initiative (CSI) instituted under the current administration to soften the negative impacts of environmental regulation.

SUMMARY

In summary, 35 interviewees were selected from the ACC directory based on their apparent environmental experience in the civil aviation industry. Of the 35 selections, 20 resulted in successful interviews. The interview was designed to

gather general information on the most typical environmental issues likely to be important in the civil aviation industry.

The results of the survey indicated that the most prevalent type of environmental work being done by these firms is environmental audits, assessments, and impact statements for expansion and construction projects under the provisions of the Federal NEPA program. The next most important issues are wetlands studies and storm water discharge permitting and pollution prevention plans under the CWS; air permitting under the CAA; emergency response plans under the CERCLA, RCRA, FIFRA/TSCA, and PPA. Virtually no work was indicated as being done under SDWA, FFCA, or OSHA.

The primary issues expected to gain importance are wetlands issues, air quality issues, storm water issues, and noise.

Bias was likely introduced to the sampling results for a variety of reasons. Some of the reasons are likely to include the limited sampling pool size, variations in interviewee background and responses, and the different areas of practice exhibited by the various firms contacted. However, an attempt was made to select interviewees who appeared to be focused exclusively on the civilian aviation industry and who had environmental expertise. Although this survey could not possibly cover all of the environmental issues being considered in civil aviation today, it probably represents a close approximation of the key issues.

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APPENDIX A
SURVEY QUESTIONNAIRE—ENVIRONMENTAL ISSUES IN THE CIVILIAN AVIATION INDUSTRY

Opening statement: Hello, my name is Steve Morrissette. I'm a graduate student in the Aviation Institute at the University of Nebraska at Omaha. I'm conducting research for a class project on environmental issues in the aviation industry and I would appreciate just a few minutes of your time. My project is a

survey study of the primary environmental issues facing the civilian aviation industry and I obtained your company name from the 1995 Airport Consultants Council (ACC) directory as a firm that does environmental consulting to the aviation industry. I have a list of about 10 or 15 questions I'd like to ask you in order to gather some general information for my study. I can maintain your anonymity if you wish and can also provide you a copy of the study if you wish. Would you care to participate in my survey?

1. Do you do any work pertaining to the National Environmental Policy Act (NEPA)?

   YES
   NO

   If yes, please offer a brief description of the work that you do under this law:

   If yes, what is your estimate of the percentage of the total environmental work that you do that is done under NEPA?

2. Do you do any work pertaining to the Federal Water Pollution Control Act and Clean Water Act Amendments?

   YES
   NO

   If yes, please offer a brief description of the work that you do under this law:

   If yes, what is your estimate of the percentage of the total environmental work that you do that is done under these Act?

3. Do you do any work pertaining to the Safe Drinking Water Act (SDWA)?

   YES
   NO

   If yes, please offer a brief description of the work that you do under this law:

   If yes, what is your estimate of the percentage of the total environmental work that you do that is done under the SDWA?

4. Do you do any work pertaining to the Resource Conservation and Recovery Act (RCRA) and the Hazardous and Solid Waste Amendments (HSWA)?

   YES
   NO

   If yes, please offer a brief description of the work that you do under this law:

   If yes, what is your estimate of the percentage of the total environmental work that you do that is done under RCRA and HSWA?

5.

Do you do any work pertaining to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or ``Superfund'') and the Superfund Amendments and Reauthorization Act (SARA)?

YES
NO

If yes, please offer a brief description of the work that you do under this law:

If yes, what is your estimate of the percentage of the total environmental work that you do that is done under CERCLA and SARA?

6. Do you do any work pertaining to the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), and Toxic Substances Control Act (TSCA)?

   YES
   NO

   If yes, please offer a brief description of the work that you do under this law:

   If yes, what is your estimate of the percentage of the total environmental work that you do that is done under FIFRA and TSCA?

7. Do you do any work pertaining to the Clean Air Act (CAA)?

   YES
   NO

   If yes, please offer a brief description of the work that you do under this law:

   If yes, what is your estimate of the percentage of the total environmental work that you do that is done under the CAA?

8. Do you do any work pertaining to the Emergency Planning and Community Right--to--Know Act?

   YES
   NO

   If yes, please offer a brief description of the work that you do under this law:

   If yes, what is your estimate of the percentage of the total environmental work that you do that is done under this Act?

9. Do you do any work pertaining to the Federal Facility Compliance Act?

   YES
   NO

   If yes, please offer a brief description of the work that you do under this law:

   If yes, what is your estimate of the percentage of the total environmental work that you do that is done under this Act?

10. Do you do any work pertaining to the Pollution Prevention Act (PPA)?

YES
NO

If yes, please offer a brief description of the work that you do under this law:

If yes, what is your estimate of the percentage of the total environmental work that you do that is done under this Act?

11. Do you do any work pertaining to the Occupational Safety and Health Act (OSHA)?

    YES
    NO

    If yes, please offer a brief description of the work that you do under this law:

    If yes, what is your estimate of the percentage of the total environmental work that you do that is done under this Act?

12. Are there any other environmental issues or laws that you deal with within the aviation industry that have not been mentioned in this survey?

    YES
    NO

    If yes, would you please provide a brief description of these environmental laws or issues:

13. In your estimation, and in general terms, which environmental laws and issues do you see as becoming less important and which do you see as becoming more important in relation to the aviation industry in the future?