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American Public Works Association

PUBLIC WORKS MANAGEMENT PRACTICES - VOLUME I

A PUBLIC WORKS PERSPECTIVE OF THE ROAD BLOCKS AND OPPORTUNITIES TO IMPROVE PERFORMANCE

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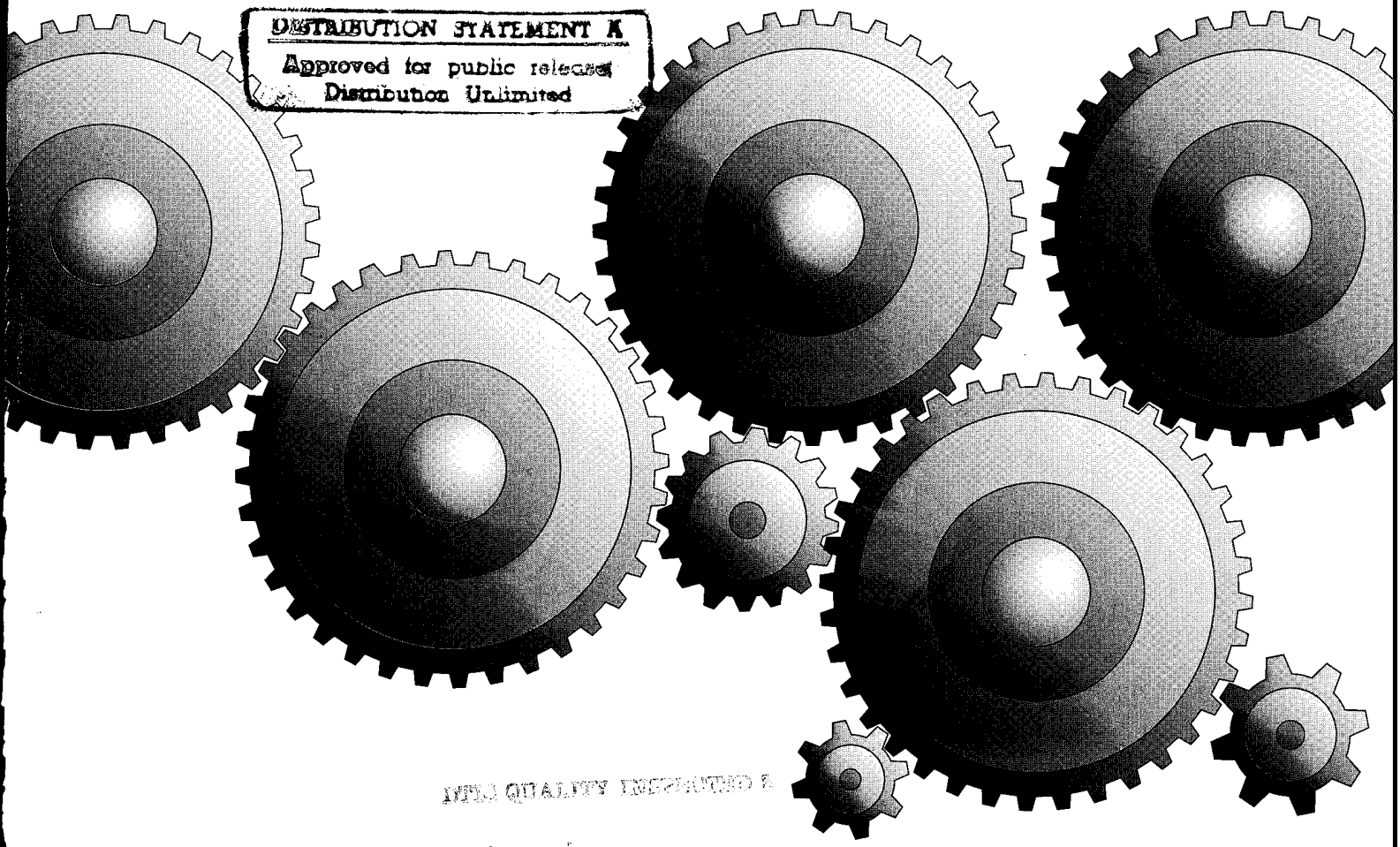

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Federal Infrastructure Strategy Program

August 1994

IWR Report 94-FIS-14

Federal Infrastructure Strategy Reports

This is one in a series of reports prepared during the Federal Infrastructure Strategy (FIS) Initiative, an intergovernmental program exploring the development of an integrated or multi-agency Federal infrastructure strategy. The series of reports which chronicle the strategy's development reflect the desire to publish interim documentation as results become available. These documents have been used to facilitate the dialogue within the Federal and non-Federal infrastructure communities as policy deliberations continue. See page 131 for a listing of other FIS reports.

The FIS program will culminate with a summary report to be published later in 1994. The documentation contained herein is not intended to foreclose or preclude the program's final conclusions and recommendations. Within this context, comments are welcome on any of the FIS reports.

This report, *A Public Works Perspective on the Road Blocks and Opportunities to Improve Performance*, is the first volume in a two-part examination of the constraints and obstacles that limit the effectiveness of municipal public works agencies. This volume documents the analysis conducted by the American Public Works Association (APWA), and includes information gathered from twelve municipal, county, and state public works agencies representing a broad range of populations, geographic locations, forms of governance, and functions. Specifically, the report identifies the legislative (Federal and state), administrative, and technical impediments to implementing improved public works management practices.

A companion analysis, contained in a IWR Report No. 94-FIS-15, was conducted by the National Academy of Public Administration (NAPA). The NAPA study extended APWA's analysis one step further and developed recommendations which, if implemented, could ultimately improve public works performance while meeting the goals and objectives set out in the Federal legislation and administrative procedures.

Together, the APWA and NAPA analyses provide an indepth look into the issues and opportunities available to improve the effectiveness of our nation's public works at the local level.

For further information on the Federal Infrastructure Strategy program, please contact:

Mr. Robert A. Pietrowksy
FIS Program Manager
703/355-3073

Dr. Eugene Z. Stakhiv
Chief Policy and Special
Studies Division
703/355-2370

U.S. Department of the Army
Corps of Engineers
Institute for Water Resources
Casey Building, 7701 Telegraph Road
Alexandria, VA 22315-3868

The Institute's infrastructure study team also included Dr. Cameron E. Gordon, Economics Studies Manager and Mr. James F. Thompson, Jr., Engineering Studies Manager. The program was overseen by Mr. Kyle Schilling, Director of the Institute.

Reports may be ordered by writing (above address) or calling Mrs. Arlene Nurthen, IWR Publications, at 703-355-3042.

The Federal Infrastructure Strategy Program

PUBLIC WORKS MANAGEMENT PRACTICES - VOLUME I

A Public Works Perspective of the Road Blocks and Opportunities To Improve Performance

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by

Eric Melvin
and
James D. Thorne

American Public Works Association

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This report is the product of many hours of discussions with public works practitioners. Their experience, insights, uncompromising professionalism, and deep interest in bettering public works management were demonstrated throughout the course of the research for this report.

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EXECUTIVE SUMMARY

BACKGROUND

Public works agencies must deal with what seem to be an ever increasing variety of demands and pressures. These derive from various sources: local constituents, state agencies, and the federal government.

Numerous studies have been conducted to identify critical problems in public works and possible solutions. Among the most notable recent efforts is the work of the National Council on Public Works Improvement. This multi-year study examined basic areas of public works infrastructure and operations and recommended a series of actions to improve the condition of the nation's public works infrastructure -- the physical facilities that are necessary for providing clean water, sanitary waste disposal, and modern transportation.

The American Public Works Association (APWA) has also undertaken programs to enhance the public works field. The development of a manual of *Public Works Management Practices* was a significant effort toward upgrading practices in the public works field. This manual was developed and tested by public works professionals in all of the many professions included within APWA's membership. APWA has also developed an educational program to guide agencies in using the manual to internally assess their operations.

The Institute for Water Resources of the U.S. Army Corps of Engineers facilitated a cooperative interagency effort on the development of an integrated Federal Infrastructure Strategy. This program sought to explore the merits of a more cohesive approach to improving the state of the nation's public works. The Corps of Engineers conducted a broad range of studies and investigations to accomplish this objective. This report documents one of these efforts.

STUDY RESPONSIBILITIES

The Corps of Engineers contracted with APWA and the National Academy of Public Administration (NAPA) to investigate constraints and obstacles that limit the effectiveness of public works activities. This project was based on the work conducted by the National Council on Public Works Improvement and APWA's *Public Works Management Practices* program. The project identifies legislative, administrative, and other significant barriers and impediments to improving public works performance.

This study was a cooperative effort between APWA and NAPA as partners. Although each organization worked under a separate Corps of Engineers contract, their respective staffs met together frequently, maintained a free and open dialogue, shared data, and worked cooperatively in the development of analysis techniques.

APWA is a not-for-profit public service organization composed of over 26,000 public works engineers and administrators at the federal, state, and local levels of government, and engineers, managers, and providers of goods and services from private industry. Its purpose is to enable people involved in the field of public works, primarily in the United States and Canada, to work together to improve the practice of their various professions. For this project, APWA focused on the identification of state and local impediments to improving public works management, with a specific concentration on whether the practices recommended in their *Public Works Management Practices* had been or could be successfully implemented by their members.

The National Academy of Public Administration (NAPA) is a nonpartisan, nonprofit organization chartered by Congress to improve governance at all levels: federal, state and local. The Academy was formed to conduct studies and provide counsel on public management issues and the practical implications of public policy. NAPA uses the individual and collective experiences of elected Fellows to provide expert advice and counsel to government leaders. For this project, NAPA sought to identify and summarize local officials complaints, observations and proposals concerning specific federal legislative, regulatory, and administrative mandates and requirements which have had significant impact on local public works operations. The Academy also reviewed the *Public Works Management Practices* manual to offer guidance and suggestions. NAPA applied its expertise in public administration to identify programs, practices, and methods that could be used to improve the performance of public works organizations.

STUDY OBJECTIVES

The Corps of Engineers joined with the APWA and NAPA to apply the *Public Works Management Practices* manual to twelve state and local agencies across the nation to determine the legislative, administrative, and technical roadblocks which impede compliance with improved management practices. The public works functions covered included: municipal engineering, design, construction, buildings, grounds, equipment, potable water, solid waste collection, solid waste processing and disposal, streets, snow and ice control, storm water and wastewater. Administrative practices associated with public works operations were also evaluated. These case studies of twelve public works agencies were conducted using an assessment process developed by APWA.

The objectives of this study were to obtain from public works professionals:

1. Perceived federal, state and local legislative, administrative, and technical impediments that hinder public works agencies from complying with the APWA management practices.

2. Possible strategies which would improve the performance and operating efficiencies of public works agencies.

The 12 agencies selected for the project represented a broad range of populations, geographic locations, forms of governance, and public works functions. They included the public works departments of the following cities and towns:

- Wakefield, Massachusetts
- Foster City, California
- Atlanta, Georgia
- Pittsburgh, Pennsylvania
- Waukegan, Illinois
- Round Rock, Texas
- Lawrence, Kansas
- Billings, Montana
- St. Paul, Minnesota

Also included were:

- Snohomish County, Washington Public Works Department
- Los Angeles County Internal Services Department
- Arizona Department of Transportation

STUDY APPROACH

To accomplish the study objectives, the APWA and NAPA study teams worked cooperatively to develop a study approach. This approach included the use of a questionnaire followed by site assessments/interviews with the public works officials from the selected municipalities.

Questionnaire Development

An extensive questionnaire was developed first to collect information about management practices that were most likely to face impediments and barriers. After sharing and discussing information from the questionnaire, teams of public works professionals and APWA and NAPA investigators conducted on-site assessments at the twelve site assessment agencies from May 1993 through August 1993. During this period, team members interviewed agency personnel about barriers and impediments to complying with the public works management practices. Information was also sought on other problems encountered in the course of meeting their responsibilities, and on innovative steps taken to accomplish their work.

Based on an initial assessment of the survey data, the NAPA and APWA project teams agreed that a distinction between barriers and impediments was warranted. The questionnaire referred exclusively to barriers without distinguishing them from impediments. However, many of the questionnaire responses indicated that the barriers identified, while not causing insurmountable obstacles to compliance with the management practices, still hamper agencies' ability to comply with some of the practices. For this reason, NAPA and APWA chose to use the term *impediments* to describe federal, state, and local barriers that make compliance difficult but do not prevent it. The project team would continue to use the term *barrier* when referring to mandates and difficulties that render compliance nearly impossible. This usage is reflected in the text of this report.

Questionnaire Results

The questionnaire data was limited primarily to barriers and impediments to complying with the APWA management practices. Local, administrative impediments represented nearly three-fourths of all impediments to complying with the management practices. State imposed impediments accounted for 10.5 percent of the reported impediments, followed by federal impediments, representing 9.5 percent of all impediments. Respondents also said that a combination of federal and state impediments accounted for 5.1 percent of the total. Federal impediments, therefore, represented, in part, almost 15 percent of all reported impediments. Technical barriers represented about one percent of the reported impediments.

In the local, administrative group, funding and budget limitations were the most prevalent constraints (30 percent), followed by problems associated with interagency, interdepartmental, or interjurisdictional cooperation and communication (17.5 percent). Personnel management restrictions and environmental regulations together accounted for a large fraction of federally imposed impediments. The latter included the costs of the RCRA Subtitle D landfill regulations, stormwater regulations, and hazardous materials regulations.

Site Assessments

The site assessments provided an opportunity to confirm questionnaire findings and to collect additional information about the APWA management practices. Impediments to practices not included on the questionnaire were also identified. Using a specially designed checklist, visiting assessment teams asked respondents which practices seemed unclear or hard to understand, which were necessary for effective operation, and whether agencies actually complied with the practices.

With the help of the checklist, the site assessment teams interviewed agency staff about barriers and impediments to improving effectiveness and efficiency. Of particular interest were federal laws, regulations, court decisions, and practices which may get in the way of improving performance and operations. In some cases, site visit participants reported problems that, upon further analysis, were judged not to be impediments to the management practices, but which could be considered impediments to effective operations. The assessments also allowed the respondents to voice other important concerns about prevailing and impending challenges and opportunities confronted by public works agencies. Both positive and negative observations were noted.

FINDINGS

Based on site visit responses, the most significant federal mandates confronting the agencies included the following:

- The National Pollutant Discharge Elimination System (NPDES) stormwater regulations
- The Resource Conservation and Recovery Act (RCRA) Subtitle D Municipal Solid Waste Landfill Criteria
- The Safe Drinking Water Act (SDWA) Lead and Copper Rule
- The Americans with Disabilities Act (ADA),

Each of these mandates stems from legislation intended to address issues of broad national interest -- from civil rights to surface transportation policy to environmental quality and to the health of Americans. Though these mandates differ greatly in terms of policy goals, the agencies or institutions subject to their requirements, and enforcement provisions, a significant share of the responsibility for ensuring compliance will be borne by public works providers.

Administrators at the site visit agencies phrased their concerns in several ways. Some asked questions such as the following: "If ADA requires curb cuts at all or most street crossings, will my agency be permitted to install them over time by coordinating the work with concurrent projects?" Or, "will my agency be required to undertake massive, costly, and disruptive retrofits for existing, unmodified curbs at crosswalks and street intersections?"

The main concern with these federal mandates was that they would be applied inflexibly, with little consideration for limited resources or time constraints. The resource issue is key to understanding the agencies' concern with "unfunded mandates," a currently popular label for the items listed above -- but, in the view of many agencies, an accurate one.

For many, the situation means that funds targeted for improving maintenance management and implementing other good management practices are more vulnerable to reduction or elimination. In fact, several agencies said that meeting the variety of new requirements mandated by Congress and federal agencies -- from Subtitle D to the stormwater regulations to ADA -- could force a substantial number of local governments to divert resources from other needed programs. Agencies within St. Paul, Lawrence, Billings, Wakefield, Pittsburgh, and Snohomish County all mentioned that implementing new management tools (i.e. Geographic Information Systems) to provide better maintenance for public works facilities requires funding. To comply with some of the most recent federal mandates, public works agencies may find it necessary to defer funding for these tools.

The report summarizes the main provisions of these mandates and the potential for flexible administration is discussed. Discussion of the site visit participants' key concerns about the impact of these mandates immediately follows each summary. Where relevant, other research findings are introduced, particularly as they relate to the actual or estimated costs of complying with each of the mandates. Following that, concerns about other areas where federal laws or actions affect public works operations are discussed and evaluated.

Additional site assessment findings relating to state and local administrative impediments are discussed. Though the reported state impediments had little in common, site visit agencies did point to one category of impediment with which many of them must contend: state imposed constraints on the bid process. While not considered a major impediment to effective operations, respondents generally agreed that it hampers their ability to acquire quality services, limits the applicability and use of life-cycle cost methods, encourages legal challenges from contractors seeking full recovery of costs, and results in higher long-term costs -- costs that might have been avoided had other factors been considered during the bid evaluation phase.

Local or agency administrative impediments such as lack of funding, staff shortages, and scheduling constraints hamper or prevent agencies from complying with the APWA management practices. However, the questionnaire also identified interagency and interjurisdictional communication as a significant impediment to effective performance.

Strategies and techniques that the site visit agencies have used to improve performance and efficiency and provide better maintenance of public facilities are also discussed.

All of the site visit agencies expressed strong interest in acquiring new or better tools for maintaining public facilities. Now that microcomputer applications for collecting, storing, and managing facility inventory and inspection data, maintenance histories, and related information are available, agencies want to upgrade their maintenance management practices by making use of at least some of these applications. The problem has been that the resources to invest in these tools have not been available. Nevertheless, several agencies are using or developing the capability to use management systems for pavements, bridges, buildings, sewers, water mains, fleets, and other capital assets. These systems typically enable the user to create a facility or equipment inventory, inspect components for deficiencies, assess condition, develop a priority ranking for maintenance needs, schedule preventive and routine maintenance tasks, and plan for replacements and major rehabilitation of facilities, components, and equipment.

APWA believes that the various kinds of impediments discussed in this report, whether federal, state, or local, are all, at least in a sense, of equal importance. They involve important problems that require creative solutions. Public works providers need resources to acquire new information management tools that will help them manage and maintain capital assets.

RECOMMENDATIONS

The success of any strategy to remove local, administrative impediments depends on the resolution of a very sensitive intergovernmental issue -- whether public works providers continue to find themselves having to meet various state and federal requirements *with little or no funding available to do so*. Examples are described in Chapter Four of the report. The NPDES stormwater regulations, the Lead and Copper Rule, RCRA Subtitle D Landfill Criteria, and the Americans with Disabilities Act impose sweeping and costly requirements on municipalities and counties.

Technical assistance, in addition to funding help, is critical because many state and local governments believe that Federal agencies, such as EPA, have promulgated some of their regulations without clarifying the standards or goals agencies subject to those regulations are expected to meet. In many cases, agencies are simply ordered to make use of available technologies to, for example, remove

certain contaminants from a site or prevent certain pollutants from being discharged to a particular location. Complete compliance with requirements is expected even in the absence of sound evidence showing that the measures ordered by EPA will bring about any overall improvement in the environment or public health.

With respect to federal mandates, it is proposed that the following be considered as Congress and the federal government resume discussion of mandates that affect local government:

1. State and federal mandates should be issued only when accompanied by a clear statement of goals, objectives, and standards.

2. A reasonable level of federal funding should be provided to agencies subject to federal laws and regulations that involve substantial implementation costs.

3. Environmental regulations should be tied to risk assessment standards for public health and environmental quality rather than best available technology.

4. As far as practical, regulations and mandates should be tailored to local conditions and permit flexible solutions based on those conditions.

5. Where practical, federal review and permitting processes should be coordinated to avoid duplication of effort, needless delays, and additional costs, while strictly following steps to avoid environmental damage.

Finally, the report recommends that the *Public Works Management Practices* manual be increasingly used as a tool by public works managers to assist them in evaluating agency operations and to help them identify ways to improve performance. It further recommends that the manual should be maintained and updated as necessary to reflect the state of the practice and changes in methods and technology.

I. INTRODUCTION

In 1993 the American Public Works Association Research Foundation, in cooperation with the National Academy of Public Administration, examined impediments and barriers that limit the effectiveness of public works activities in the United States. The project was based on the work conducted in the 1980s by the National Council on Public Works Improvement and recent efforts by the American Public Works Association (APWA) to establish standard public works management practices. The objective of this project was to identify legislative, regulatory, administrative, and technical barriers that hamper implementation of the National Council's recommendations for improving the nation's public works and hinder the efforts of public agencies to improve public works performance.

Funding for the project was provided by the U.S. Army Corps of Engineers, Institute for Water Resources as part of a three year program known as the Federal Infrastructure Strategy Initiative. This report describes the project's findings, the methods used to develop those findings, and possible strategies for overcoming impediments and barriers to effective performance.

BACKGROUND

The National Council on Public Works Improvement

The National Council on Public Works Improvement (NCPWI) was created by the Public Works Improvement Act of 1984 (P.L. 98-501) to assess the state of America's infrastructure. In fulfilling its mission, NCPWI defined national issues and assessed the nation's infrastructure needs within the framework of several traditionally defined categories of public works: transportation, water resources, water supply, wastewater, and the management of solid and hazardous waste. The NCPWI's final report, *Fragile Foundations: A Report on America's Public Works*, concluded that the nation's infrastructure was "barely adequate to fulfill current requirements and insufficient to meet the demands of future economic growth and development".[1] To combat these deficiencies, the NCPWI recommended the following:

- A national commitment, by all levels of government and the private sector, to increase capital spending by as much as 100 percent above current levels
- Clarification of the respective roles of the federal, state, and local governments in infrastructure construction and management to focus responsibility and increase accountability
- More flexible administration of federal and state mandates to allow cost-effective methods of compliance

- Accelerated spending of the federal highway, transit, aviation, and waterways trust funds

- Financing of a larger share of the cost of public works by those who benefit from services

- Removal of unwarranted limits on the ability of state and local governments to help themselves through tax-exempt financing

- Strong incentives for maintenance of capital assets

- Providing additional support to research and development to accelerate technical innovations, the adoption of new technologies and the training of public works professionals

- A rational capital budgeting process at all levels of government[2]

Some NCPWI recommendations have been addressed by newly enacted laws. The 1991 Intermodal Surface Transportation Efficiency Act (ISTEA) promotes many of the actions recommended by the NCPWI. ISTEA has increased potential spending on transportation infrastructure, introduced a comprehensive approach to addressing transportation problems, emphasized innovation and flexibility, and expanded the role of local governments in decisionmaking on transportation projects.[3]

Many assessments of the major problems facing our nation's public works suggest the need for both new facilities and increased maintenance and rehabilitation of existing structures. The future of America's infrastructure is likely to include a focus on maintaining and getting the most out of existing facilities, keeping costs down, making public facilities fit more comfortably into the natural environment, and greater ingenuity in meeting needs in the most efficient ways possible.

Federal Infrastructure Strategy

In 1990, the U.S. Army Corps of Engineers was directed to undertake a three year program to explore the development of an integrated federal infrastructure policy. The Federal Infrastructure Strategy (FIS) program was a more detailed follow-up to the issues identified by the NCPWI. As such, it represented the first effort of its kind conducted within the executive branch. The program examined the roles of the various levels of government and the private sector and tried to develop approaches to improve infrastructure performance and ensure more efficient investments. Drawing on the expertise of a broad spectrum of participants, the Corps adopted a three-tiered approach:

1. A collaborative intergovernmental dialogue to define and clarify the roles of various levels of infrastructure agencies in resolving national infrastructure problems

2. In-depth, interagency inquiries, workshops, and technical studies on important infrastructure topics to better develop the technical and management foundations of the policy formulation process

3. Commissioning theme papers and technical documents on specific public works issues to serve as the basis for interagency discussions and actions[4]

This three-tiered approach sought to define the federal role as a catalyst for producing closer coordination between all levels of government. In addition, the federal agency representatives that participated in this new strategy proposed developing specific actions to implement the key recommendations of previous reports, rather than developing a new study.

American Public Works Association

The American Public Works Association (APWA) is a not-for-profit public service organization composed of over 26,000 public works engineers and administrators at the federal, state and local levels of government, and engineers, managers, and providers of goods and services from private industry. APWA was organized in 1937 through the merger of the American Society of Municipal Engineers (established 1894) and the International Association of Public Works Officials (established 1919). Its purpose is to enable people involved in the field of public works, primarily in the United States and Canada, to work together to improve the practice of their various professions, thereby serving the best interests of the public. APWA's scope of interest is reflected in the definition of the term *public works*: the physical structures and facilities that are developed or acquired by public agencies to house governmental functions and provide water, waste disposal, transportation, power, and similar services to facilitate the achievement of common social and economic objectives.

APWA's principal offices are located in Kansas City, Missouri. APWA provides membership services and operates Education and Research Foundations; Institutes for Professional Development (transportation, municipal engineering, solid waste, buildings and grounds, equipment services, water resources, and administrative management); Councils on Emergency Management, Equal Opportunity, and Utility Location and Coordination; and a Public Works Historical Society. Major annual events include the International Public Works Congress and Exposition, Snow Conference, and One-Call Systems and Damage Prevention Symposium. APWA also maintains a Washington Office to facilitate liaison with federal agencies and organizations with similar interests. APWA members receive a monthly magazine, the *APWA Reporter*, and are served through a network of 64 chapters in the United States and Canada. (For more detailed descriptions of the entities that make up APWA, see Appendix A.)

APWA's Public Works Management Practices

In 1991, APWA published the *Public Works Management Practices* manual (APWA Special Report No. 59), following several years of research and testing. It would be difficult to overestimate the practical benefits this work has provided to public works administrators and staff. *Public Works Management Practices* contains proven methods and general practices that have worked effectively for public works agencies. APWA and its membership believe that the approximately 400 management practices contained in the manual represent minimum criteria for operating any well-run public works organization. In addition to publishing the manual, APWA continues to develop education programs and evaluation tools to facilitate local adoption of standard public works management practices and procedures.

The main objectives of the first efforts to create public works management practices were as follows:

- Develop practices which serve as a guide for assessing organizational management operations and preparedness needs of public works agencies
- Provide an internal evaluation tool to improve departmental activities
- Promote awareness of the importance of public works agencies and their services
- Improve the quality of public works services to the community

(See Appendix B for further information on the development of the management practices program, including a sample page from the *Public Works Management Practices* manual.)

Definition of a Management Practice. A management practice is a generally accepted practice of a well managed public works department. It is, in part, a statement that identifies management and operations requirements for public works services. More precisely, it requires either the development and implementation of a policy or procedure in the form of a rule, regulation, or written directive or the execution of an activity, report, or procedure. In its written form, it is usually followed by information that explains or expands the practice, or provides guidance for compliance. The purpose of a management practice is not to create a burdensome requirement for the public works department but rather to assist the public works manager in planning and controlling operations, improving performance, and increasing productivity.

The practices contained in the *Public Works Management Practices* manual were derived from a variety of sources: operations manuals, policies, procedures, memoranda, records, other written materials, and the professional experience of hundreds of APWA members. Management practices are specific to the particular agency and are based on agency size, resources and responsibilities. Some practices contained in the manual may be prohibited by state law, local ordinance, local policy, or department decision. During the self assessment process -- the process by which an agency critically compares its own practices with those in the manual -- the agency examines each practice and determines its applicability to the agency.

Contrasted with Performance Standards. A management practice is not a performance standard. A performance standard implies a predetermined level of output. It means knowing that the established standards will be the same regardless of the agency and its size, resources and responsibilities. A standard involves measurements, and quantitative information. The management practices were carefully written so as not to prescribe measured performance goals or "benchmarks." Rather, each written practice statement represents a certain policy, function, or operation that a well managed public works agency should perform. For example, a management practice may state that there will be a policy or procedure for overlaying streets. A standard says that you will overlay with hot bituminous concrete to a three inch depth at a rate of five tons per hour. However, some of the management practices do call for an agency to establish or determine an appropriate performance standard and apply it where appropriate.[5]

Management practices provide employees, supervisors, policy makers, and the community with a clear statement of the agency's priorities and operating mission. These practices are implemented by each agency with proper consideration for local procedures, resources, regulations and the environment.

Organization of the Manual. The *Management Practices* manual is organized into 29 chapters by specific areas such as personnel, planning, finance, risk management, emergency management, engineering design, buildings, equipment, solid waste, streets, stormwater, potable water, snow removal, and wastewater. Within each chapter is a list of management practices pertaining to the chapter. Each chapter begins with an explanation of the chapter topic and the activities associated with the topic. The title or name of the management practice is written in the margin. The statement of the management practice itself is written in italics. Following each management practice is a statement which explains the practice in more detail.

The first nine chapters of the manual deal with topics that would likely be dealt with to some degree by all public works agencies. These chapters address issues such as: organization, personnel management, planning, finance, risk management, communications, and records. The remaining chapters cover specific public works areas such as municipal engineering, construction, buildings, equipment, solid waste, and stormwater. (A sample page from the "Streets" chapter of the manual can be found in Appendix B.)

The National Academy of Public Administration

The National Academy of Public Administration (NAPA) is a nonpartisan, non-profit organization whose mission is to improve governance at all levels -- federal, state and local. The Academy was formed in 1967 to conduct studies and provide counsel on public management issues and the practical implications of public policy. The Academy, which is located in Washington, D.C., was chartered by Congress in 1984.

NAPA uses the individual and collective experiences of elected Fellows to provide expert advice and counsel to government leaders. Fellows of the Academy have diverse backgrounds and experience at all levels of American government. NAPA's membership includes more than 400 current and former presidential cabinet officers, members of Congress, governors, mayors, legislators, jurists, business executives, public managers, and scholars who have been elected as Fellows because of their distinguished contributions to the nation's public life.

Since its establishment, NAPA has responded to many requests for assistance from various agencies and has undertaken a growing number of studies on issues of particular interest to Congress. In addition, NAPA has conducted projects for private foundations and has begun to work closely with private corporations.

NAPA's work covers a wide range of topics, including: agriculture, education, health, human services, housing, urban development, prisons, courts, space, defense, environment, emergency management, human resources, organization and management analysis, and international public management. NAPA has substantial, objective analysis capabilities.

For this project, NAPA sought to identify and summarize local officials' complaints, observations, and proposals concerning specific federal legislative, regulatory, and administrative

mandates and requirements which can have significant impact on local public works operations. The Academy also reviewed the APWA *Public Works Management Practices* manual to offer guidance and suggestions. NAPA's expertise in public administration was applied in this project to identify programs, practices, and methods that could be used to improve the performance of public works organizations.

To conduct the study, NAPA organized a panel of five members of the Academy. A NAPA staff person worked with this panel to organize and conduct the necessary work. In addition, other Academy members participated directly in the development of the project, meetings with the Corps of Engineers and APWA, and in the site assessments. The panel reviewed project reports and guided NAPA's activities on the project.

BRINGING THE PIECES TOGETHER

As part of the development of the Federal Infrastructure Strategy, the U.S. Army Corps of Engineers' Institute for Water Resources initiated an in-depth inquiry to identify and evaluate roadblocks which prevent local public works departments from implementing improved management practices. The centerpiece of the study was the APWA management practices manual was used as the baseline for assessing those critical elements of standard practices and performance that were impeded by internal or external factors. Therefore, using the APWA manual as a guide, the objectives of this study were to obtain from public works professionals:

1. Perceived federal, state and local legislative, administrative, and technical impediments which prevent public works agencies from implementing improved management practices

2. Possible strategies which would improve the performance and operating efficiencies of public works agencies

The Corps of Engineers joined with the APWA and NAPA to apply the *Public Works Management Practices* manual to 12 state and local agencies across the nation to determine the legislative, administrative, and technical roadblocks which impede compliance with the management practices. The public works functions assessed included: municipal engineering, design, construction, buildings, grounds, equipment, potable water, solid waste collection, solid waste processing and disposal, streets, snow and ice control, storm water and waste water. Administrative practices associated with public works operations were also evaluated. These case studies of twelve public works agencies were conducted using an assessment process developed by APWA.

APWA and NAPA worked in partnership to select assessment sites, develop a pre-site visit questionnaire and an on-site checklist, and conduct the site visit assessments. Early in the project, NAPA reviewed the *Public Works Management Practices* manual to make a preliminary identification of which practices would most likely encounter federal legislative, regulatory, or administrative barriers and impediments. This information aided in the development of survey materials for the project. APWA was responsible for distributing the questionnaires and tabulating the responses. APWA also organized the site visit process.

A NAPA representative participated in each of the site visits. An APWA staff member participated in each site visit along with two APWA members from other communities. One of these

public works professionals was from another assessment site which was paired with the host agency. The other was from a group of APWA members experienced in the development and use of the *Public Works Management Practices* manual. The group included members of the APWA Management Practices Advisory Committee, faculty for the APWA Self Assessment Clinics, and managers of ongoing self assessment programs.

A representative of the U.S. Army Corps of Engineers participated in the initial, orientation meeting for the site assessments and in the seventh site visit (Atlanta). APWA staff worked with a local coordinator from each of the twelve sites to organize and schedule site visit activities. Information on the operations of the agency, impediments identified in the pre-site visit questionnaire, and the site visit schedule were distributed to the assessment team prior to the site visit.

During the on-site interview process, the NAPA representative focused on federal mandates that may impede compliance with the management practices. One of the public works professionals on the site visit team lead discussions and helped organize on-site activities. The APWA staff person was responsible for completing the on-site checklist and gathering reference materials.

II. METHODS

The expertise and resources of APWA and NAPA were combined to obtain the following information from public works professionals:

- Perceived legislative, administrative, and technical road blocks which prevent agencies from implementing the NCPWI recommendations and complying with the APWA public works management practices
- Ways to effectively implement the recommendations and the management practices
- Strategies which would most likely improve the performance and operating efficiency of public works agencies
- Strategies for providing better maintenance of public works facilities

A research program was developed to accomplish these objectives. The instruments to be used to collect information included: APWA's management practices self assessment clinics; an extensive questionnaire based on public works management practices; and site visit interviews conducted at twelve agencies across the United States.

Specific steps in the project included:

- Gathering insights from public works professionals
- Developing a site assessment process
- Selecting the assessment sites
- Developing and administering a comprehensive questionnaire
- Establishing the site assessment process
- Developing a pre-site visit package
- Developing a site assessment checklist
- Conducting site visits

- Conducting telephone interviews
- Documenting the process and findings

The following sections describe these steps in greater detail.

GATHERING INSIGHTS FROM PUBLIC WORKS PROFESSIONALS

The scope of the project required contacts with a substantial number of public works professionals. Participants from the APWA Management Practices Self Assessment Clinics supplied a wealth of information on issues affecting compliance with the public works management practices. As part of the clinic discussions, participants identified potential uses of the management practices and the benefits of conducting an agency self assessment (Appendix B summarizes these comments). Occasionally, participants remarked on prominent barriers to complying with the practices. Clinic faculty who participated in the site visit assessments helped to communicate much of this response to site visit participants.

The site assessment teams experienced many opportunities to listen to public works professionals express their concerns and interests. Most of these contacts were with individuals at the twelve sites. Among them were public works department directors, elected officials, staff engineers, operations personnel, and professionals from other departments and agencies, such as finance, legal counsel, human resources/personnel, and planning. At sites where a particular public works function was the responsibility of an agency other than the public works department, site visit teams interviewed personnel from that agency. Typically, these were water departments, engineering departments, environmental services, and emergency management agencies. Also, professionals nationwide were consulted for information on federal, state, and local programs to clarify issues and to identify innovative methods.

DEVELOPING A SITE ASSESSMENT METHOD

The wide ranging nature of public works functions and variations in how they are accomplished led to selection of twelve agencies to provide information on their operations. The purpose of the site assessments was to gather information and insight from public works practitioners. The assessments were not intended to evaluate the performance of any agency.

APWA Research Foundation staff solicited sites that could function as both test sites for evaluating the management practices and as providers of qualified public works professionals who were willing and able to travel to other sites to assist with the assessments. An assessment team consisted of a member of the Management Practices Advisory Committee, an APWA staff person, a NAPA representative, and a public works professional from a participating assessment agency. A representative from the Corps of Engineers also participated in one site visit to obtain perspectives on key issues and to observe the entire process.

Of the twelve sites, nine served areas with populations over 50,000 and three served areas with populations under 50,000. A mix of agencies was sought to represent a broad range of geographic regions. Other selection criteria included climate (arid, low rainfall, high rainfall, humid regions, and freeze-thaw to no-freeze areas), the range of agency public works functions (transportation, waste water, storm water, solid waste, etc.) and representation of the four time zones within the continental United

States. Past participation in a self assessment clinic was also considered as agencies with this training would tend to have more background and experience with the manual and the self assessment process.

SELECTING ASSESSMENT SITES

At several self assessment clinics offered by the APWA Education Foundation, clinic faculty and APWA staff approached attendees about participating in a national study of barriers and impediments to complying with the management practices. The attendees were informed that, if selected, they would work with an assessment team to identify problems confronted by agencies seeking to comply with the practices. More than thirty agencies expressed interest in participating. APWA also publicized the program at the 1992 International Public Works Congress and Exposition held in Boston, Massachusetts.

Finally, in order to enlarge the pool from which sites would be selected, APWA created a form to solicit expressions of interest in hosting a site assessment. APWA mailed this form to several hundred agencies that had sent one or more staffpersons to one of the dozen self assessment clinics held over the previous year. Officers from the 64 APWA chapters and the 65 sponsors of the original management practices research project, from which *Public Works Management Practices* was developed, were sent request forms as well. The notice (see Appendix C) was distributed in October, 1992.

The response was encouraging, as over 75 returned completed forms. In all, about 30 agencies expressed sincere interest in becoming involved in the study. APWA's Management Practices Advisory Committee reviewed the letters and in turn recommended sites for final consideration by the Corps of Engineers. APWA, NAPA, and the Corps conferred with each other to ensure that the site selections met the criteria. The willingness and level of commitment expressed by the various agencies, along with the need to obtain a wide representation of public works functions, guided the selection process.

The recommended sites were reviewed by APWA staff with the Corps of Engineers and NAPA at a January 11, 1993 meeting in Washington, D.C. Agreement was reached on several sites and on regions of the country and types of agencies to be targeted to complete the list of twelve sites. Follow-up contacts were made with additional agencies which had not responded with a letter of interest.

After securing agreements to meet the conditions of participation from a preliminary group of 12 sites and receiving final approval from the Corps of Engineers, APWA selected the following agencies, primarily public works departments, for participation in the project:

- Wakefield, Massachusetts
- Foster City, California
- Atlanta, Georgia
- Pittsburgh, Pennsylvania
- Waukegan, Illinois
- Round Rock, Texas

- Lawrence, Kansas
- Billings, Montana
- Snohomish County, Washington
- St. Paul, Minnesota
- Los Angeles County Internal Services Department
- Arizona Department of Transportation

The selected sites represented all regions of the country and a range of agency sizes, functions, and responsibilities. Figure 2.1. displays the location of the assessment sites.

Table 2.1. shows the agencies selected to participate in the project. The information on the public works functions was gathered from a survey included with the request for letters of interest in being an assessment site. As the information depicted in the table indicates, all basic public works function areas were represented to some degree among the twelve agencies.

The survey questions were organized by public works functions, representing selected practices from most of the twenty-nine chapters in the *Public Works Management Practices* manual. APWA staff modified or adapted statements of specific practices in the manual, sometimes slightly altering the wording of a statement in order to create a meaningful, but brief and understandable question. In most instances the wording of the question was identical to the corresponding practice from the *Management Practices* manual. But, in a number of cases staff decided that transforming a practice statement into a multiple choice survey question required significant rewording -- always, however, taking care to avoid any distortion of the meaning of the practice from which the question was adapted. Still other questions represented combined practices.

DEVELOPING AND ADMINISTERING A COMPREHENSIVE QUESTIONNAIRE

APWA and NAPA developed a questionnaire that the site visit agencies were to complete and return to APWA prior to the site assessment. The purpose of the questionnaire was to identify potential legislative, regulatory, administrative, or technical barriers to implementing or complying with the APWA management practices. In addition, the survey sought to identify: paths to enhancing and improving the performance of public works agencies; effective techniques that would enable agencies to better maintain infrastructure assets and minimize the effects of deferred maintenance; and ways to accelerate development and implementation of new technologies that have the potential for benefiting public works activities. Results of the questionnaire were to be tabulated in advance of the site visit and used by the assessment team to identify issues to pursue during interviews with agency personnel.

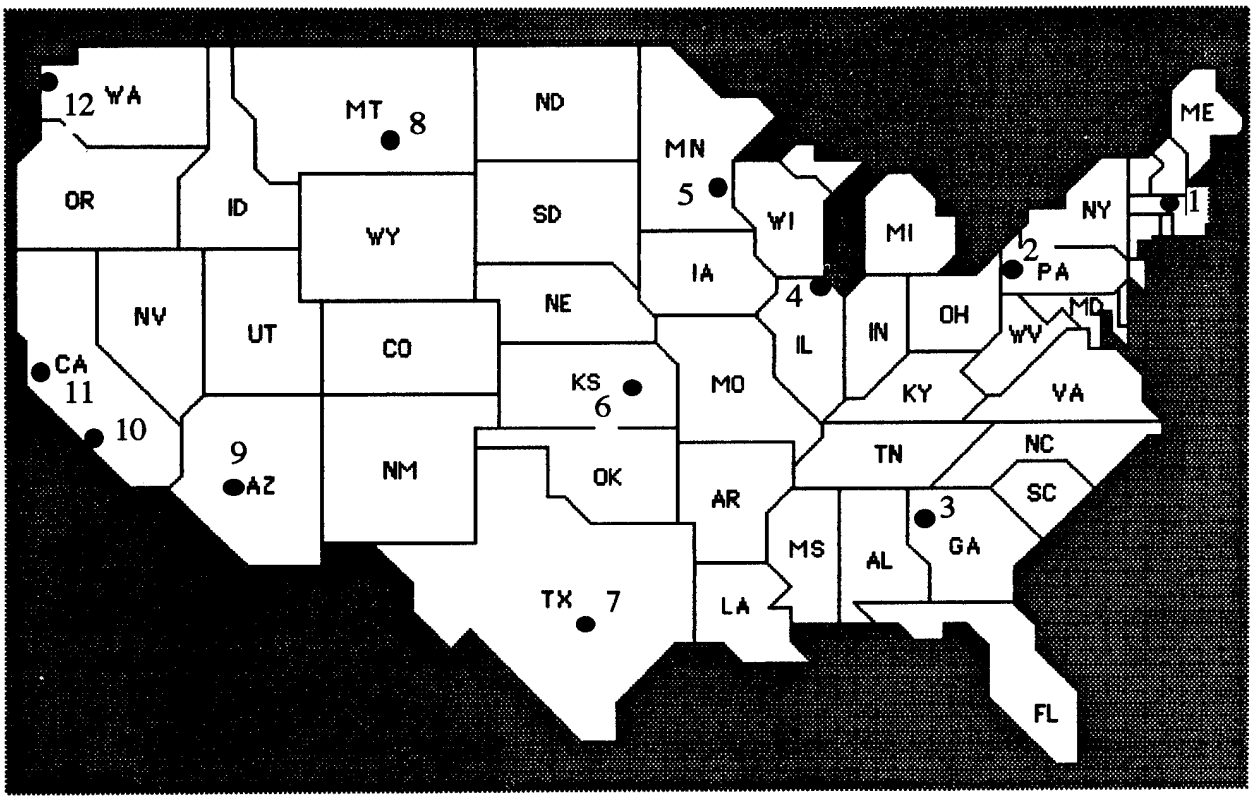

FIGURE 2.1. LOCATION OF ASSESSMENT SITES

LEGEND

1 - Wakefield, Massachusetts
2 - Pittsburgh, Pennsylvania
3 - Atlanta, Georgia
4 - Waukegan, Illinois
5 - St. Paul, Minnesota
6 - Lawrence, Kansas
7 - Round Rock, Texas
8 - Billings, Montana
9 - Arizona Department of Transportation
10 - Los Angeles County, California
11 - Foster City, California
12 - Snohomish County, Washington

Source: APWA Research Foundation, 1994.

TABLE 2.1. SELF ASSESSMENT SITES BY PUBLIC WORKS FUNCTION

	Function									
Agency	Engrng.	Const.	Bldgs.	Grnds.	Equip. Svcs.	Solid Waste	Streets	Storm Water	Potable Water	Waste Water
Wakefield	X	X	X	X	X	X	X	X	X	X
Foster City	X	X	X		X		X	X	X	X
Pittsburgh	X	X	X	X	X	X	X	X		X
Atlanta	X		X		X	X	X	X		X
Lawrence	X	X	X		X	X	X	X		X
Billings	X	X			X	X	X	X		
Waukegan	X	X	X	X	X		X	X	X	X
Round Rock	X	X	X	X	X	X	X	X	X	X
St. Paul	X	X	X	X	X		X	X		X
Snohomish Co.	X	X	X		X	X	X	X		
Arizona DOT	X	X	X	X	X		X	X		
L.A. County	X	X	X	X	X		X			

Source: APWA Research Foundation, 1994

To keep the questionnaire to a manageable length, APWA and NAPA worked closely to select only those practices that seemed most likely to elicit responses indicating the existence of barriers and impediments to compliance. The result of this effort was a questionnaire representing nearly half of the 417 management practices contained in the manual. There were 207 questions in all. (See Appendix D for a copy of the questionnaire.)

The respondent was asked to acknowledge any barriers or impediments by rating them as substantial, moderate, or minor. As explained in Chapter Three, the ratings data were eventually determined to be of little practical value and were not tabulated or used in subsequent analyses. If the respondent checked any of the three barrier ratings boxes, an open-ended question appearing at the end of each of the separate sections of the questionnaire asked the respondent to describe the barrier or impediment in as much detail as possible. Explanations and examples of possible federal, state, or local

barriers and impediments were provided in the background section of the survey form. A brief description of the identified barriers and impediments was then requested.

ESTABLISHING THE SITE ASSESSMENT PROCESS

As the questionnaire was being developed, APWA also began organizing activities for the site assessments. Staff took advantage of materials and experiences gained during twelve site visits conducted by APWA in 1991 to validate the *Public Works Management Practices* manual. The process generally provided for scheduling of the site visits, pairing of sites, arranging assessment teams, scheduling activities, and preparing materials to facilitate the site visits. The local coordinator at each site aided this process by scheduling interviews, making arrangements for meeting rooms, and resolving other logistical matters.

APWA staff worked with members of the Management Practices Advisory Committee and others who had served as faculty for the APWA Self Assessment Clinics to assign representatives for each site assessment. They would be able to ensure accurate and consistent interpretations of the manual and self assessment process if asked to do so during the site assessments. A representative from each site visit agency was paired with another so that each could participate in the other's site assessment.

A matrix of the *Management Practices* chapters to review at each site was prepared using information provided by each site visit agency (see Appendix E for a copy of the matrix). As arrangements proceeded through March and April 1993, local coordinators arranged and scheduled site visit interviews with staff from other departments and agencies if those departments or agencies were responsible for management functions not handled by the site visit agency. Typically, these would be planning departments, engineering departments, emergency services, personnel/human resources departments, legal counsel or city attorney, finance, or water departments.

DEVELOPING A PRE-SITE VISIT PACKAGE

To ensure that all parties in the assessment process were adequately informed about the events to take place as part of the site assessment, a package of material was prepared and distributed in advance of the site visit. The package identified the participants in the site assessment, the location of meetings, the interview schedule, the chapters to be discussed at each site, a copy of the on-site checklist, and a summary of the site's questionnaire responses.

DEVELOPING A SITE ASSESSMENT CHECKLIST

A site assessment checklist was developed to evaluate whether the management practices reflect the actual practice of public works agencies and to identify barriers and impediments that limit the effectiveness of public works activities. Assessment teams used the checklist to determine whether the intent of each management practice was clear and understandable, whether the practice was necessary for a good public works operation, and whether there were restrictions or impediments to complying with the practice. A sample page from the checklist can be found in Appendix F. Unlike the questionnaire, which covered about half of the APWA management practices, the full site assessment checklist included all 417 practices from the manual.

CONDUCTING SITE VISITS

APWA and NAPA assembled panels of experienced professionals to perform the on-site assessments over the spring and summer of 1993. On May 2, 1993, APWA, NAPA and the Corps of Engineers jointly held an orientation session of the project participants in St. Paul, the site of the first assessment. In attendance were members of the Management Practices Advisory Committee, other Self Assessment clinic faculty, the NAPA assessment team, APWA staff, and a representative from the Corps; eighteen individuals in all participated in the orientation. The group reviewed the development of the manual and self assessment process, discussed the objectives of the project, reviewed the site assessment materials and procedures, reviewed the questionnaire findings to-date, determined documentation requirements and responsibilities for the site visits, and discussed potential federal barriers.

The site visits began in May, 1993 and concluded in August, 1993. Two full days were allocated for each site visit with the project team arriving on-site the evening before the first day. Following is the site visit schedule:

May 2-4	St. Paul, MN
May 9-11	Snohomish County, WA
May 16-18	Waukegan, IL
June 6-8	Lawrence, KS
June 13-15	Los Angeles County, CA
July 11-13	Wakefield, MA
July 18-20	Atlanta, GA
July 25-27	Round Rock, TX
August 1-3	Arizona DOT
August 8-10	Pittsburgh, PA
August 15-17	Foster City, CA
August 18-20	Billings, MT

APWA worked with a coordinator at each site to organize the visit. A schedule was developed to interview key personnel over the two day period. Interviews typically were held with the director of public works, operations personnel, division heads, directors of other departments such as personnel and finance, and with county executives, mayors, city managers, and council members. As mentioned, local coordinators arranged and scheduled site visit interviews with staff from other departments and agencies if those departments or agencies were responsible for management functions not handled by the site visit agency. (See Appendix G for a brief overview of site activities.)

The site visits began with an orientation and training session held the evening before the first day's activities. Members of the assessment team met with representatives of the host site to review the objectives of the site visit, go over the assessment procedures, and provide background on the entire process. This gave participants an opportunity to get to know each other before spending two days discussing all facets of the site visit agency's public works operations. It also provided participants with a common understanding of the objectives of the project and the assessment process.

Summaries of questionnaire results were included in the pre-site visit packages given to members of the assessment team prior to the visit. This gave the team an early indication of particular areas of concern for the agency.

During interviews with agency personnel, the assessment team leader asked respondents mainly for information about barriers and impediments to complying with the management practices, using the checklist as a guide. But the team stressed that it sought information regarding any other types of impediments as well, federal impediments especially. As illustrated in Chapter Four, the site assessment interviews produced much more information than the questionnaire about barriers from the federal level. At six or seven sites, the agency staff had filled out the checklist in advance of the site visit; consequently, at these sites assessment team members were able to focus discussion on some of the agency's deepest concerns.

Often the interviews involved several staff members from the host site, which allowed the team to cover several aspects of a given topic. For example, the public works director might have a perspective different than that of the operations supervisor or the director of planning. Discussions with elected officials, such as council and board members, commissioners, and mayors contributed to a better understanding of how the policymaking process affects what the public works department does.

In addition to the extensive notes and checklist information that the site visits provided, agency staff at most of the sites supplied the teams with ample documentation of agency operations, policies, and procedures. Among the items team members were able to take with them were the following: annual financial reports; personnel manuals; budget documents; various brochures on city or county services; photocopies of internal documents proving compliance with selected APWA management practices; operations manuals on snow removal, emergency services, sewer maintenance, street repair, fleet maintenance, etc.; capital improvement plans, and so on. Not all of these materials were equally valuable as sources of information, but most provided essential data about each agency's operations that could not otherwise have been obtained in the limited time available for interviews with staff.

The interview process typically required two full days. A debriefing session was held at the end of the second day to review the major findings and observations. Team members offered verbal summaries of their observations during these sessions.

CONDUCTING TELEPHONE INTERVIEWS

Follow-up telephone interviews were conducted as necessary to clarify issues raised during site visits. On occasion these involved interviews with individuals who may not have been available during the site-visit or, more often, involved issues or concerns that the assessment team wanted to explore in greater depth (see Chapter Four for reports on these issues). APWA staff also contacted individuals from other public works agencies, associations currently researching similar issues, and Federal agencies in further attempts to gather additional information relevant to this project. These included cities that have implemented innovative infrastructure management systems or agencies that could clarify legislative or regulatory questions. The telephone interviews followed the completion of the site assessments.

DOCUMENTING THE PROCESS AND FINDINGS

With the documented information and notes taken during the assessments, the APWA project team was ready to prepare a formal report on the results of the research. (NAPA team members prepared an independent report for the project.) The questionnaires from each of the twelve sites had already been tabulated and analyzed and would be incorporated into the report (see Chapter Three).

APWA staff prepared an interim report for the project following the completion of the twelfth site visit. This report provided an overview of the process and the preliminary findings. It was the basis for a review session held between APWA and the Corp of Engineers in conjunction with the International Public Works Congress and Exposition in Phoenix, Arizona on September 18, 1993. Following comments received on the interim report, APWA began preparation of a preliminary draft report. This report expanded on the items cited in the interim report.

APWA submitted the first draft of the final report to the Corps the first week of January. It was then discussed at a meeting of representatives of the Corps of Engineers, NAPA, and APWA on January 10, 1994 in Washington, D.C. Agreement was reached on the general approach for completing the project and preparing and reviewing the final reports prepared by APWA and NAPA. Following the meeting, the Corps provided written, specific comments on the draft report which APWA used in preparing the final draft. The final draft report was submitted for review in March 1994. The report was reviewed by personnel within the Corps and by representatives of APWA and the twelve assessment sites. Comments on the draft were addressed in preparation of APWA's final report for the project.

The next two chapters summarize the findings from the questionnaire administered to the site visit agencies, the intensive field interviews of site visit personnel, and follow-up communication with several of those who participated in the site assessments. The final chapter contains conclusions and recommendations.

III. SUMMARY AND ANALYSIS OF QUESTIONNAIRE RESPONSES

Eleven of the 12 agencies participating in the project returned completed questionnaires before scheduled site visits; one agency returned its questionnaire to the assessment team during the site visit. At several sites, agency staff furnished supplementary material. This material typically included annual reports, personnel handbooks, mission statements, organizational charts, operations manuals, and other documents pertaining to the agency. The following summarizes information from the questionnaires about impediments to complying with the APWA management practices.

DEMOGRAPHIC AND ADMINISTRATIVE CHARACTERISTICS

The site visit agencies represent a broad range of populations, geographic locations, forms of governance, and public works functions. Table 3.1. is a profile of each agency, showing information on population size, number of employees, and the authority under which each agency operates. Two of the agencies report to a mayor, four to a city manager/administrator, and three to a chief administrative officer. Populations range from nearly 24,000 to as many as 13 million.

PUBLIC WORKS FUNCTIONS

While not all the agencies are primarily public works agencies, each is responsible for some public works functions. With the exception of the Los Angeles County Internal Services Department (LAISD) and the Arizona Department of Transportation (ADOT), all are municipal or county public works agencies. Nearly all of the agencies manage fleet and equipment, streets, and stormwater. All but three agencies manage and maintain public buildings, while ten perform engineering design services and 11 perform functions associated with construction. LAISD, whose mission is to provide support services to other departments within Los Angeles County, manages and maintains buildings, equipment, and other real property, but is not responsible for solid waste, streets, stormwater, potable water, or wastewater.

In many jurisdictions, supplying potable water is the responsibility of an agency or utility distinct from the public works department. Among the survey group, four supply potable water to residents and businesses. A separately chartered agency or department performs this function in the other jurisdictions represented in the survey.

TABLE 3.1. CHARACTERISTICS OF AGENCIES SURVEYED

Agencies	Population of Area Served	Authority to Which Agency Reports	Number of Full-time Employees
St. Paul, MN	270,000	Mayor	472
Snohomish County, WA	494,000	County Executive	548
Waukegan, IL	70,000	Mayor	114
Lawrence, KS	54,000	City Manager	131
Billings, MT	81,150	City Administrator	102
Wakefield, MA	23,714	Board of Public Works	66
Round Rock, TX	36,000	City Manager	100
Pittsburgh, PA	375,000	Administrative Officer	800
Foster City, CA	29,000	City Manager	48
L.A. County, CA	13,000,000	Administrative Officer	1,109
Arizona DOT	3,858,825	Governor	4,400
Atlanta, GA	450,000	Administrative Officer	1,762

Source: APWA Research Foundation, 1994

Wastewater treatment, like potable water supply and distribution, is also often the responsibility of a special, sometimes multi-jurisdictional utility or agency. But some public works departments manage both the collection and treatment of wastewater. The survey identified three agencies that fall into this category (although one is involved only as a part owner of a treatment plant, with no responsibility for plant operation). Four agencies manage and maintain sewer collection systems (half with combined sewers and half with separated sewers), but none are responsible for treatment. Since many of the APWA management practices relating to wastewater apply to post-collection operations rather than to

sewer operations and since only a few of the surveyed agencies operate treatment facilities, the questionnaire discovered few impediments or barriers in this category.

Solid waste functions also are not well represented among the respondents. Only two agencies handle the full range of solid waste operations, including refuse and recyclables collection, material recovery, and landfill disposal operations; and only one is involved with municipal solid waste combustion. But four other agencies are responsible for collection of either refuse or recyclables or both. Solid waste's underrepresentation in the survey may reflect the trend in recent years towards privatization of functions formerly handled by municipalities and other units of local government. Once again, few barriers or impediments to the applicable solid waste practices were identified, with one or two exceptions.

All of the agencies had at least some degree of responsibility for the regular administrative functions associated with public works. Each agency reported some degree of responsibility for personnel management, finance and purchasing, records, and communications.

IDENTIFYING IMPEDIMENTS TO THE MANAGEMENT PRACTICES

A principal objective of the questionnaire was to identify impediments or barriers to complying with the APWA management practices. Understanding the state, federal, local, administrative, and technical roadblocks that hamper the efforts of public works administrators and staff to improve public works performance enabled the Corps of Engineers, APWA, and NAPA to propose strategies for overcoming or mitigating such roadblocks.

The questionnaire consisted of 170 questions, covering approximately 200 of the 417 management practices from the APWA manual (see Appendix D for a sample questionnaire). Respondents were asked not only whether they knew of any barriers or impediments their agencies might confront in complying with the management practices, but also to rate the severity of known impediments and provide specific details on the source of each impediment. Most of the respondents supplied ample amounts of information about impediments which they had identified. But the data indicating whether respondents perceived impediments as substantial, moderate, or minor was judged too subjective and of little practical value for this study.

The instructions for answering the questionnaire emphasized APWA's and NAPA's interest in federal, state, and local mandates that respondents regarded as hindrances to compliance with the management practices. Occasionally, respondents did not or could not identify or describe the exact source of a reported impediment. Nor did respondents necessarily distinguish between a regulation or law and the agency responsible for enforcing compliance with the regulation or law. In other instances, respondents said that the chief obstacle to complying with a particular management practice was in understanding how a mandate affected them. For example, some perceived the Americans with Disabilities Act (ADA) as a potential impediment to the extent that they lacked a clear idea of how it would be applied and enforced.

Several other significant federal policy initiatives (including stormwater permit regulations, landfill regulations, drinking water sampling and treatment requirements, and the Intermodal Surface Transportation Efficiency Act or ISTEA) were similarly perceived. Respondents were unsure how these initiatives would affect their agencies' ability to provide essential services, maintain capital assets, and

plan for future improvements. Often, they find the federal government's attempts to provide assistance confusing.

BARRIERS VERSUS IMPEDIMENTS

Based on an initial assessment of the survey data, the NAPA and APWA project teams agreed that a distinction between barriers and impediments was warranted. The questionnaire referred exclusively to barriers without distinguishing them from impediments. However, many of the questionnaire responses indicated that the barriers identified, while not causing insurmountable obstacles to compliance with the management practices, still hamper agencies' ability to comply with some of the practices. For this reason, NAPA and APWA chose to use the term *impediments* to describe federal, state, and local barriers that make compliance difficult but do not prevent it. The project team would continue to use the term *barrier* when referring to mandates and difficulties that render compliance nearly impossible. This usage is reflected in the text of this report.

ORGANIZING THE DATA

From the raw data, APWA project staff organized individual responses primarily according to the level of government from which mandates are generated. Generally, impediments fell into one of five categories:

- Federal mandates, laws, regulations, court decisions, and review and permitting procedures with a potential impact on local public works
- State mandates, laws, regulations, and review and permitting procedures that impede local public works
- Combined state and federal mandates, laws, and regulations
- Local or agency administrative obstacles
- Technical impediments

Within each of these categories, responses were classified into a range of subcategories, the most important of which were federal impediments and local or administrative obstacles. Impediments involving state mandates, while cited as often as federal impediments, were not as easy to organize into comprehensive categories because they varied significantly by state. A federal/state category covered combinations of federal and state mandates that were said to create problems for compliance with some management practices.

Technical impediments were mentioned in only a small number of survey responses. Defining and distinguishing these from other forms of impediments, especially administrative impediments, was difficult. In general, the APWA management practices require no special technical innovations or technology that is not already available. Numerous practices, however, are concerned with providing better management of infrastructure assets, which today, means using sophisticated, computer-based information systems -- for example, geographic information systems, computer aided design and drafting (CADD) systems, maintenance management systems and so on. Of the few technical impediments

identified, almost all expressed concerns that technical developments in information management systems had not kept up with agency needs. The project staff did not attempt to divide these into subcategories.

Federal Impediments

In grouping the federal impediments, project staff interpreted survey responses broadly. The response subcategories had to cover a varied range of individual responses. The intent was to make it easier to conduct meaningful analyses of the tabulated responses. Federal impediments included the following:

- Laws enacted by Congress -- Americans with Disabilities Act (ADA), Fair Labor Standards Act, Water Quality Act of 1987, Intermodal Surface Transportation Efficiency Act (ISTEA), etc.

- Regulations issued by a federal agency, as directed by a specific act of Congress -- National Pollutant Discharge Elimination System (NPDES) stormwater permit regulations, Subtitle D Landfill Criteria, etc.

- Compliance with federal regulations difficult for lack of funding ("unfunded mandates")

- Problems cooperating or communicating with one or more specific federal agencies or officials

- Impediments associated with federal permitting and review processes.

- Inflexible or unreasonable application of federal regulations or mandates by the federal government or enforcing agency

- Uncertainties about the correct interpretation of particular laws or regulations

Unfunded mandates -- federal laws or regulations with which local governments must comply despite the considerable costs of compliance and the federal government's failure to provide funds to do so -- represented one of the respondents' most prominent concerns. Though, in a sense, the problem is an administrative and resource related issue, it seemed appropriate that it be categorized as a federal impediment. Unfunded mandates force public works agencies to divert their resources (Funding, Manpower, and Materials) that could be used to meet local needs and apply those resources to meet Federal / national goals and objectives. This produces a resource constraint upon the municipalities which effects their ability to perform their daily operations. As such, unfunded mandates are not impediments to implementing good management practices. However, unfunded mandates are impediments to public works operations because they impact resource allocation and project priorities.

During the assessment visits, some participants pointed out that, given adequate funding, public works agencies probably could comply with many federal mandates no matter how burdensome. Even so, several involve issues that would make compliance difficult whether or not funding assistance was available.

Local, Administrative Impediments

Local, administrative impediments represented by far the largest category of impediments. The project team adopted fairly liberal criteria for deciding what to include in this category, just as it did for federal impediments. Obvious differences exist among the responses classified as local, administrative -- for example, some involve legislative or local policymaking issues while others chiefly involve management or organizational concerns. For the purposes of this study, however, there was no need to create separate categories of responses to account for such distinctions. Thus, included in the category of local, administrative impediments were the following:

- Funding and budget constraints
- Interagency communication problems
- Local county or municipal ordinances that prevent compliance
- Responsibility for function divided among two or more agencies
- Staffing limitations
- Time constraints

In tabulating questionnaire responses, the project team identified several subcategories of local, administrative impediments in addition to those above. They are presented and discussed in the next section of this report.

SUMMARY OF REPORTED IMPEDIMENTS TO THE MANAGEMENT PRACTICES

The remaining sections of this report summarize the responses to the questionnaire. Table 3.2. shows the distribution of the principal impediment groups by participating agency. Local, administrative impediments represented nearly three-fourths of all impediments to complying with the management practices. State imposed impediments accounted for 10.5 percent of the reported impediments, followed by federal impediments, representing 9.5 percent of all impediments. Respondents also said that a combination of federal and state impediments accounted for 5.1 percent of the total. Federal impediments, therefore, represented, in part, almost 15 percent of all reported impediments. Technical barriers represented about one percent of the reported impediments.

Generally, this distribution held for most of the agencies, with local administrative impediments being cited more frequently than other types of impediments. In some instances, agencies (Lawrence, Wakefield, Pittsburgh, and Waukegan) found it difficult to name any specific federal or state impediments that rendered compliance with the management practices difficult. Against this trend, however, Billings reported more state and federal (53) impediments than local, administrative impediments (39). Not to be misled, it is worth pointing out that the reported impediments do not necessarily represent different federal, state, or local mandates, but rather the number of practices with which respondents would have difficulty complying because of mandates, administrative barriers and so on. This means that a respondent might have checked multiple practices as subject to a single type of mandate or regulation --

TABLE 3.2. DISTRIBUTION OF IMPEDIMENTS BY AGENCY

Agency	Federal	State	Fed & State	Local, Admin.	Technical	Other	Totals
St. Paul	6	1	2	66	1	0	76
Snohomish Co.	1	1	0	0	0	0	2
Waukegan	0	1	0	29	0	0	30
Lawrence	0	0	0	17	0	0	17
Billings	20	23	10	39	2	0	94
Wakefield	2	0	2	57	0	0	61
Round Rock	8	5	0	25	1	2	41
Pittsburgh	0	0	0	20	0	3	23
Foster City	8	8	10	30	0	1	57
L.A. County	0	0	0	2	0	0	2
Atlanta	3	1	0	64	1	0	69
ADOT	2	15	3	33	0	0	53
Totals	50	55	27	382	5	6	525
Pct.	9.5%	10.5%	5.1%	72.7%	1.0%	1.1%	100%

Source: APWA Research Foundation, 1994.

the Fair Labor Standards Act, for example. In tabulating the results, the project team would count each as a separate impediment, although, it simply would reflect the fact that more than one practice could be affected by a single impediment. As for the Billings finding, which indicated 30 federal impediments (some in combination with state impediments), nine or ten federal mandates (mostly federal labor laws, OSHA requirements, Subtitle D landfill regulations, ADA, the Clean Air Act, wetlands regulations, and the Davis-Bacon Act) were actually identified. In some cases, Billings mentioned that different aspects of the Subtitle D regulations presented compliance problems for different solid waste disposal management practices. But most of the impediments reported simply called attention to the multiple practices for which a single federal (or state) mandate is an obstacle.

Snohomish and Los Angeles Counties indicated the fewest impediments among the twelve sites. This is the result of a combination of factors which include; functional areas of responsibility (Snohomish County is not responsible for potable or wastewater, and L.A.I.S.D. does not have responsibility for major environmental programs); and the availability of resources to operate programs.

Interestingly, the data do not suggest a clear correlation between the total number of impediments identified by each agency and agency size, type of government, or population. For example, Billings, which reported the most impediments, is comparable in size to Waukegan and Lawrence which reported far fewer impediments. By contrast one of the largest agencies -- LAISD -- reported only a few minor impediments, while another of the largest agencies -- ADOT -- reported over 50 impediments. (Narrative summaries of both questionnaire data and site visit responses can be found in Appendix H.)

Analysis of Reported Local, Administrative Impediments

Despite the diversity of the administrative impediments identified in the survey, several items predominated. Table 3.3. shows that funding and budget limitations were the most prevalent constraints (30 percent), followed by problems associated with interagency, interdepartmental, or interjurisdictional cooperation and communication (17.5 percent).

If shortage of staff and time/scheduling constraints are treated as a subset of funding related impediments, then the fraction represented by this category rises to about 40 percent. The relatively large group labeled "other impediments" reflects the many unique, agency-specific impediments that were difficult or impossible to categorize. For example, one agency said that its sludge management program was hampered by county ordinances which prohibit disposal of wastewater grit in county landfills. Like many responses, this impediment did not seem to fit into any of the impediment groups listed in the table and did not seem to match other impediments identified in the survey. Also included in this category were about 30 unidentified administrative impediments.

Analysis of Reported Federal Impediments

Approximately 15 percent of the reported impediments involved federal mandates and regulations of one kind or another. As Table 3.4 shows, personnel management and environmental regulations together accounted for a large fraction of federally imposed barriers. Respondents mentioned the Fair Labor Standards Act (FLSA), Affirmative Action requirements, the Americans with Disabilities Act (ADA), prevailing wage legislation, and minority business set aside requirements as impediments to compliance with various management practices. These represented about 20 percent of the federal impediments.

Impediments related to environmental regulation included the costs of the Resource Conservation and Recovery Act (RCRA) Subtitle D landfill regulations, the National Pollutant Discharge Elimination System (NPDES) stormwater regulations, and hazardous materials regulations. These accounted for about 38 percent of the problems believed to be caused by federal impediments. (Interestingly, respondents did not report any problems with Safe Drinking Water Act requirements, though concerns were discussed at several site visits.)

TABLE 3.3. LOCAL/ADMINISTRATIVE IMPEDIMENTS TO COMPLIANCE WITH THE MANAGEMENT PRACTICES (N = 12)

Local/Administrative Impediments	Number of Impediments	Percent of Reported Impediments
Funding & budget constraints	114	30.0
Shortage of personnel	20	4.9
Time/scheduling constraints	19	4.9
Insufficient computer resources	24	6.3
Problems cooperating or communicating with other departments, agencies, or jurisdictions	67	17.5
Local politics	9	2.4
Inflexible union rules or contract terms	4	1.0
Local bid process requirements	5	1.3
Liability concerns	3	<1.0
Inefficient permitting process	10	2.6
Elected officials unwilling or unable to fund training for staff	6	1.6
Other impediments	101	26.5
Total	382	100.0

Source: APWA Research Foundation, 1994

TABLE 3.4. FEDERAL IMPEDIMENTS TO THE MANAGEMENT PRACTICES (N = 12)

Federal Impediments	Number of Impediments	Percent of Reported Impediments
Federal laws pertaining to job discrimination and equal opportunity	5	6.5
FLSA provisions governing overtime & classification of exempt employees	5	6.5
Davis-Bacon limits agency ability to make best purchasing decisions.	5	6.5
Understanding OSHA regulations	7	9.0
Hazardous materials regulations	6	7.8
Costs of implementing ADA accessibility requirements	3	3.9
Costs associated with Subtitle D landfill regulations	9	11.7
Costs of complying with NPDES stormwater regulations	14	18.1
Difficulties in working with Army Corps of Engineers	3	3.9
Cumbersome nature of federal permit process	3	3.9
FEMA criteria for defining local floodplain	3	3.9
Other	14	18.1
Total	77	100.0

Source: APWA Research Foundation, 1994

Much of the concern expressed through the survey about stormwater and landfill regulations reflected uncertainty about the precise impact these regulations might have on stormwater management and landfill design and operation in the future. Some were not under any immediate pressure to deal with the provisions of the stormwater rules, for example, but believed that they could be and were unsure about how to plan for it. Similar doubts were expressed about the landfill regulations, although in this case only two of the agencies surveyed were involved with operating an active landfill.

Finally, the responses included a significant number of either unknown or uncategorizable impediments at the federal level, representing about 18 percent of the total.

OTHER IMPEDIMENTS

Little of the survey information pertaining to state laws and regulations was specific enough to permit any meaningful analysis or comparison for this summary. Over three-fourths of all state impediments were reported by two agencies -- Billings and Arizona DOT -- and principally involved personnel management and environmental regulations. However, the site visit interviews yielded significant information on state impediments; Chapter Four contains a discussion of this information.

Only five examples of technical impediments were identified, three of which related to a lack of adequate information management capability.

CONCLUSION

Most of impediments agencies described in the survey were either internal or local, administrative impediments. Lack of funding was the reason most agencies experienced difficulty in complying with the management practices. In some cases, the lack of funding was perceived as an impediment to complying with a federal mandate.

Federal impediments represented about 15 percent of the total, if the federal/state category is included in the count. A possible explanation for the low percentage is that where the APWA management practices refer to applicable federal laws or regulations, agencies must comply with such laws or regulations in order to comply with the practice itself. Therefore, the survey should have revealed few federal impediments to complying with the practices, since doing so generally implies compliance with any applicable federal (and state and local) laws and regulations. This, of course, does not mean that the surveyed agencies will not face impediments or difficulties in complying with federal mandates or that complying with those mandates will not impede their ability to comply with other management practices.

IV. SUMMARY OF SITE ASSESSMENT INFORMATION

The site assessments provided an opportunity to confirm questionnaire findings and to collect additional information about the APWA management practices. Impediments to practices not included on the questionnaire were also identified. Using a specially designed checklist (see Appendix F), visiting assessment teams asked respondents which practices seemed unclear or hard to understand, which were necessary for effective operation, and whether agencies actually complied with the practices. For the latter, the team did not require written proof of compliance; respondents were asked simply whether their respective agencies had the practice. Respondents sometimes provided documentation of compliance when they were able to do so. APWA plans to use the supplemental information to revise and improve the *Public Works Management Practices* manual and to develop programs to encourage agencies to undertake self-assessment.

ASSESSMENT PROCEDURE

With the help of the checklist, the site assessment teams interviewed agency staff about barriers and impediments to improving effectiveness and efficiency. Of particular interest were federal laws, regulations, court decisions, and practices which get in the way of improving performance and operations. Potential impediments were not necessarily impediments to the management practices. In some cases, site visit participants reported problems that, upon further analysis, were judged not to be impediments to the management practices, but which could be considered impediments to effective operations. The assessments also allowed the respondents to voice other important concerns about prevailing and impending challenges and opportunities confronted by public works agencies. Both positive and negative observations were noted.

OVERVIEW OF AGENCY CONCERNS

Generally, the concerns expressed during the site interviews reflected both the tone and substance of information supplied from answers to the questionnaires (see Appendix H for summaries of site assessment responses). Respondents said that local, administrative impediments -- inadequate resources especially -- presented the most frequent challenge to improving operations and efficient service delivery. Funding shortages and insufficient staff make it difficult (though not impossible) for many of the agencies to plan strategically for future capital projects and to improve operations and maintenance practices. These problems seemed especially acute for agencies with inventories of many older facilities -- Wakefield, St. Paul, Lawrence, Pittsburgh -- and less so for agencies whose infrastructure was of more recent construction (for example, Foster City, Round Rock, and L.A. County). But the seemingly unending fiscal and budgetary constraints that all local governments must face are compounded by demands from the states and the federal government which have transferred heavy responsibility for solving a number of national problems to local governments.

FEDERAL MANDATES

Many agencies expressed concerns about federal mandates -- including some about which no concerns were reported on the questionnaire. In general, the concerns were with federal mandates whose full impact was yet to be felt. The reason is probably that these mandates derive from legislation only recently enacted by Congress or federal regulations issued within the past three to five years.

Based on the questionnaire and site visit responses, the most significant federal mandates confronting the agencies included the following:

- The National Pollutant Discharge Elimination System (NPDES) stormwater regulations
- The Resource Conservation and Recovery Act (RCRA) Subtitle D Municipal Solid Waste Landfill Criteria
- The Safe Drinking Water Act (SDWA) Lead and Copper Rule
- The Americans with Disabilities Act (ADA)

Each of these mandates stems from legislation intended to address issues of broad national interest -- from civil rights to surface transportation policy to environmental quality and to the health of Americans. Though these mandates differ greatly in terms of policy goals, the agencies or institutions subject to their requirements, and enforcement provisions, a significant share of the responsibility for ensuring compliance will be borne by public works providers.

Administrators at the site visit agencies phrased their concerns in several ways. Some asked questions such as the following: "If ADA requires curb cuts at all or most street crossings, will my agency be permitted to install them over time by coordinating the work with concurrent projects?" Or, "will my agency be required to undertake massive, costly, and disruptive retrofits for existing, unmodified curbs at crosswalks and street intersections?"

These kinds of questions exemplify the range of concerns expressed by many site visit participants: that ADA, SDWA amendments, stormwater and landfill regulations, and other federal mandates would be applied inflexibly, with little consideration for limited resources or time constraints. In almost all cases, participants prefaced their concerns by praising the intent of the mandates; they understood and appreciated the federal government's and the nation's interest in improving access to public accommodations for the disabled, providing safe, uncontaminated drinking water, reducing water pollution and so forth. The problem is the lack of resources -- personnel, time, technical assistance, and especially, funding -- that is needed locally to address the issues with which these mandates are concerned. Hence the expression "unfunded mandates." At the same time, the participants were unsure about what to expect and who would enforce the new mandates, making it more difficult to anticipate the resources they might need to meet them.

In the sections that follow, summaries of the main provisions of these legislated mandates and the potential for flexible administration is discussed. Discussion of the site visit participants' key concerns about the impact of these mandates immediately follows each summary. Where relevant, other

research findings are introduced, particularly as they relate to the actual or estimated costs of complying with each of the mandates. Following that, concerns about other areas where federal laws or actions affect public works operations are discussed and evaluated.

NPDES Stormwater Regulations

The NPDES regulations governing stormwater derive from the 1987 Water Quality Act, which was enacted in response to an earlier federal court decision that said EPA must regulate the discharge of stormwater runoff into receiving waters of the United States. The Act required cities and counties that operate separate storm sewers and have populations of 100,000 or more (so-called Phase I discharges) to apply for and obtain NPDES permits to discharge stormwater from storm sewers. EPA promulgated the final regulations, following extensive comments from reviews of earlier drafts, in November 1990. To meet the requirements for a permit, cities, counties, and designated industries must implement a range of measures:

- Identify stormwater outfalls
- Sample dry weather flows to detect illicit connections from the sanitary sewer system and illicit storm sewer discharges
- Demonstrate legal authority to control stormwater discharges
- Provide a topographic map and description of current and projected land use activities
- Describe existing non-structural controls (public education programs, litter control, street sweeping, etc.) and structural controls (detention basins, bar screens, grass swales, etc.) to reduce pollutant loading of stormwater flows
- Sample and analyze system discharges during wet weather to identify pollutants
- Identify available financial resources to fund program activities

The preceding were to be accomplished at various stages during a two-part application process. In addition, municipalities and counties subject to the regulations must develop a comprehensive plan for controlling or preventing polluted stormwater discharges to the "maximum extent practicable." Both the EPA and local agencies hope that program objectives and permit requirements can be met using non-structural source controls, such as educating the public about proper disposal of used motor oil, regulating the application of lawn chemicals, and improving maintenance of stormwater drainage facilities. Since these types of controls are less expensive (though costly nevertheless) than most structural controls, which typically involve large capital expenditures, permittees will likely attempt to achieve water quality goals using just these kinds of best management practices if possible. As of this date, EPA had not issued regulations for separately storm sewered areas with populations of less than 100,000 (so-called Phase II discharges), as anticipated.[6]

Costs of Compliance. Because of the magnitude and complexity of both the stormwater permit process and the measures permitted jurisdictions must carry out to comply with permit requirements, most

authorities predict that local governments will have to provide substantial fiscal outlays to meet the costs of compliance. Two recent, independent surveys indicate that municipalities and counties have already spent an average of $600,000 to $800,000 each on application costs for NPDES permits.[7] According to one survey, conducted in early 1992, the Cities of Columbus, Ohio, Tulsa, Oklahoma, and Ft. Worth, Texas had each expended over $1 million for Part I application costs alone.[8] A second survey, conducted by the National Association of Flood and Stormwater Management Agencies (NAFSMA), reported actual Parts I and II application costs of nearly $42 million for 64 cities and counties.[9] The survey estimated application costs of $130 million for the approximately 180 cities and counties required to obtain permits under Phase I of the program. In addition, NAFSMA projected permit compliance costs "to range from $1.5 - $3.2 billion over the next five years for programs and activities" required by the permits.[10]

Areas of Potential Flexibility. Whether the stormwater regulations contain room for flexible administration or alternative approaches that would reduce program implementation costs is unknown at this time. The regulations, unlike the Subtitle D landfill regulations (discussed in the next section), contain no provisions that would allow agencies in states with EPA approved programs to seek solutions that reflect local needs and conditions.

Given the broad scope and authority of the stormwater regulations, opportunities for less costly approaches to managing local non-point sources of pollution will probably be very limited.

Obviously much will depend on how strictly EPA and other regulatory agencies interpret the requirement that local jurisdictions control pollutant discharges to the maximum extent practicable. If EPA concludes that water quality standards can be met *only by* requiring jurisdictions to treat stormwater -- just as they treat municipal wastewater -- then flexible application of the NPDES regulations will be very difficult to achieve. If, on the other hand, EPA stresses non-structural controls in writing permits, those involved in the process will probably have greater freedom to explore less costly and less burdensome options.

Concerns Expressed about the Stormwater Regulations. Four of the twelve site visit agencies (Atlanta, Snohomish County, St. Paul, and Pittsburgh) had previously been identified among the 220 Phase I cities and counties required by NPDES to apply for stormwater discharge permits.[11] Pittsburgh (along with 29 other cities) was subsequently exempted from the permit program because its population is wholly served by a combined sewer system. (Portions of the populations of Atlanta and St. Paul are served partially by combined sewer systems, but were included in the program because each city has more than 100,000 people served by separate storm sewers.) The Arizona Department of Transportation also filed an application for a General Permit covering construction activities of five acres or more.

Atlanta, Snohomish County, and St. Paul have completed or are in the process of completing NPDES permit applications and are awaiting notification from their respective state regulatory agencies concerning permit conditions. All indicated that limited funding is the most significant impediment to full compliance.

During the site visit interviews and in further personal communication, Public Works Department staff from St. Paul reported that the Department had not completed wet-weather sampling of stormwater discharges, as stipulated by Part II of its permit application. The Department had completed other Parts I and II requirements (i.e., dry-weather screening for illicit discharges from the sanitary sewer system, identification of outfalls, etc.), but currently lack sufficient funding to complete the sampling and

monitoring activity -- a relatively time-consuming and costly process. Any extra funding for complying with the stormwater regulations must be requested from the city council.

The St. Paul staff expressed concern about possible pollution prevention controls it may have to implement to satisfy permit requirements. But it is uncertain about what measures it will be ordered to take. Non-structural controls, such as establishing a program to collect used motor vehicle fluids and augmenting the city's current street cleaning operations, would be very difficult to manage within the existing departmental budget. Structural controls to remove solids, oils, and grease from stormwater flows would be even more costly and difficult to fund. However, the Department believes it is making good faith efforts to meet compliance deadlines and is cooperating with its state permitting agency, the Minnesota Pollution Control Agency, which recognizes the effect that funding constraints place on the Department's efforts.[12]

The site visit teams heard similar concerns about NPDES in both Atlanta and Snohomish County. The City of Atlanta's Bureau of Highways and Streets has submitted Parts I and II of its application for a discharge permit, but does not know its current status. Nor has it been able to complete the required survey of its storm sewer system, which serves about 100 square miles (sq mi) of the City's total area (about 30 sq mi are served by combined sewers). In follow-up communication, the Bureau reported that it has spent at least $300,000 to complete the permit application and about $3 million for the drainage survey; it presently lacks the resources to hire staff needed to finish the survey. Like St. Paul, the Bureau is unsure about what controls the permit will require of the City. Structural controls have not been excluded, but the City has hired a consultant to evaluate non-structural controls such as street sweeping. Any controls will be expensive and the Bureau does not know how it will obtain the necessary funding.[13]

Snohomish County, has also submitted a two-part application for a stormwater permit. Because of a recent state tax initiative, the County has a limited funding base from which to finance any water quality enhancements. Any new pollution prevention controls that would be required as part of an NPDES permit would place a heavy burden on the County's budget.[14]

Subtitle D Municipal Solid Waste Landfill Criteria

In October, 1991, the EPA announced revised criteria for municipal solid waste landfills (MSWLFs) under Subtitle D of the Resource Conservation and Recovery Act. EPA defines an MSWLF as "a discrete area of land or an excavation that receives household waste, and that is not a land application unit, surface impoundment, injection well, or waste pile."[15] An MSWLF may receive commercial solid waste, nonhazardous sludge from wastewater treatment facilities, industrial wastes, and may be publicly or privately owned. The criteria apply to all MSWLFs that continued to accept waste after October 9, 1993. Except for very small landfills located in generally arid or especially remote areas, all landfills must comply with the regulations' location restrictions, design criteria (new and lateral expansion units only), and operating criteria. Owners or operators of MSWLFs must install groundwater monitoring wells and take corrective action when maximum contaminant levels are exceeded. The criteria also require closure and post-closure care (applying and maintaining a final cover, monitoring groundwater and methane gas, and managing leachate) for landfills that stop accepting waste and owners or operators must demonstrate financial assurance for closure and post-closure care and any necessary corrective actions. In an effort to build flexibility into the regulations, EPA will grant relief from a

number of the requirements (such as allowing use of alternative daily cover materials) to owners or operators in states that have EPA-approved permitting programs.[16]

Costs of Compliance. No comprehensive research has been performed on the overall cost of ensuring that new and existing landfills comply with the Subtitle D regulations. However, there is nearly universal agreement among knowledgeable observers that planning, designing, constructing, operating, and closing a landfill in accordance with the regulations will be expensive. For older landfills that were accepting waste as of October 9, 1991 and beyond, groundwater monitoring will be one of the largest costs. If the landfill was designed and constructed without wells, they must be retrofitted to the landfill. The operator must sample and test for groundwater pollutants throughout the active life and postclosure period of the landfill.[17]

To ensure that sufficient financial resources are available for closure, postclosure care, and any corrective actions, owners and operators must demonstrate the availability of such resources while the landfill is still active. This may take the form of a trust fund, bond, or insurance policy, all of which will require direct payments by the owner or operator. For some, this requirement could range in cost from $15 million to $50 million, depending on the size of the landfill and any local conditions that might affect closure and postclosure operations.[18]

Since the early 1980s, most new landfills and lateral expansions of existing landfills have been designed and built according to the engineering standards incorporated into Subtitle D. In some cases, stricter state regulations prompted developers of new facilities to adopt the standards. By 1989, two years before the Subtitle D regulations were issued, a composite liner consisting of compacted clay and a geosynthetic membrane, leachate collection, groundwater monitoring wells, and landfill gas monitoring and control systems had become standard features in modern landfill design. Thus, the fact that landfill design, construction, and operating practices had been evolving towards the Subtitle D criteria may have mitigated the cost impact to some extent.

Areas of Potential Flexibility. The Subtitle D landfill criteria include provisions designed to allow flexible implementation and consideration of local conditions. Unlike a number of other environmental mandates promulgated by EPA, the criteria seem to have the most explicitly defined conditions for such flexibility. For example, the criteria allow states or tribes with EPA-approved landfill permitting programs to locate "new or laterally expanding landfills in wetlands, providing certain conditions are met."[19] Additionally, states with approved programs may permit owners/operators to use alternative daily cover materials, approve "landfill designs appropriate for site-specific conditions," and apply flexibility in the areas of groundwater monitoring, corrective action, closure and post-closure care, and financial assurance.[20] As EPA has only recently begun to approve state programs, it is too early to judge the effect the policy might have on local programs seeking more flexibility and site-specific solutions to their needs. And, some states may not be pursuing the authority to exercise flexibility in any case (possibly because their own landfill regulations are already as stringent or more stringent than EPA's and the deadline for compliance with Subtitle D expired on October 9, 1993).

Concerns Expressed about the Subtitle D Landfill Regulations. Only the City of Billings and the City of Atlanta operated active landfills at the time of the site visits. Atlanta planned to close its landfill; initial closure costs were expected to reach $7 million, with total postclosure costs reaching $22 million. Billings reported that its landfill complied with Subtitle D regulations, but only through implementation of measures that the City believed were unnecessary and costly. According to Billings

Public Works staff, the landfill rests on a practically impermeable 250 ft. thick shale base, well above any underground aquifers. In addition, the Billings climate is dry and mild, with average annual precipitation of 13 inches. Hence, the landfill generates little or no leachate that could percolate into groundwater sources even if it could penetrate the shale base beneath it. Yet, the City was required to install more groundwater monitoring wells than may have been needed in order to comply with the Subtitle D criteria. The City indicated it was aware that the State of Montana had applied for EPA approval of its permitting program but that approval had not been granted to date. It was therefore unable to take advantage of the regulatory flexibility that such approval could have furnished with respect to groundwater monitoring requirements.[21]

SDWA Lead and Copper Rule

Enacted by Congress in 1974, the Safe Drinking Water Act (SDWA) granted EPA the authority to regulate the quality of the United States' water supply. EPA not only had been responsible for maintaining existing drinking water standards (referred to as maximum contaminant levels or MCLs after 1974), but for establishing limits for all contaminants that might represent a health risk to humans. MCLs were to be based on a relatively strict best available technology (BAT) standard and then "a second numerical standard that is based upon a goal of no adverse health effect."[22] States were responsible for ensuring that community water systems complied with the standards. However, prior to 1987, EPA made limited modifications or additions to previous contaminant levels.[23] Thus, Congress in 1986 amended the SDWA to require EPA to promulgate regulations for 83 identifiable contaminants and to erect a firm time frame within which EPA must act. Congress also authorized EPA to regulate monitoring and treatment techniques for drinking water supplies that unacceptably exceed the established MCLs. Subsequently, EPA set rules for a number of contaminants, including trihalomethanes, total coliform bacteria, synthetic organic and inorganic chemicals, and lead and copper. For lead, the action level has most recently been set at 0.015 milligrams per liter (mg/l). Monitoring activities require that water utilities collect "first draw" samples at consumers' taps, over two six-month periods. If 10 percent of the samples exceed the action level, then the utility must study treatment options to determine whether the problem is produced by the water source or the distribution system.

The most common treatment techniques for the latter include phosphate and silicate inhibitors, which are used to coat lead service lines and prevent corrosion. Replacement of lead service may be required if corrosion control treatments are ineffective. However, there is a potential technical problem with this strategy. Since much of the lead found in drinking water leaches from household plumbing, not the distribution lines that service homes, the mandated solutions may have little effect on lead levels.[24]

Costs of Compliance. Although no data are available on the cost of implementing the Lead and Copper Rule, EPA has estimated that about 20 percent of the water systems in the U.S. will have to treat pipes for corrosion control. While it is too early to say how many will have to begin replacing lead service lines, some will certainly have to do so. One estimate suggests that this may require about $1.1 billion in capital expense and $200 million for annual operating costs.[25]

Areas of Potential Flexibility. The language in the Rule seems to leave little if any room for flexibility. It explicitly requires systems to replace lead service lines should corrosion control treatments fail to remedy the problem. No consideration is given to other technically or economically feasible options water utilities might explore. Nor does it suggest a solution for communities where indoor plumbing is determined to be the source of the lead.

Concerns Expressed about the Lead and Copper Rule. Four of the site visit agencies -- Waukegan, Foster City, Wakefield, and Round Rock -- are responsible for municipal water supply and distribution. Waukegan draws its water from Lake Michigan while Round Rock takes its water from both reservoir and groundwater sources. Foster City stores finished water in fully contained, above-ground tanks located within the City; the water is piped from the City of San Francisco. San Francisco treats the water before distribution to surrounding communities. The Town of Wakefield draws 15 percent of its water from a lake within the Town and 85 percent from reservoirs operated by the Massachusetts Water Resources Authority (MWRA).

With the passage of the SDWA Amendments in 1986 came several new mandates with which local governments were expected to comply. Except for minor funding assistance for small water systems, the Amendments failed to provide local governments with the resources to meet new, tighter standards for drinking water. The water utilities of the four agencies mentioned are required to monitor and regulate lead in their drinking water supplies. The City of Waukegan, for example, samples and tests tapwater every six months, as required by the Lead and Copper Rule. The cost is relatively small -- about $5,000 to $8,000 annually. But the City has begun corrosion control treatment of its lead service anyway, using a phosphate inhibitor at a cost of about $50,000 annually. The City expressed concern that sample results may show concentrations of lead that exceed the established 0.015 mg/l level in more than 10 percent of the samples. If the EPA concludes that the City's corrosion control strategy is ineffective in bringing the system into compliance, the Lead and Copper Rule will require the City to replace the lead service lines. For the City, this solution would be extremely costly and, as mentioned earlier, perhaps as ineffective as corrosion control. The Water Department believes that the source of the lead is in the home, in the old lead solder that connects copper pipes to brass faucets and, in some cases, in the brass fixtures themselves.[26]

Americans with Disabilities Act

The Americans with Disabilities Act (ADA) prohibits discrimination against persons with disabilities in employment, public accommodations, public transportation, and telecommunications. Because it was enacted as a civil rights law, ADA is to be enforced in response to actions of an individual or group alleging violations of its provisions. Under Title III of ADA, which applies mostly to buildings, streets, and parking lots, owners of such public accommodations must provide disabled persons equal access to facilities that house public services, or are used for public gathering, education, or recreation. Equal access means that accommodations available to the general public or similar accommodations are furnished to disabled persons as well. Public agencies that manage buildings, parking facilities, public transit, streets and other rights-of-way are required by ADA to remove barriers that restrict disabled persons' access to these facilities. Required actions may include making curb cuts in sidewalks, installing wheelchair ramps, widening doors, replacing and repositioning sinks in restrooms, an so forth.[27]

Costs of Compliance and Areas of Potential Flexibility. No published estimates of the overall cost of ADA to agencies that operate public facilities are available. Obviously, agencies that are responsible for substantial numbers of older buildings may face expensive retrofits for those buildings to improve accessibility. Whether agencies will be allowed to consider available resources as they develop programs to comply with ADA requirements depends on how narrowly the U.S. Department of Justice interprets the law. When the federal regulations are issued, the outlook may become clearer.

Concerns Expressed about ADA. While nearly all of the site visit agencies expressed concerns about the potential impact of ADA Title III requirements, none reported actual difficulties with the requirements to date. No complaint or lawsuit alleging violation of Title III had yet been filed against any of the agencies. Most, however, acknowledged areas of non-compliance and that corrective measures would be taken as resources became available. The agencies' primary concern was that they would be compelled to make sweeping modifications of public facilities, with little consideration for available resources and time.[28]

CONCERNS ABOUT OTHER FEDERAL MANDATES

Several additional areas of concern for agencies affected by recent modifications to federal legislation are mentioned in the following.

The Intermodal Surface Transportation Efficiency Act

Several agencies expressed confusion about provisions of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) that may or may not apply to them. Although its provisions are complex, ISTEA was intended to give local governments greater control and decisionmaking flexibility with respect to local transportation needs. In addition to authorizing $121 billion for highway programs and $31 billion for transit programs for fiscal years 1992-1997, ISTEA shifts much of the control of project selection and transportation planning to metropolitan planning organizations (MPOs). Major features are listed as follows:

- Functional reclassification of major roads into a single National Highway System (NHS)
- Establishment of Surface Transportation Program (STP), providing $23 billion over six years in block grants for use on NHS, Federal-Aid-Roads, bridges, safety, carpool related and bicycle/pedestrian projects
- States permitted to transfer 50 percent of NHS funds to STP
- MPO is responsible for developing long-range transportation plan and Transportation Improvement Program (TIP)
- MPO, in consultation with the state, selects projects in urban areas with over 200,000 people. NHS, bridge, and interstate maintenance projects are selected by the state
- The state, in consultation with the MPO, selects projects in urban areas with 50,000 to 200,000 people
- States will develop and implement management systems for pavements, bridges, highway safety, traffic congestion, public transportation facilities and equipment, and intermodal transportation facilities and systems[29]

Seven agencies, all representing jurisdictions with the largest populations among the 12 agencies, remarked on ISTEA during interviews and follow-up discussions. Generally, the agencies perceived ISTEA, not as an impediment or barrier, but as a potential opportunity to better address local and state transportation needs.[30]

The most common concern was uncertainty about the eventual impact of the law. St. Paul, for example, said that the legislation represented "an opportunity, but one whose meaning was still unclear, and for which getting reliable information on funding and regulations was difficult." Few thought their jurisdictions had benefitted in any direct way from the legislation. For example, Pittsburgh said that ISTEA so far had produced no new or additional funds to help the city meet its needs.

The impression seemed to be that either states in some cases were resisting shifting control of the project selection process to the MPOs or that the MPOs lacked the essential expertise and "practical experience" to set the right policies. As a consequence, local agencies, requesting approvals for projects, say they remain unclear about the availability of funding and the regulations governing the process. In site visit interviews, staff from the Cities of Atlanta, Pittsburgh, Billings, Snohomish County, and St. Paul expressed doubts about the ability of the MPOs to understand local priorities. Complicating the issue further, they commented, are the requirements in ISTEA that MPOs incorporate, as part of their long-range plans, proposals to construct or enhance bicycle and pedestrian facilities.

On the other hand, Snohomish County and St. Paul were somewhat optimistic that ISTEA would be an improvement over the previous system given time and once agencies learn how to work with it.

Los Angeles County Public Works expressed concerns about ISTEA's requirement that states use recycled scrap tire rubber in a portion of the federally funded asphalt paving used in each state beginning in 1994 and provisions that states develop and implement the six management systems mentioned above.[31] The Department was especially concerned that the pavement management system it presently uses would not meet new standards for such systems now under consideration by the U.S. Department of Transportation.

The Fair Labor Standards Act

Few other federal mandates were identified by site-assessment agencies as potential impediments to effective performance or compliance with the management practices. Of those that were identified, the Fair Labor Standards Act (FLSA) requirements regarding classification of exempt and non-exempt employees and overtime pay were among the only ones that seemed significant. Five agencies commented on what they perceived as "decreasing flexibility for classifying exempt employees." One agency, Foster City, said that it must now try to avoid having staff work overtime no matter what the need in order to comply with FLSA standards. The affected agencies did not indicate that the standards create excessively burdensome costs for the agencies, merely that it is more difficult to work out flexible arrangements with employees who may or may not be exempt from FLSA requirements.

The Davis-Bacon Act

The Davis-Bacon Act of 1931 requires that contractors or subcontractors on federally funded construction projects pay wages at rates equal to or greater than prevailing wage rates. The Act defines

prevailing wage rates as those typically paid for similar types of work on similar projects within the immediate geographic area, as determined by the Secretary of Labor.

Historically, the Davis-Bacon Act has had significant impact on public works projects because of the federal government's role in financing many of these projects. Federal-aid highways and wastewater treatment plant construction are two examples where federal funding has had such an impact. But the Act has had little impact on many of the site visit agencies because state and even local laws are at least as restrictive as the federal law. California, Minnesota, Texas, and Massachusetts, where some of the site-visit agencies are located, have such state laws. Atlanta has a local ordinance that adopts the Davis-Bacon Act. And Wakefield reported that the federal law was of little or no consequence because state law requires prevailing wages on all town contracts.

However, two or three of the agencies did voice concerns about the Act, particularly with the way in which the local wage rates are determined and communicated to agencies by the Department of Labor. Lawrence, for example, said its costs are raised substantially because it is considered part of the Kansas City-Topeka labor market where wage rates are higher than in Lawrence.[32] For ADOT, the problem concerns the timeliness with which the updated wage rate determinations are communicated to contractors preparing bids on ADOT projects. When the Department of Labor fails to notify the contractor of changes in wage rates within a reasonable time period, administrative costs for the bid increase.

Federal Agency Reviews of Public Works Projects

Surprisingly, most of the agencies expressed few concerns about federal environmental review and permit requirements for public works projects, with the exception of the Arizona Department of Transportation (ADOT). Because many of ADOT's projects involve the multi-jurisdictional authority of several federal agencies, the agency must usually submit to more than one review process before a project can begin. Frequently, this includes applying for a dredge-and-fill permit under Section 404 of the *Clean Water Act*, if wetlands are involved. In such circumstances, ADOT must deal with both the Corps of Engineers and the EPA. Moreover, the agency's project plans often must be reviewed by the Federal Highway Administration, the Bureau of Indian Affairs, the Forest Service, the Fish and Wildlife Service, and the Bureau of Land Management to address various environmental and local community concerns about the project. It must also coordinate project objectives with the concerns and needs of 11 tribal councils. Site visit participants mentioned an example of Native American sacred areas that did not appear on available maps. Since the review processes are fragmented and sequential rather than coordinated, it is very hard to fulfill commitments to project timetables and budgets. Consequently, projects are frequently delayed. ADOT said that it now seeks financing of highway projects through bonds, developer contributions, and so forth to avoid some of requirements tied specifically to acceptance of federal assistance for projects.[33]

Integrating the multiple review processes so that all or at least most of the items federal agencies want addressed are dealt with concurrently would reduce the burden ADOT now confronts when federal agencies review project plans. In a report issued in November 1992, the Advisory Commission on Intergovernmental Relations documented the problems that the federal environmental decisionmaking process generates for infrastructure.[34] The report's recommendations for streamlining that process would seem to be applicable in this case.

UNFUNDED MANDATES

If the site visit participants shared an opinion regarding the impact of federal mandates, it was that the failure to provide at least some kind of matching assistance to comply with the mandates places an enormous burden on agencies already struggling to provide essential services. For these agencies, this situation means that funds targeted for improving maintenance management and implementing other good management practices are more vulnerable to reduction or elimination. In fact, several agencies said that meeting the variety of new requirements mandated by Congress and federal agencies -- from Subtitle D to the stormwater regulations to ADA -- could force a substantial number of local governments to divert resources from needed or useful programs. Agencies such as St. Paul, Lawrence, Billings, Wakefield, Pittsburgh, and Snohomish County all mentioned that implementing new management tools to provide better maintenance for public works facilities requires funding. To comply with some of the most recent federal mandates, public works agencies may find it necessary to defer funding for these tools.

CONCERNS ABOUT STATE MANDATES

State regulations and mandates often mirror federal mandates. And, states, by federal law, are often assigned responsibility for administering and enforcing federal regulations. The NPDES stormwater regulations and the RCRA Subtitle D Landfill Criteria are examples of this. It would not be surprising then for local agency staff to express uncertainty about whether a particular mandate is derived from the federal government or the state. For example, one of the site visit agencies described an incident in which an explosion caused by an illicit discharge into a sanitary sewer led to confusion about who or what agency could take responsibility for decisions to resolve the emergency. Part of the problem stemmed from confusion about a rule governing joint decisionmaking responsibility that one of the agencies involved believed was a federal OSHA regulation but that was, in fact, a state regulation. The site visit agency thought that the confusion over the rule created an unnecessary delay and additional costs for all of the agencies involved.

Aside from this example, the site visit agencies reported few major problems with state mandates and regulations. Those judged important enough to mention were unique to individual agencies, making it difficult to identify any trends or similarities among mandates generated at the state level.

A sampling of some of the concerns is as follows:

- The Pennsylvania Department of Environmental Regulation requires that the City of Pittsburgh construct enclosures for its water reservoirs by 1995; by one estimate, the total cost could reach $120 million.

- In Billings, concern was expressed about a state law requiring the City Council and the Mayor to approve all Department of Public Works contracts; the Department believes that this creates too many delays in getting projects started.

- Snohomish County expressed strong concern about the State of Washington's Model Toxic Control Act, which regulates cleanup of contaminated sites; the County has to prove that it was not responsible for the contamination of sites that occurred prior to its purchase of those sites; this is very expensive in itself and cost the County about $1 million in 1992.

- In St. Paul, state law exempts the Water Department (a separate agency) from having to obtain a permit to build or excavate in the right-of-way; Public Works Department staff believes this exemption makes it hard to ensure that restoration meets the Department's standards.

- State law entrusts pollution mitigation enforcement to the City of Atlanta, but the City claims it lacks the legal authority to enforce pollution laws.[35]

Though the reported state impediments had little in common, site visit agencies did point to one category of impediment with which many of them must contend: state imposed constraints on the bid process. Almost all of the agencies are required to award contracts for goods or services to the lowest bidder. While this requirement, for the most part, was not considered a major impediment to effective operations, respondents generally agreed that it hampers their ability to acquire quality services, limits the applicability and use of life-cycle cost methods, encourages legal challenges from contractors seeking full recovery of costs, and results in higher long-term costs -- costs that might have been avoided had other factors been considered during the bid evaluation phase.

Agencies attempt to circumvent the low bid requirement by prequalifying bidders or writing project specifications to ensure that only qualified bidders submit proposals. Some, however, must rely entirely on the latter approach because state law (Round Rock and Snohomish County) also bars prequalification of potential bidders. Most of the site visit agencies favored a more flexible system in which factors such as previous experience and operation and maintenance costs are considered during bid evaluation rather than just lowest initial cost.

LOCAL, ADMINISTRATIVE IMPEDIMENTS

Though the site visit interviews revealed that agencies have important concerns about state and federal mandates, concerns about local or administrative impediments to improved performance were also numerous. Local or agency administrative impediments such as lack of funding, staff shortages, and scheduling constraints hamper or prevent agencies from complying with the APWA management practices. Such were the findings reported in Chapter Three (see Table 3.3.), where funding and budget constraints alone accounted for 30 percent of local, administrative impediments. However, the questionnaire also identified interagency and interjurisdictional communication as a significant impediment to effective performance.

Concerns About Local, Administrative Impediments

Lack of resources was frequently mentioned as one of the barriers to complying with state and federal mandates. But the lack of qualified staff, funding, and computer resources was also identified as major reason why most or even all of the site visit agencies are not able to manage and maintain infrastructure assets as well as they would like.

Conceivably, resources that might have been available for infrastructure maintenance and rehabilitation instead are diverted to help local governments comply with some of the mandates mentioned above. Whether this is true is difficult to say. However, both the questionnaire data and site visit interviews confirmed that respondents generally have been unable to invest resources in information management tools critical to the task of defining infrastructure needs. With respect to public buildings,

streets, and water resources infrastructure (stormwater, wastewater, and potable water facilities), respondents were asked whether their agencies had begun efforts to inventory and document the short and long-range maintenance and repair needs of these facilities.

The APWA management practices specify that agencies develop and maintain inventories of major public works facilities including "storm and sanitary sewers, water distribution systems, roadways, curbs, gutters, sidewalks, street lights, traffic control devices, trees, buildings, vehicles, and signs." Agencies should conduct regular inspections of these facilities to identify deficiencies and maintenance needs and provide a medium for storing and retrieving all inspection data. This could include life-cycle cost data and information needed to develop schedules for replacing or renewing major components. As many of the site visit participants pointed out, however, these types of infrastructure management programs require funding -- usually for computer resources, trained personnel, and often, specialized consulting services. Yet, some of these agencies have discovered that even when funding has been allocated for these functions, it may be cut when fiscal resources for other higher priority items become scarce. Snohomish County, Wakefield, Billings, Round Rock, Waukegan, Atlanta, and St. Paul cited lack of funding and personnel as significant barriers in this area.

Though having to manage effectively with fewer personnel is, in one sense, nothing more than a resource issue, it is a critically important one nevertheless. For the workload usually remains the same or increases. Therefore, available staff must divide its responsibilities, resources, and abilities over a greater number of needs and tasks.

Billings' Department of Public Works, for example, reported that its engineering section had lost 30 percent of its staff over several years, while the volume of work increased. During the that period, the City annexed surrounding areas, expanding the City's boundaries by about 25 percent. With the loss of staff, the Department had to curtail construction traffic control and construction inspection. Plan reviews now require four weeks instead of one. Atlanta also said that it had suffered a significant loss of qualified staff through a voluntary retirement incentive program.

A separate but related personnel issue is the inability to provide competitive salaries and benefits to qualified engineering staff. Billings, Pittsburgh, and Atlanta reported that low pay scales hampered their ability to attract desirable engineering services staff.

Communicating and cooperating with separate agencies, departments, or jurisdictions was another area where agencies reported impediments to compliance with the management practices and to effective performance. Several agencies discussed problems resulting from having a separate personnel department handle matters pertaining to hiring. Billings, Atlanta, and ADOT reported that the length of time required to advertise a position, interview applicants, and make a selection is too time consuming. Other agencies, however, did not report that the existence of an independent personnel department had created any serious problems in recruiting or hiring staff. In fact, LAISD, Foster City, Waukegan, and Round Rock indicated that they each had satisfactory, cooperative relationships with their respective personnel departments.

Other, perhaps more serious, problems arise in situations where agencies must coordinate activities with or obtain agreements from agencies with separate legal authority or local governments or jurisdictions. These may include police, fire, and emergency service departments or water and sewer authorities or districts. Atlanta, for example, said that "misunderstandings" occasionally result when it

tries to coordinate street operations and maintenance activities with the police, fire, and emergency service departments. Some agencies, on the other hand, reported impediments of a reverse nature: lack of authority to require other agencies to notify, coordinate, or obtain permits for work in the right-of-way and other areas within the agency's jurisdiction.

St. Paul said that by state law, the City's Water Department is exempted from requirements to obtain a permit for street excavation and construction. Similarly, Billings mentioned that the City's Parks and Recreation, Community Development, and Public Utilities Departments are not required to coordinate their project development activities with Billings' Engineering Department. ADOT also reported problems in getting other jurisdictions to coordinate projects with the agency.

MANAGEMENT STRATEGIES FOR IMPROVING PERFORMANCE

The agency assessments did not provide as much information about techniques or strategies for improving performance as expected. Most of the agencies have not established performance standards or "benchmarks" by which to judge the efficiency of their operations.

But many if not all of the agencies expressed interest and support for using the APWA Management Practices to improve performance and service delivery. Using forms and procedures presented in the APWA Self Assessment Clinics, more than half had prepared file systems for assembling documentation needed to show compliance with applicable management practices. Most also thought that compliance with the practices was a necessary first step to achieving greater efficiency.

Several agencies -- with the L.A. County Internal Services Department (LAISD) being the most notable -- now see themselves, as not just owners and operators of various infrastructure assets, but as providers of customer services. The customers may be -- as in the case of LAISD -- other agencies within the same jurisdiction or individual ratepayers. Along with this new emphasis on customer service, some are using teams, decentralized management, and "partnering" (working with vendors and suppliers to reduce the potential for later disputes concerning contracted services or products). Along similar lines, many of the agencies have a strong interest in developing quality-based approaches to providing services to the communities they represent. This is reflected in several of the agency mission statements appearing in the accompanying sidebar. As public works agencies continue to seek financing for their operations through user fees and enterprise funds, the customer service approach may be seen as the most appropriate way to improve performance.

STRATEGIES FOR PROVIDING BETTER MAINTENANCE OF PUBLIC FACILITIES

All of the site visit agencies expressed strong interest in acquiring new or better tools for maintaining public facilities. Now that microcomputer applications for collecting, storing, and managing facility inventory and inspection data, maintenance histories, and related information are available, agencies want to upgrade their maintenance management practices by making use of at least some of these applications. The problem has been that the resources to invest in these tools have not been available. Nevertheless, several agencies are using or developing the capability to use management systems for pavements, bridges, buildings, sewers, water mains, fleets, and other capital assets. These systems typically enable the user to create a facility or equipment inventory, inspect components for deficiencies, assess condition, develop a priority ranking for maintenance needs, schedule preventive and routine maintenance tasks, and plan for replacements and major rehabilitation of facilities, components, and

equipment. Some agencies have further enhanced the information management capabilities such systems provide by linking or integrating them with GIS/automated mapping systems. Several site visit agencies wanted information on how others approach the problem and whether management systems for sanitary sewers, bridges, traffic control devices, and stormwater facilities have been developed.

Using life-cycle costing techniques and taking future maintenance costs into consideration when designing and developing new facilities also emerged as an important concern in the interviews. Both St. Paul and Foster City have begun programs that allow for such considerations in selecting among capital improvement options. Foster City, for example, created an Interdepartmental Evaluation Committee, which allows public works staff involved with operations and maintenance to provide input to design reviews for new facilities. On the other hand, more than half the agencies said that these types of efforts are often hampered by state mandates that require accepting low bid for design, engineering, and construction services on capital projects.

REVISIONS TO THE APWA MANAGEMENT PRACTICES

The site visit agencies made valuable suggestions for either revising, deleting, or adding to the APWA Management Practices. The checklists enabled all participants to identify practices whose meaning was unclear, confusing, contained misspellings, or was mislabeled. Participants pointed out a number of practices that probably belong in other chapters of the manual. Suggestions for chapters and/or practices to add include cemeteries, dead animal control, airports, harbors, bridges, traffic engineering, sewer maintenance, and relations with the media.

Public Works Mission Statements

Public works describes the physical structures, resources, and operations that support a community. Communities across the country display variations in the types of public works facilities and services provided. Many public works agencies have adopted mission statements to establish a focus for their agency.

Mission statements were collected from some of the twelve assessment sites to gain some perspective on the roles established by public works agencies. In addition to mission statements, many of these agencies had more elaborate documentation of the goals of individual divisions and programs. Often this was presented in budget documents. This sampling provides some insight into how public works agencies function as providers of public services.

St. Paul, Minnesota has a seven-word mission statement: "Provide, maintain, and control public works facilities." It states why the department exists, and what it is doing now. St. Paul also has a vision statement that sets forth what it wants to be known for, and how they want to be seen by themselves, their customers, and co-workers. St. Paul's statement emphasizes responsive services, quality facilities and employee pride. Notable phrases included in the four paragraph statement include:

"...consistent success at being responsive and responsible."

"...full trust and cooperation among all partners."

"...not always agree, always trust each other, recognize interdependence, and work together.."

"...effective computerized infrastructure management system..."

"..support equipment and tools used by employees are up-to-date and in excellent condition and appearance."

"(employees) agree with the mission and are competent and enthusiastic."

"...set consistently high work standards..."

"Teamwork and innovation are the unquestioned Public Works approaches..."

"...noted for labor/management cooperation and productivity that results."

The statement is important as it provides focus and direction to the department. The key words of the vision statement; responsive services, quality facilities, and employee pride are prominent in agency communications.

The Billings, Montana Department of Public Works' mission statement is presented below:

To provide a friendly and responsive source of information and coordinated services assuring the present and future health, safety, and welfare of the public through cost effective planning, permitting, inspections, and operations; recognizing the key to our success is the efficient and motivated efforts of quality individuals.

The Lawrence Department of Public Works' mission :

is to improve the quality of life by providing a forum for the exchange of ideas, information, and technology which enhances the delivery of public works services to the citizens of our community; promoting personal and professional growth and development for its employees; and advancing public works issues on the public agenda.

The Los Angeles County Internal Services Department has the most focused mission statement:

To deliver high quality, timely, competitively priced support services to County Departments and other paying customers.

This statement reflects the unique nature of the Department's function as a provider of support services to other public agencies.

The Pittsburgh Department of Public Works had a statement of purpose which says:

The ...Department, under the direction and charge of the Public Works Director, who reports directly to the Mayor, is responsible for the planning, improvement, resurfacing, repair, cleaning, salting, maintenance and lighting of streets, sidewalks and public right-of-ways. This responsibility includes the repair, maintenance, and operation of parks, bridges, drains, ditches, sewers, public squares and structures by City forces for public use. In addition, the Department is responsible for maintaining a clean and healthful environment by providing refuse collection, animal control, and rodent control services.

The Department also lists eight specific purposes which cover topics such as: protecting public health, safety, and welfare; reducing traffic hazards; attractive and harmonious environment; preserving structural integrity; keeping communications open; and acting with the utmost good faith, fidelity, and respect as fiduciaries of the City and public trust. The Department also sets out goals and long and short range objectives.

The value of mission statements is perhaps best reflected in how they are perceived by the employees who are responsible for implementing them. Statements may be crafted to cover the workings of a department's responsibilities, but lacking recognition or acceptance by departmental personnel or the public, become great statements that do not influence the agency's work. A good statement of an agency's mission that is made a part of day-to-day operations becomes a means to influence decisionmaking, improve employee morale, focus employees on customer service, and improve public perception of the Department's operations. The trick is ingraining the mission statement. Possible methods to accomplish this are to (1) actively involve employees in a process that leads to the development of the mission statement; (2) develop a plan of specific actions to accomplish or reinforce the mission; (3) take action based on the mission statement; and (4) promote the statement (or key phrases from the statement) regularly in agency and office documents such as newsletters, brochures, posters, vehicle logos, etc.

V. FINDINGS AND RECOMMENDATIONS

As shown in Chapter Three, most of the impediments to complying with the APWA management practices and to improving infrastructure are local and administrative. Shortages of funds, time, and staff are among the prevalent concerns. The remaining impediments are either state and federal mandates, laws, or regulations that may hamper an agency's ability to meet local priorities.

This finding could be misleading if one infers from it that local impediments are necessarily more significant than state or federal impediments. There are two reasons that may account for this. First, even though local impediments are more numerous, their cumulative impact may be less significant than the impact of state and federal mandates -- particularly, those imposed on agencies without the resources needed to comply with them. Meeting NPDES stormwater permit conditions, for example, may not directly effect any agency functions other than those associated with stormwater management (except perhaps street cleaning or solid waste, depending on the particular requirements). Indirectly, however, the overall impact on an agency could be severe: resources may have to be shifted from other critical programs such as bridge maintenance or recycling to meet stormwater requirements. Most of the local, administrative barriers identified in this study probably will not effect agencies in this way, whereas, there is general agreement that some of federal mandates described in this report will be very costly to comply with locally.

A second reason to avoid jumping to the conclusion that local impediments are of more importance than state and federal mandates was discussed earlier. In Chapter Four it was pointed out that the low percentage of federal impediments in the survey could be explained by the fact that in order to comply with the APWA management practices, an agency generally must comply with any federal laws or regulations associated with those practices. For example, management practice 23.10, **Landfill Design Monitoring**, states:

> *Landfill design includes monitoring requirements that comply with federal, provincial, state and local directives.*[36]

Practices with similar provisions concerning federal laws and other requirements appear throughout the *Management Practices* manual. It is, therefore, not surprising that the survey revealed only a modest number of state and federal impediments, since the management practices generally imply that agencies comply with state and federal mandates and laws -- whether or not those agencies view such mandates as burdensome and costly.

But another objective of this research was to identify any significant roadblocks, barriers, or impediments to effective management of public works. By conducting site assessment interviews with public works agency staff, APWA and NAPA learned about barriers and impediments to effective

management that do not necessarily block compliance with the APWA management practices. Among them were the state and federal mandates discussed in Chapter Four. These tend to be the most costly to comply with and may actually require diversion of substantial amounts of money and time from other important needs. Local, administrative impediments, on the other hand, are less likely to impact an agency's resources in this way. The impact is more likely to be on the managerial or operational efficiency of the agency.

In any case, APWA believes that the various kinds of impediments discussed in this report, whether federal, state, or local, are all, at least in a sense, of equal importance. They involve important problems that require creative solutions.

STRATEGIES AND SOLUTIONS

Unfortunately, vague and simplistic answers are the only easy answers to many of the concerns and difficulties expressed by the public works providers that participated in this project and other agencies that share the same concerns. APWA is aware that agencies have spent many hours in efforts to persuade local decisionmakers of the need to invest in new tools and techniques for managing taxpayer supported facilities and to ensure proper training of staff. Many have taken steps to improve communication and coordination with the state and federal government, local agencies, departments, and jurisdictions. APWA does not want to "second-guess" those efforts. Still, this Chapter suggests some potentially fruitful approaches.

APWA is also aware of the technical and political complexities involved in creating state and federal mandates and regulations with just the right amounts of flexibility and authority. And, admittedly, the research approach adopted for this project was somewhat one-sided: the research team observed only the effects that state and federal requirements have on local public works agencies. It did not examine or attempt to understand the complicated mix of technical, economic, legal, and administrative issues, regional concerns, special interest group demands, and other factors that lawmakers and regulatory bodies must consider in developing policy and in writing regulations. Nevertheless, this and other previous research strongly suggests that greater flexibility or relief of some kind from federal regulation is appropriate and necessary.[37] This report suggests several broadbased strategies for introducing flexibility into federal regulations. No attempt is made to propose unique solutions for each of the mandates discussed in earlier chapters, although selected mandates are used to show how suggested strategies might apply in specific instances.

LOCAL STRATEGIES

Overcoming local impediments may mean that public works providers need to develop creative, even novel solutions. Taxpayers and their elected representatives are not easily persuaded, especially during these times, of the value of investing local resources into measures which have benefits that take time to realize and are difficult to quantify. Nevertheless, implementing the management practices will require additional resources and personnel as well as support from management and elected officials. Somehow public works practitioners will have to demonstrate to their communities why that investment is worth the cost. Needless to say, this may be especially difficult for smaller communities. For examples of three municipalities that have developed unique approaches to the problem, see the accompanying sidebar.

Three Approaches to Better Management of Infrastructure

For this project, APWA gathered information on notable infrastructure improvement programs and initiatives several major cities have begun either within the last fifteen years or so or more recently. The underlying goals of these programs and initiatives are similar, but vary in scope. They include:

- Development of an infrastructure reinvestment plan
- Objective identification of repair, rehabilitation, and replacement needs (inventory, condition assessment, and projection of future needs)
- Development of a system (preferably computer based) for monitoring and scheduling planned improvements
- Providing a reference point for assessing infrastructure needs against other local priorities
- Helping local policymakers understand the value of preserving infrastructure
- Reducing level of deferred maintenance and reliance on the "fix it as it breaks" approach to managing public facilities

A central feature of most of these programs is their use of a combination of management information tools. All of them recognize the critical need for documenting (and quantifying where feasible) what each city owns, the physical condition of what's owned, and the costs to upgrade, repair, or replace facilities. In some cases, programs have been designed to evaluate existing facilities' capacity to meet local demand for the services provided by those facilities.

San Jose Infrastructure Management System. In 1983, the City of San Jose, California decided to develop a strategy to better assess the City's infrastructure needs. Two years later, the City Council approved initial funding for the development of the Infrastructure Management System (IMS). The IMS is a set of computer based subsystems designed to manage inventory and facility condition data for eight categories of infrastructure: pavements, sanitary sewers, buildings, traffic control devices, parks, storm drains, bridges, and right-of-way landscaping. Subsystems for pavements, sewers, traffic controls, and buildings have been completed and are functioning. Development of a parks management system is underway, while the other three subsystems remain in the conceptual stage. Integration of the subsystems is achieved through a tie-in to the City's GIS/mapping system.

The IMS supplies San Jose's City Council and administration with objective, quantitative information about the condition of the City's infrastructure. For example, the Sewer Management System (SMS) stores and manages data on the structural condition of pipe segments, based on TV inspections. Similarly, the Building Management System (BMS) stores and manages all types of information on building deficiencies and repair needs. Each subsystem identifies current preventive and corrective maintenance tasks, estimates budget requirements for maintenance and repair, and stores construction and maintenance history information. Both the Pavement Management System (PMS) and the SMS are capable of predicting future maintenance and repair needs given expected funding over a ten-year period. All of the subsystems provide information enabling City staff to evaluate the cost effectiveness of directing funds to preventive maintenance versus major rehabilitative work. The IMS is the most sophisticated program of its kind, and, with continued support, could be a model for other urban areas with similar information management needs.[1]

[1] City of San Jose, *Infrastructure Management System: Program Information*, (San Jose, CA: February, 1993); Tom Esch, P.E., "Infrastructure Management in San Jose," *APWA Reporter* (October, 1993): pp. 4-5; and Tom Esch, City of San Jose, personal communication, February, 1994.

Portland Transportation Management System. The City of Portland, Oregon's Office of Transportation is developing an information management system for the City's transportation facilities. Full development is expected to take seven years and covers pavements, curbs, sidewalks, traffic control devices, stairways, bridges, and other transportation related facilities managed by the City. To date, the City has invested about $2 million for consultants, software development, and staff time to develop the system, which will consist of a facilities inventory, maintenance histories, and condition assessments.[2]

Dayton Capital Allocation Process. About 1980, the City of Dayton, Ohio established a methodology for allocating City resources for repair, reconstruction, and replacement of the City's infrastructure. After approximately 15 years, the program continues, using much the same framework as before. That framework includes: a special committee to recommend capital investment projects; a set of capital budgeting policies; inventories of all major city owned facilities; facility condition assessments; repair/replacement schedules; quantitative project evaluations; and citizen involvement.[3]

Perhaps the most innovative feature of Dayton's methodology is its dependence on a collaborative, working relationship among various professionals who work in Dayton's city government. It is not only the public works administrator who shapes and defends capital allocation decisions, but the finance professional as well. A Capital Investment Committee, consisting of management level personnel from the City's planning, urban development, budget, finance, engineering, and water departments, studies and recommends capital budgets to the city manager. The Committee is guided by a set of written capital budget policies, setting forth criteria the Committee must follow "in evaluating the relative merit of each capital project."[4] Investments that minimize long-term maintenance costs and help avoid unanticipated system failures and premature replacement of facilities are favored; economic development, neighborhood vitality, and citywide planning considerations are also important.

As with the other innovative programs and methods considered here, Dayton's program is founded on a comprehensive inventory and condition assessment of its facilities. The inventory serves as a central source of detailed information on the number, type, age, maintenance history, and design characteristics of each facility, from traffic control devices to buildings to storm sewers. Facility inspections supply raw data for condition assessments; Numerical rating systems have been developed to support recommended corrective actions and repair/replacement schedules. Both the inventory data and condition assessments are published in an *Infrastructure Handbook* which enables members of the Capital Investment Committee to participate directly in the decisionmaking process.

Dayton's approach has succeeded largely without the aid of computerized information management systems. Much of the condition data is collected manually, although some database applications are used. Several departments plan to implement specialized management systems fairly soon -- for example, the streets department is implementing a pavement management system.

According to participants in the process, the City has kept pace with the deterioration that accompanies aging and use of its capital assets by reinvesting in them. Careful monitoring of the conditions of those assets and reliance on the consensus-building approach account for its achievement.

[2] Marnie Glick, Strategic Planning Manager, City of Portland, Oregon, personal communication, February, 1994.

[3] Timothy H. Riordan, Maria E. Oria, and Joseph P. Tuss, "The Bridge From Dreams to Realities: Dayton's Capital Allocation Process," *Government Finance Review*, 3, No. 2 (April 1987): pp. 7-13; Dick Davis, Deputy Director of Public Works, City of Dayton, Ohio, personal communication, February, 1994.

[4] Riordan, p. 8.

FEDERAL AND STATE IMPEDIMENTS

The success of any strategy to remove local, administrative impediments depends on the resolution of a very sensitive intergovernmental issue -- whether public works providers continue to find themselves having to meet various state and federal requirements *with little or no funding available to do so*. Examples were described in Chapter Four. The NPDES stormwater regulations, the Lead and Copper Rule, RCRA Subtitle D Landfill Criteria, and the Americans with Disabilities Act impose sweeping and costly requirements on municipalities and counties.

Do local governments and public works administrators support the aims of these mandates? Do they support the broad environmental, public health, and civil rights objectives addressed in the legislation that sanctioned them? Based on APWA's and NAPA's discussions with representatives from local governments and public works departments, the answer is yes; many are in agreement with the objectives. Furthermore, they are making what they consider to be good faith efforts to comply with the mandates. The problem, as they see it, is that if "across-the-board" or "one size fits all" solutions are going to be applied to each problem without regard to local conditions, they will need an appropriate level of financial and technical assistance to implement the solutions.

Technical assistance, in addition to funding help, is critical because agencies such as EPA have promulgated some of their regulations without clarifying the standards or goals agencies subject to those regulations are expected to meet. In many cases, agencies are simply ordered to make use of available technologies to, for example, remove certain contaminants from a site or prevent certain pollutants from being discharged to a particular location. Complete compliance with requirements is expected even in the absence of sound evidence showing that the measures ordered by EPA will bring about any overall improvement in the environment or public health.

The stormwater permit program exemplifies this approach. Though EPA has not established water quality standards or goals by which permitted agencies can measure the success of their efforts to regulate stormwater, those agencies must adopt a program of best management practices regardless. For example, Phase I permits may require permitted agencies to establish household hazardous waste collection programs to discourage residents from discharging such wastes into municipal storm drains. But it is impossible to judge the effectiveness of this type of program at this time because the water quality goals it is intended to serve have not been defined. The Clean Water Act stipulates that numerical water quality standards are to be used in evaluating permit compliance, but those standards have yet to be developed for stormwater runoff.

These and other concerns about the technical and scientific basis for the permit program have been voiced by several prominent public works practitioners who are recognized for their expertise in stormwater management.[38] They have urged EPA and Congress to introduce more flexibility to the program to reflect the resources available to local governments and the fact that little is known about which management practices are effective in meeting water quality standards. The National Association of Flood and Stormwater Management Agencies' position supports "a deferral of further regulation of the Phase II sources," until EPA and the states are in a better position to regulate them and more is understood about what worked in Phase I.[39]

Similar concerns apply to the Subtitle D Landfill Criteria and to the SDWA Lead and Copper Rule -- the latter, in particular, because, while a numerical limit for lead has been established, current

information suggests that available corrective measures will have little impact on reducing lead levels to mandated levels.

In view of the information presented in this report and the need to balance public works and infrastructure needs with environmental, public health, and other goals, APWA proposes that the following be considered as the Congress and the Federal Government resume discussion of any federal mandates that affect local governments:

1. State and Federal Mandates should be issued only when accompanied by a clear statement of goals, objectives, and standards.

2. The U.S. Congress should provide a reasonable level of funding assistance to agencies subject to federal regulations that involve substantial implementation costs.

3. Environmental regulations should be tied to risk assessment standards for public health and environmental quality rather than best available technology.

4. As far as practical, regulations and mandates should be tailored to local conditions and permit flexible solutions based on those conditions.

5. Where practical, federal review and permitting processes should be coordinated to avoid duplication of effort, needless delays, and additional costs, while strictly following steps to avoid environmental damage.

As suggestions for changing the way the Federal government regulates local governments, these are meant to be applied broadly and not necessarily to any single area where federal mandates are creating difficulties. Obviously, however, if any one of the first four were applied to the stormwater permitting program, some relief would be provided to public works agencies that must comply with the program. Simply issuing a clear statement of the water quality goals of the program, for example, would at least help clarify local funding priorities, and thus help agencies avoid spending money they do not need to spend. Setting up a revolving loan program or even a grant program would be another option for agencies that may have to invest in major structural controls for stormwater pollutants.

As for state mandates, perhaps the most significant in terms of their affect on most local governments in the United States are low bid requirements for contracts and purchases. Many who participated in this study have observed that these requirements tend to make it difficult to obtain quality work and cost more in the long term (because of higher maintenance costs, shorter service lives, and attempts by vendors and contractors to recover their full costs through legal remedies) in any case. Although, the authors of this study know of no recent legislative challenges to state low bid requirements, some states should perhaps consider modifying those requirements as they consider ways to deal with issues related to deteriorating infrastructure.

FINAL THOUGHTS

The site assessments provided considerable information on the operations of each site visit agency and the barriers they confront. Some of these agencies also identified innovative methods that other public works agencies could implement and benefit from.

Among the needs cited by public works agencies during the site visits were: (1) resource materials that provide details on good public works practices (examples, improved methods, case studies, etc.); (2) demonstration projects for good practices, innovative methods, and new technology; and (3) more complete and reliable information on the implementation of federal programs. More complete information should not be interpreted as meaning more guidance, or more pages in the Federal Register. Frustration was expressed by several representatives over conflicting guidance from different regulators, continually changing regulations ("moving targets"), and lack of substantiated good practices for accomplishing some mandates.

This project has indicated the benefits of using the *Public Works Management Practices* manual in evaluating an agency's operations and identifying ways to improve performance. This manual should be maintained and updated as necessary to reflect the state of the practice and changes in methods and technology. An ongoing effort is required to maintain this document as a current and useful tool for the profession.

APPENDIX A - DESCRIPTIONS OF APWA ENTITIES

Chapters

A prime strength of APWA as the developer of guidelines for public works management practices relates to the extensive network of chapters that has been developed over the years. It is primarily the chapter, through its on-going activities, that provides the means for developing the long-term support needed to establish maintenance and operations practices and ensure that those practices are disseminated effectively and updated as necessary. Chapters establish technical committees that serve to provide members with information about public works practices in seven subject areas, including transportation and utility location. Newsletters, technical programs, and workshops sponsored by the chapter provide the mechanism for disseminating information on improved practices.

Institutes for Professional Development

In an effort to meet the diverse needs of the membership, seven Institutes for Professional Development have been established. The APWA Institutes for Professional Development serve two broad purposes. First, they are a meeting ground for people who share special responsibilities and expertise. Second, they are resources for the entire membership. Institutes have the following major responsibilities: establish and maintain liaison with related interest groups; analyze and evaluate policy, proposed regulations and problems in their areas of specialization; recommend action to the Board of Directors; undertake studies, conduct surveys, and prepare publications; develop research projects; and sponsor educational programs. The scope of each institute's interests is illustrated below:

Institute for Administrative Management (IAM) - deals with personnel, safety, financial and management practices of general application, labor/management relations, organizational structure, developments in planning and budgeting, techniques for community involvement and decision making, and electronic data processing.

Institute for Equipment Services (IES) - concentrates on the development of knowledge about fleet management techniques, performance data, equipment productivity, maintenance of equipment, parts inventory, garage and service facilities, equipment replacement policies, conservation of fuel, and centralized motor pool operations.

Institute for Municipal Engineering (IME) - concentrates on the development, adoption and use of sound engineering policies and practices by those employed in public agencies. It is concerned with establishing effective regulations and procedures, compliance with

legislation, the selection and retention of consulting engineers, and the administration of construction contracts.

Institute for Water Resources (IWR) - concentrates on the development and protection of water resources and the management of water supply and distribution systems, waste water collection, treatment and disposal, drainage and flood control, and other programs involving the use of water for the generation of power, irrigation and recreation.

Institute for Transportation (IT) - concerned primarily with the development and management of the infrastructure required for all modes of transportation, including the maintenance of streets, highways, bridges, transit systems, airports, waterways, harbors, docks and other public facilities needed for the transportation of people and goods. It has focused much of its attention on traffic control measures, and has sponsored APWA's membership on the National Committee on Uniform Traffic Control Devices.

Institute for Buildings and Grounds (IBG) - focuses on the management of activities relating to the design and maintenance of public buildings and grounds, cemetery and recreational grounds, security services, space utilization, energy conservation, and special services.

Institute for Solid Wastes (ISW) - concerns itself with the development and adoption of safe, sanitary, and efficient methods of storing, collecting, utilizing, or otherwise disposing of solid wastes from urban and rural communities. It concentrates on contracts, regulations, reuse and/or disposal of solid wastes, financing, and the selection and use of appropriate equipment.

In addition to the Institutes for Professional Development, special councils have been established to serve the needs of the membership. For example, the Utility Location and Coordination Council (ULCC) was established at the specific request of the National Transportation Safety Board. It conducts a wide variety of programs designed to minimize accidents, property damage and inconvenience to the public resulting from the joint use of rights-of-way by public and private utilities and transportation organizations. Councils have also been formed for Emergency Management and Equal Opportunity.

Information Services

APWA's Information Services responds to requests for information on a myriad of public works-related topics from association members, staff, governmental agencies, private firms, and public interest groups. The unique strength of the Information Services stems from its collection of public works planning reports, manuals, guidelines, specifications and other materials often prepared by public agencies for their internal use. A computerized database has been developed which currently contains a detailed listing of over 36,000 books, magazine articles. etc. on public works subjects. In addition to more speedy retrieval of information, the computerized database also permits expanded searches of most topics.

APWA Education Foundation

One of APWA's major purposes is to advance the professional competencies of public works officials, their employees, and others interested in the public works field. An education program

designed to meet the needs of all members, affiliates, and potential members is sponsored by the Education Foundation. This series is developed from current research studies and state-of-the-art information developed by the Institutes for Professional Development and literature available from the APWA Information Service. The Foundation is actively involved in the development of new workshops and training programs to respond to the needs of the APWA membership.

APWA Research Foundation

APWA created the APWA Research Foundation in 1955 to enable public agencies to cooperatively finance research programs designed to find solutions to public works problems commonly experienced by state and local governments. Suggestions for research are regularly sought from the APWA membership, and those found to be of general interest are developed into projects which are then conducted by the Foundation. The APWA Research Foundation has successfully completed more than 65 projects with a total funding of more than $7 million. Subscribers have included cities, special districts, counties, states, federal agencies, utilities, consulting firms, trade associations, foundations and manufacturers. The results of APWA Research Foundation projects are typically published and distributed by APWA.

Washington, D.C. Office

APWA's Washington D.C. Office is responsible for monitoring federal developments and maintaining liaison with those agencies involved in various types of public works programs. It also collaborates with other professional organizations based in Washington that share an interest in public works issues and other matters of special concern to the APWA membership. The Washington office is also responsible for a cooperative agreement between the Department of Transportation and APWA to manage FHWA's Technology Transfer Clearinghouse and the Federal Transit Administration's Rural Transit Assistance Program (RTAP). The T^2 Clearinghouse provides a network for exchanging highway-related training and information among 46 Technology Transfer Centers and with other organizations. Activities of the RTAP National Program include operating a resource center with a toll-free hotline and an electronic bulletin board, maintaining a catalog of training materials, developing video-based training materials, operating a peer-to-peer technical assistance network, and networking with the state RTAP's.

APPENDIX B - BACKGROUND ON THE DEVELOPMENT OF MANAGEMENT PRACTICES

The concept for the public works management practices came about when members of a consortium of Chicago-area municipalities (called the Northwest Municipal Conference) realized that self assessment and accreditation programs such as those currently used by law enforcement agencies could serve as a model for a public works accreditation program. The Chicago area managers saw the need for national guidelines to develop their standards for in-house operations.

The Municipal Conference sought out a sponsor for a public works accreditation effort. Realizing this would be an endeavor that would require a national presence, the APWA Research Foundation was enlisted to develop and raise money to fund the research efforts In all, a group of eight APWA chapters and 56 North American communities sponsored the research and contributed to the development, testing, evaluation and validation of the management practices. The manual of practices was developed through the active involvement of the APWA Institutes for Professional Development. Public works professionals in each major area of expertise developed the practice statements. These were then extensively reviewed by other APWA members. This volunteer effort involved a large number public works professionals from across the U.S. and Canada. The result was the *Public Works Management Practices* (sample pages from the chapter on streets appear at the end of this appendix).

Before going to press, *Public Works Management Practices* went through a rigorous review process. It was scrutinized in detail by 12 public agencies--including local, county, and state agencies; special districts; and agencies of various sizes, populations, areas, and operating and capital budgets. To test whether or not the nearly 400 management practices were indeed the best for public works departments, a one-day review of each participating agency was conducted by assessment teams consisting of public works managers. These teams were comprised of managers from the Georgia, Chicago, Sacramento and Washington chapters. The Chicago team visited Georgia, and a month later the Georgia team visited Chicago. The Sacramento and Washington teams were paired similarly.

Teams traveled to different agencies to examine the practices as they were documented and executed. Many of the sessions were "one on one." Team members interviewed department heads to discuss practices in greater detail, especially in cases where an agency's operating protocol was different from the stated practices.

Much groundwork was completed even before these interviews took place; the interviews were structured and a data form was sent to each agency in advance of the assessment. The forms included questions on each practice, such as: Is this a written policy?

How is it authorized? Is there written verification? Finally, all managers were asked which practices they thought should be included in the accreditation program.

After the assessments were completed, the project advisory committee convened at the end of July, 1991. Armed with an arsenal of information, they compared notes. Although there were several working changes to the final document stemming from the on-site assessments, only five practices were dropped; eight were added. The manual was published in August, 1991. At the 1991 International Public Works Congress and Exposition, a resolution was adopted by APWA's full membership encouraging each public works agency to compare their current management practices to those contained in *Public Works Management Practices*. The resolution also supported the use of the manual as the basis for a public works accreditation program.

Management practices assist public works managers in planning and controlling operations, improving performance and increasing productivity, instilling confidence and pride in personnel, and reducing the potential for liability. To achieve these goals a self assessment must be conducted which involves a thorough, agency wide look at current management and operations policies and practices. Each practice is formally recorded and evaluated against the standards set forth in the manual. The end result: problem areas are identified and corrected, leading to improvement in efficiency and productivity.

Management Practices Advisory Committee

APWA established an advisory committee composed of public works directors from different regions of the country to guide the management practices project. This advisory committee worked to develop the concept and produce the management practices manual and the clinics. The project advisory committee provided leadership and guided the development of the management practices.

The Advisory Committee members also serve as faculty for the Management Practices Self Assessment Clinics and have moderated many discussions on the opportunities and potential road blocks to implementing the practices.

Self Assessment Clinics

A training clinic on how to use *Public Works Management Practices* to conduct an agency self assessment was developed through a joint effort of the APWA Research and Education Foundations. The clinic offers guidance on how to evaluate management and operations, using the *Public Works Management Practices* as a yardstick for objective analysis.

Self assessment clinics have been held at the following locations: Chicago, IL; Kansas City, MO; Orlando, FL; Sacramento, CA; Portland, OR; Chatham, MA; Virginia Beach, VA; Boston, MA; Minneapolis, MN; Calgary, Alberta; San Diego, CA; Phoenix, AZ, and Moncton, New Brunswick. More than 600 public works professionals have participated in these clinics. Many of these clinic participants noted their intent to conduct assessments using the Management Practices. Many of these evaluations are underway.

During 1992 and 1993, APWA provided training on public works management practices self assessment and solicited reaction and feedback on the 400 practice statements. During the self assessment clinic, implementation of the management practices is discussed as are common problems and potential

solutions. A summary of comments offered by clinic participants on the potential uses of Public Works Management Practices is provided in Table A. A summary of clinic comments on the benefits of conducting an agency self assessment is provided in Table B.

Next Step for Management Practices

APWA will refine the management practices document based on its application in the profession. The document has been cited as a living publication. It will be revised to incorporate advances in methods and technology. As agencies gain more experience with the practices in the publication, their observations and recommendations for revision of the document will be considered. Efforts are also being made to provide the necessary support to agencies who want to use the management practices document to conduct an assessment of their operations.

A Management Practices Self Assessment Forum has recently been established within APWA to provide support to agencies conducting assessments using *Public Works Management Practices*. This group will collect examples of good practices and their implementation from agencies and facilitate the transfer of this information to other public works departments. This user's group will also work to advance the development of the management practices program and interaction among agencies conducting self assessments.

Ultimately, APWA may establish an accreditation program based on the management practices. The purpose of such a program would be to provide objective, independent verification of agency compliance with the management practices. To ensure the independence and credibility of the program, representatives from groups and associations sharing some of APWA's interests would act as a governing body. The APWA Board of Directors,in 1993, approved draft bylaws for administering the program once established. These preliminary bylaws are the basis for discussion of the concept with other entities.

Table A. Uses of Public Works Management Practices.

- gain better insight into agency
- aid in restructuring
- fine tune operations
- do more with less
- gain more from tight resources without additional staff
- method to review existing procedures
- improve quality of services
- channelize good staff ideas
- aid in strategic planning
- handle staff turnover
- sharpen skills
- formalize what is already known
- identify weak spots in agency
- improve staff self image
- tool for team building
- focus resources better
- cope with inadequate funding and staff cutbacks
- develop insights for hiring
- respond to new council members
- improve interdepartmental cooperation and coordination
- enlighten bosses
- become less reactive and more proactive
- gain credibility with council and public
- learn what is real, what is perceived
- develop new staff

Source: APWA Self Assessment Clinics, 1992 - 1993.

Table B. Benefits of Conducting a Self Assessment

- identify poor practices and inefficiencies
- improve staff involvement, morale and team building
- encourage training and advancement
- promote "open door" to new ideas
- examine what one is doing and why
- take initiative in downsizing before it is done for us
- increased community involvement
- tap into knowledge of senior staff before retirement
- improve communication
- gain objective picture of operations
- recognize perceptions and respond better through clearer management practices
- integrate management and budget making decision process
- better communication with other public works departments
- better coordination with other departments
- improved productivity through team work
- downsize effectively
- improve morale on proactive basis
- provide forum for new ideas
- find method to determine quality through intercommunity discussion
- verify or change department structure
- develop objective criteria for department evaluation
- gain policy maker/public acceptance
- develop more employee involvement
- increase employee job knowledge
- better court documentation
- are we doing the right things
- how to compare with private sector
- upgrade operations
- consolidation of services
- develop supporting documentation
- employee buy-in, pride of ownership
- promote communication with higher policy body
- improved training program
- builds credence and professionalism
- builds trust and respect
- gauge quality of service
- revitalize organization
- identify effect of policies on operation of agency

Source: APWA Self Assessment Clinics, 1992 - 1993.

24. Streets

There are two major areas of street related responsibilities: street maintenance and traffic management. Specific areas of concern include pavement, street surfacing, snow removal, bridge maintenance, traffic control devices, street lighting, and methods for organizing traffic flows.

Administration and Planning

The management and planning of roads and streets is a typical public works function. Activities of this department are coordinated with other local, state or provincial transportation and land use planning efforts.

24.1 Legal Authority

Responsibility to perform street operations and related functions is designated legally.

The agency has established and documented that local, state, federal or provincial laws provide proper authority for the agency to carry out its transportation related responsibilities.

24.2 Qualified Staffing

A registered engineer and qualified designer are on staff, or is contracted, to ensure that proper procedures and methods are used on engineering design projects.

Other design professionals are used on projects that are appropriate to their disciplines.

24.3 Planning Participation

Local, state and provincial transportation agencies support, attend and participate in local, state or provincial planning efforts.

The relationship between changes in land use characteristics and the transportation system require that agencies become active participants in local land use and transportation planning efforts. Where state or provincial agencies have major responsibilities for development of highway projects, local and regional agencies should be involved in planning and project development activities.

24.4 Planning Procedures

Policies designate procedures for planning streets and related facilities.

Policies establish or reference the criteria and procedures for planning street improvements, lighting and on-street parking; pedestrian and bicycle facilities; snow and debris removal operations; and emergency and hazardous materials routes.

24.5
Planning Coordination

Transportation programs are coordinated with other local, state or provincial transportation and land use planning efforts.

Participation in established transportation planning programs will facilitate the coordination of agency activities with other local, state or provincial transportation programs. Transportation and land use coordinated efforts are critical in land use planning efforts, economic development programs, major new facilities, utilities, major terminals and transit programs.

24.6
Capital Programming

Short- and long-term capital improvement programs establish the schedule sequence for major construction and rehabilitation projects.

Short- and long-term improvement programs are developed through participation in local planning programs and are based on regular inspection and assessment of conditions.

24.7
Design and Construction Responsibility

The responsibility for the implementation of projects is established.

The responsibility for planning and design, placement of traffic control devices, constructing and maintaining roadways, and implementing other capital projects should be clearly defined.

Operations and Maintenance

There are many measures that can be used in securing effective operations and maintenance of streets, these measures include computer-controlled traffic signal systems, reversible one-way streets, center-of-street lanes for left turns; pavement management systems and preventive maintenance programs.

24.8
Operations and Maintenance Responsibility

Responsibility for the operation and maintenance of streets and related facilities is established.

To ensure that operations and maintenance responsibilities are carried out consistently and properly, specific areas of responsibility for operation and maintenance of streets and related facilities are established and documented. A clear delineation of who maintains street lights, traffic signals or other features will help to ensure that proper resources are allocated for this activity and minimize undue delay or confusion in emergencies.

24.9
Operations and Maintenance Coordination

Operations and maintenance practices for streets and related facilities are detailed and coordinated with other agencies.

Operations and maintenance activities are coordinated with fire, police, emergency services and flood control agencies.

24.10
Operations and Maintenance Standards

Standards for operations and maintenance practices are adopted.

Accepted operation and maintenance standards are identified and used for street functions such as pothole repair, traffic control devices, street lighting, bridges, retaining walls, pedestrian facilities, etc.

24.11
Operations and Maintenance Inspection

A policy establishes the frequency and level of inspection for roadways, bridges, tunnels, retaining walls, and sidewalks.

Inspections test for structural integrity to identify damage or decay and thus prevent failure. Inspections are made during construction and at regular intervals afterwards. Inspections identify stability, settling, cracking, faulting, disintegration, presence of vegetation, ruts or erosion, and water accumulation.

24.12
Material Conservation

A policy outlines material conservation in planning, design, operations and maintenance.

Examples of conserved resources include salt, pesticides, and patching material.

24.13
One-Call Participation

Owners or operators of underground lines or facilities participate in Call-Before-You-Dig or One-Call Systems in compliance with provincial and state laws or local directives.

A one-call system is a consultation service for underground line owners to avoid line breaks or disruptions to the service during construction activities.

24.14
Utility Cut Permit Program

A policy establishes the conditions under which pavement may be cut.

The policy covers when and how cuts are made and ensures that the resulting patch is constructed according to required specifications.

APPENDIX C - REQUEST FOR PARTICIPATION IN A PUBLIC WORKS MANAGEMENT PRACTICES PROJECT

Objective: The APWA Research Foundation is seeking commitments from agencies interested both in conducting self-assessments using the *Public Works Management Practices* publication and in hosting a site visit to discuss the findings of this evaluation. The intent of the site visit is to evaluate the published Management Practices and gather information for use in a national study on improving public works performance. This is not an evaluation or accreditation of any agency.

Background: More than 300 individuals have already participated in the APWA clinics on using *Public Works Management Practices* to conduct an agency self assessment. A number of agencies are proceeding with assessments of their operations and many more have expressed their intent to do so.

The self assessment process involves a thorough examination of all practices in the *Public Works Management Practices* publication that pertain to the functions of an agency. Each practice is formally recorded and existing documentation is assembled to indicate what agency policies or procedures show compliance with each practice. The need for new, or revised procedures or policies are noted. Barriers or obstacles to meeting each practice are also noted.

As part of a project for the U.S. Army Corps of Engineers to *Identify Road Blocks and Opportunities to Improve Public Works Performance*, site visits will be held at twelve agencies that are conducting self assessments. Site visits will be made by teams of public works professionals from other communities. Participants will benefit from self assessment through the evaluation process and exchange of information with peers. Agencies will also identify means to improve public works performance.

Requirements: The requirements of the twelve selected agencies are:

- Familiarity with the *Public Works Management Practices* document.
- Training in conducting an agency self assessment (either through prior participation in the APWA Education Foundation clinic, or commitment to obtain training as part of this project).
- Complete a self assessment, assemble documentation for each practice that pertains to your agency, and host a site visit by May, 1993, or September, 1993 (six sites will be completed by May, with the remaining six completed by September). This will require effort by agency staff throughout the term of the project.

- Completion of questionnaires and other requests for information in a timely manner.

- Agreement to provide one staff member, trained in the self assessment process, to participate in a two-day site visit to another community. Travel, lodging and meal expenses for these site visits will be paid by APWA consistent with adopted reimbursement policy. APWA's expenses will be limited to these items and no reimbursement can be made for salaries or other items.

Selection Criteria: The selected agencies will represent various geographic regions and population sizes and have personnel trained in self assessment (or make provisions to obtain training). The twelve sites will also collectively represent the full range of public works functions (transportation, waste water, storm water, solid waste, etc). The U.S. Army Corps of Engineers will have final approval of the agencies recommended by APWA for the assessment process.

-Please complete and return the form on the reverse side-

Response due December 14, 1992

Response: Complete and return this form by **December 14, 1992**. If you are not interested in being one of the twelve sites, please complete the form so that we may continue to track communities that are interested in *Management Practices* and provide you information on future developments in this area.

Contact Person:_____
Title:_____
Agency:_____
Address:_____
City:_____State/Province_____Postal Code_____
Telephone ( )_____ Fax ( )_____

---

1) Is your agency planning to conduct a self-assessment using *Public Works Management Practices*? Yes____, Start Date_____. No_____. Comments?_____

2) Are you conducting a self assessment of your agency using *Public Works Management Practices*? Yes_____Completion Date_____. No_____ Comments?_____

3) Do you wish to be considered as one of the sites that will conduct a self assessment and host a site visit by May 1, 1993? Yes___Estimate of Practices documented by this time___%. No____. Comments?_____

4) Do you wish to be considered as one of the sites that will conduct a self assessment and host a site visit by September 1, 1993? Yes___Estimate of Practices documented by this time___%. No___. Comments?_____

5) Has a representative of your agency participated in a *Public Works Management Practices* Self Assessment clinic? Yes_____, No_____. Comments?_____

6) Check the public works functions which are under the authority of your agency:

__Municipal Engineering	__Equipment	__Snow and Ice Control
__Engineering Design	__Solid Waste Collection	__Stormwater
__Construction	__Solid Waste Processing	__Potable Water
__Buildings	__Solid Waste Disposal	__Wastewater
__Grounds	__Streets	__Other_____

Send this form to: Jim Thorne
APWA Research Foundation
1313 East 60th Street
Chicago, IL 60637-2881

Or, fax to: 312-667-2304

If you have questions on this project, call Jim Thorne at 312-667-2200, extension 544, or Hilary Green at 312-667-2200, extension 583.

Thanks for contributing to this project with your response.

APPENDIX D - PUBLIC WORKS MANAGEMENT PRACTICES SURVEY

Background

The APWA Research Foundation and the National Academy of Public Administration, in a project supported by the U.S. Army Corps of Engineers, is conducting a survey of public works administrators. The objective of the survey is to identify potential legislative, regulatory, administrative, or technical barriers to implementing the APWA Public Works Management Practices. In addition, the survey will attempt to identify: paths to enhancing and improving the performance of public works agencies; effective techniques that would enable agencies to better maintain infrastructure assets and minimize the effects of deferred maintenance; and ways to accelerate development and implementation of new technologies that have the potential for benefiting public works activities.

Format

Most of this questionnaire is concerned with identifying barriers or impediments to implementing the Public Works Management Practices as contained in the APWA publication *Public Works Management Practices* (APWA Special Report #59). The questions are organized by public works functions, representing most of the 29 chapters in the publication. Each question asks whether you are aware of any barriers that your agency might face in implementing various public works management practices. If so, indicate whether the barriers are substantial, moderate, or minor by checking the appropriate box. If you are unaware of any barriers, check the box labeled none. Then, for those practices for which you indicated that a barrier might exist, briefly describe the nature of the barrier and the specific practice to which it applies.

Though the questionnaire can be completed without the aid of the Management Practices manual, it is recommended that you keep a copy of the manual on hand. You may find it easier to answer a particular question when you refer to the full statement of the practice to which it relates. To assist you, every question is accompanied by the specific number assigned to the corresponding practice in the manual. The number appears in parentheses.

Examples of Barriers

The barriers may include federal, state, or local laws or regulations that prevent your agency from implementing specific practices. For example, federal or state environmental laws or regulations may require permitting or review procedures which hamper the execution of public works operations. The *Safe Drinking Water Act* and the *Clean Water Act* are examples of federal legislation which could impact several of the management practices, specifically those found under Potable Water and Stormwater, respectively. With respect to personnel management, the *Fair Labor Standards Act* and the *Occupational*

Safety and Health Act represent examples of federal laws that may impede compliance with some of the practices in this area.

At the state level, various laws and regulations may affect the ability of agencies to comply with practices relating to solid waste management. These might include sanitary landfill requirements or waste reduction and recycling mandates.

Examples of administrative barriers might include lack of properly trained staff, problems with interagency communication, or situations involving joint decisionmaking by multiple agencies. Potential technical barriers might include inadequate data handling capability or lack of computer resources.

Please note that you are not being asked to assess whether your agency is complying with the management practices, but only whether your agency would face restrictions or barriers in complying with the practices.

Please return the completed questionnaire by _____ 1993. Mail it to:

Eric Melvin
APWA
Northwestern University Research Park
1801 Maple Ave.
Evanston, IL 60201-3135

If you have questions about this survey or about management practices, please call: 708-467-2521

1. Name and Job Title_____

2. Agency Address _____

_____Tel._____

3. Name of Jurisdiction/Municipality

_____

4. Check Jurisdiction Type

_____ City _____ Township

_____ County _____ Village

_____ Town _____ Other_____

5. Current Estimated Population _____

6. Check the public works functions which are under the authority of your agency:

__Municipal Engineering __Equipment __Snow and Ice Control

__Engineering Design __Solid Waste Collection __Stormwater

__Construction __Solid Waste Processing __Potable Water

__Buildings __Solid Waste Disposal __Wastewater

__Grounds __Streets

__Other_____

7. To what official or entity does your agency/department report?

__City Manager

__Deputy/Asst. City Manager

__Mayor

__Deputy Mayor

__Other_____

__Administrative Officer

__Commissioner

__Board

__City Council

8. Number of persons employed full-time by your agency _____

Organization

Are you aware of federal, state, or local regulatory, administrative, or technical barriers to implementing the following management practices? Check the boxes that apply.

9. The agency has developed a statement of its purposes, professional goals and objectives. (1.1)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

10. There is a process for reviewing and revising the organization of the agency. (1.3)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

11. The agency has adopted a code of ethics. (1.5)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

12. If you checked any of the boxes indicating the existence of federal, state, or local barriers, identify each barrier and the corresponding practice.

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Personnel Management

Are you aware of federal, state, or local regulatory, administrative, or technical barriers to implementing the following management practices? Check the boxes that apply.

13. The agency has developed a job classification plan. (2.1)

    ☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

14. The plan identifies positions, titles, responsibilities, compensation, qualifications, skills, and provisions for reclassification. (2.1)

    ☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

15. The agency has a compensation plan, covering salary range surveys, promotions,overtime pay, compensation time and bonuses. (2.3)

    ☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

16. Workspace, equipment, and tools are provided. Hours of work and shift schedules are defined. (2.5)

    ☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

17. The agency establishes a career development program to ensure adequate opportunities for employee advancement and growth. (2.8)

    ☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

18. The agency has a recruitment plan, describing the procedures used to publicize employment opportunities. (2.16)

    ☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

19. An agency policy assigns responsibility for the selection process, identifies any forms that must be completed before hiring, and appoints an authority to make final decisions on employment. (2.18)

    ☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

20. The agency has an Affirmative Action Plan and an Equal Employment Opportunity Plan. (2.19, 2.20)

    ☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

21. The agency has a policy that specifically prohibits sexual harassment. (2.21)

    ☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

22. The agency verifies that personnel meet professional registration and certification requirements where applicable. (2.9)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

23. The agency establishes procedures for employee evaluations, promotions and demotions, terminations and resignations, and grievances. (2.25, 2.26, 2.27)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

24. If you checked any of the boxes indicating the existence of federal, state, or local barriers, identify each barrier and the corresponding practice

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Planning

Are you aware of federal, state, or local regulatory, administrative, or technical barriers to implementing the following practices? Check the boxes that apply.

25. The agency develops strategic plans. (3.1)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

26. As part of the strategic planning process, a mission statement is developed, levels of service are defined, long-range goals and objectives are established, and procedures for monitoring progress towards goals and objectives are developed. (3.2, 3.3, 3.4, 3.5)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

27. If you checked any of the boxes indicating the existence of federal, state, or local barriers, identify each barrier and the corresponding practice.

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Finance

Are you aware of federal, state, or local regulatory, administrative, or technical barriers to implementing the following practices? Check the boxes that apply.

28. Project budgets identify all costs associated with a project. (4.3)

    ☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

29. Prices are set for designated goods or services according to financial objectives, equity, efficiency, and administrative feasibility. (4.6)

    ☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

30. Budget forecasts are updated periodically. (4.7)

    ☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

31. The agency determines long-term facility and equipment needs through development of a capital planning program. (4.8)

    ☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

32. Procedures for acquiring or purchasing materials and services are established, as are procedures for securing service contracts. (4.11)

    ☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

33. A needs assessment should precede any acquisition of materials or services. (4.14)

    ☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

34. If you checked any of the boxes indicating the existence of federal, state, or local barriers, identify each barrier and the corresponding practice.

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Risk Management

Are you aware of federal, state, or local regulatory, administrative, or technical barriers to implementing the following management practices? Check the boxes that apply.

35. Evidence in both property damage and personal injury incidents is reported and substantiated according to a set procedure. (5.3)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

36. Legal counsel reviews documents and provides counseling in all legal matters to ensure compliance with federal, state, and local regulations. (5.4)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

37. If you checked any of the boxes indicating the existence of federal, state, or local barriers, identify each barrier and the corresponding practice.

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Communications

Are you aware of federal, state, or local regulatory, administrative, or technical barriers to implementing the following management practices? Check the boxes that apply.

38. The agency establishes and follows procedures for communicating with governing bodies and the public. (6.1)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

39. Such procedures ensure that inquiries from the public are recorded, tracked and answered. (6.2)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

40. The agency encourages the public to help the agency understand community needs through public meetings and public hearings on agency projects. (6.3)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

41. A system for responding to and recording complaints and service requests is established. (6.4)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

42. The agency communicates information about public works activities and projects to other governmental agencies and departments. (6.5)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

43. The agency coordinates its activities and projects with those of other agencies and departments. (6.5)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

44. Radio operators must comply with all federal and state telecommunications guidelines in radio operations. (6.9)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

45. Maps of the service area are readily available to communications personnel. (6.17)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

46. If you checked any of the boxes indicating the existence of federal, state, or local barriers, identify each barrier and the corresponding practice.

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Records

Are you aware of federal, state, or local regulatory, administrative, or technical barriers to implementing the following management practices? Check the boxes that apply.

47. The agency centrally manages, organizes, maintains, and retrieves agency records. (7.1)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

48. A formal process for ensuring public access to agency records is established. (7.2)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

49. The agency establishes a policy regarding retention and storage, disposal, security, and format of agency records. (7.2)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

50. The agency has a written policy which defines and determines access to personnel files. (7.8)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

51. The agency stores, catalogs, and updates maps of the service area. (7.11)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

52. If you checked any of the boxes indicating the existence of federal, state, or local barriers, identify each barrier and the corresponding practice.

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Emergency Management

Are you aware of federal, state, or local regulatory, administrative, or technical barriers to implementing the following management practices. Check the boxes that apply.

53. The agency has developed a multi-hazard emergency plan. (8.1)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

54. A manual or statement of procedures governs operations during and following an emergency. (8.2)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

55. The agency participates in emergency exercises. (8.4)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

56. The agency provides training in emergency procedures and operations to its personnel. (8.5)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

57. The agency ensures capability to communicate with emergency service providers. (8.6)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

58. Emergency equipment is tested and storage facilities are inspected to ensure operation and prevent damage. (8.7)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

59. Mutual aid agreements for providing resources and services are established. (8.8)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

60. Hazard potentials are identified and analyzed for the development of risk mitigation measures. (8.14)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

61. Procedures are established for the reliable functioning and rapid restoration of community lifeline facilities. (8.16)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

62. If you checked any of the boxes indicating the existence of federal, state, or local barriers, identify each barrier and the corresponding practice.

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Safety

Are you aware of federal, state, or local regulatory, administrative, or technical barriers to implementing the following management practices? Check the boxes that apply.

63. Occupational safety and health performance is systematically measured and reports are submitted and reviewed by risk assessment officers or other designated personnel. (9.3)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

64. Hazardous materials handling, storage, identification, and disposal are performed according to approved directives. (9.5)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

65. Procedures establish safe working conditions in excavations and confined spaces. (9.6)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

66. If you checked any of the boxes indicating the existence of federal, state, or local barriers, identify each barrier and the corresponding practice.

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_____

Municipal Engineering

Are you aware of federal, state, or local regulatory, administrative, or technical barriers to implementing the following management practices? Check the boxes that apply.

67. Zoning control regulations are established and enforced to define lot areas and other particular requirements for specific areas. (10.2)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

68. Plans for subdivision and land development proposals are reviewed in concept, preliminary, and final stages. (10.4)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

69. If you checked any of the boxes indicating the existence of federal, state, or local barriers, identify each barrier and the corresponding practice.

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_____

Engineering Design

Are you aware of federal, state, or local regulatory, administrative, or technical barriers to implementing the following management practices? Check the boxes that apply.

70. The agency has policies which determine what department or individuals are responsible for project designs. (11.1)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

71. A registered engineer or qualified designer ensures that proper procedures and methods are used on engineering design projects. (11.3)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

72. The agency uses current design standards, which include techniques for hazard mitigation. (11.4, 11.5)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

73. Project scoping is conducted to ensure that sufficient detailed information is provided to allow completion of the work within the anticipated cost and within the intended project objectives. (11.6)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

74. For an analysis of the full range of alternative approaches to meeting project needs, the agency conducts a feasibility study. (11.8)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

75. The design and construction of new or rehabilitated structures includes a quality assurance plan, including peer review for major project work. (11.13)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

76. The agency adopts standard design techniques and construction specifications and applies them to all projects. (11.14)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

77. All specifications include bidding requirements, contract forms, and standard general conditions. (11.16)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

78. Traffic plans are developed where construction work occurs on arterial or major traffic routes. (11.17)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

79. The agency schedules a final plan review prior to bidding and the plan is amended according to the results of the review. (11.19)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

80. The contract documents list all conditions of the work and the responsibilities of both parties to ensure completion and quality control. (11.20)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

81. If you checked any of the boxes indicating the existence of federal, state, or local barriers, identify each barrier and the corresponding practice.

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_____

Bid Process

Are you aware of federal, state, or local regulatory, administrative, or technical barriers to implementing the following management practices? Check the boxes that apply.

82. The agency follows legal requirements for advertising requests for bids. The advertisements should identify the work involved, where it is to be accomplished, and the date, time, and place for receiving bids. (12.1)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

83. Qualifications and performance of prospective bidders is investigated if allowed by and state law or local guidelines. (12.3)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

84. Bid opening procedures are established. (12.4)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

85. The agency sets evaluation criteria for all proposals and a procedure is established for awarding contracts. (12.5)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

86. The agency follows a well-defined procedure for formal awarding or rejecting of contracts. (12.6)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

87. If you checked any of the boxes indicating the existence of federal, state, or local barriers, identify each barrier and the corresponding practice.

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Construction

Are you aware of federal, state, or local regulatory, administrative, or technical barriers to implementing the following management practices? Check the boxes that apply.

88. The agency develops a procedures manual for administering public works construction projects. (13)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

89. The agency responsible for construction coordinates work in the public right-of-way. (13.6)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

90. A single agency is responsible for administering and coordinating work in the public right-of-way. (13.6)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

91. The agency establishes a procedure for inspecting work to ensure that construction work is completed in accordance with project plans and specifications. (13.7)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

92. Construction inspection should include certified testing of materials to verify compliance with specifications. (13.8)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

93. A written procedure for tracking the warranties on the construction work is established. (13.12)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

94. If you checked any of the boxes indicating the existence of federal, state, or local barriers, identify each barrier and the corresponding practice.

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Right-of-Way Permits

Are you aware of federal, state, or local regulatory, administrative, or technical barriers to the following practices? Check the boxes that apply.

95. A permit process is established for all construction activity in public rights-of-way. (14.1)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

96. A permit form is available to track the work to be done and to inspect the site at appropriate times during work activities and after completion of construction. (14.4)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

97. A written policy defines utility cut testing and is in compliance with accepted standards for permit work. (14.5)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

98. If you checked any of the boxes indicating the existence of federal, state, or local barriers, identify each barrier and the corresponding practice.

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Utility Coordination

Are you aware of federal, state, or local regulatory, administrative, or technical barriers to implementing the following management practices? Check the boxes that apply.

99. The agency consults and cooperates with all public and private utilities regarding requests and proposals relating to utility location. (15.1)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

100. Long range utility plans are developed for major system additions, upgrades or changes, and for compliance with federal, state, and local directives. (15.4)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

101. Records and maps documenting aboveground and underground facility location and type are maintained. (15.5)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

102. Clearance requirements are established for utility lines. (15.7)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

103. The agency participates in Call Before-You-Dig or One-Call Systems in compliance with state or local laws. (15.8)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

104. If you checked any of the boxes indicating the existence of federal, state, or local barriers, identify each barrier and the corresponding practice.

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Buildings

Are you aware of federal, state, or local regulatory, administrative, or technical barriers to implementing the following management practices? Check the boxes that apply.

105. The agency complies with all federal, state, or local building codes, regulations, and environmental laws with regard to the design, construction and maintenance of buildings. (16.1)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

106. The agency establishes a maintenance program that includes planned, preventive, and emergency maintenance. (16.3, 16.5)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

107. A planned maintenance program helps the agency to schedule replacement of building components. (16.3, 16.4)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

108. The agency performs energy audits. (16.9)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

109. The agency develops a facility inspection program, and maintains a facility inventory. (16.11, 16.13)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

110. Custodial methods and procedures are established for each facility. (16.15)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

111. An inspection and testing program is established and maintained for all life and safety components located in facilities, including: elevators, emergency generators, fire alarm systems, sprinklers, emergency fire extinguishers, and other fire suppressant systems. (16.18)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

112. Provisions are made to accommodate the handicapped. (16.20)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

113. If you checked any of the boxes indicating the existence of federal, state, or local barriers, identify each barrier and the corresponding practice.

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Equipment

Are you aware of federal, state, or local regulatory, administrative, or technical barriers to implementing the following management practices? Check the boxes that apply.

114. The agency has written standards specifying the type and frequency of required safety and condition inspections. (17.3)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

115. Inspection reports are reviewed and analyzed to identify excessive costs and downtime, the need for replacement, and whether preventive maintenance is being performed satisfactorily. (17.4)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

116. A procedure establishes safety reviews to determine the adequacy and appropriateness of equipment. (17.5)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

117. The agency establishes a preventive maintenance (PM) program. As part of this program, all PM activities are planned and scheduled in advance with periodic performance reviews of PM activities. (17.7)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

118. Planning of PM activities includes: definition of work to be performed; diagnosis of work prior to scheduling; estimate of labor, materials, shop space, and time; and documentation to support maintenance action. (17.7, 17.8)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

119. All non-emergency maintenance activities are scheduled based on priority of need. (17.11)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

120. The agency maintains an inventory of all leased and owned equipment. (17.14)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

121. A fluids inventory tracks the use of fuels, oils, lubricants and automotive fluids. (17.15)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

122. A parts inventory is established and maintained. (17.16)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

123. The agency adopts a procedure for disposing of or recycling parts and materials in an environmentally sound manner. (17.17)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

124. The agency develops a plan for replacing equipment and parts based on estimated lifespans assigned to each replacement item. (17.18)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

125. In analyzing any replacement decision, consideration is given to maintenance costs, fuel costs, condition, suitability, safety, downtime, and new technology. (17.19)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

126. The agency establishes procedures for the installation, inspection, maintenance, and removal of underground storage tanks. (17.22)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

127. If you checked any of the boxes indicating the existence of federal, state, or local barriers, identify each barrier and the corresponding practice.

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Grounds

Are you aware of federal, state, or local regulatory, administrative, or technical barriers to implementing the following management practices? Check the boxes that apply.

128. The agency establishes a comprehensive landscape master plan, which includes operations, inspections, maintenance, inventory requirements, and program improvements. (18.1)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

129. An inventory of all public trees is developed and maintained. (18.2)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

130. Vision clearance is maintained at street. alley, and driveway intersections to prevent landscaping and foliage from restricting motorists vision. (18.6)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

131. If you checked any of the boxes indicating the existence of federal, state, or local barriers, identify each barrier and the corresponding practice.

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Solid Waste

Are you aware of federal, state, or local regulatory, administrative, or technical barriers to implementing the following management practices? Check the boxes that apply.

132. The agency develops an integrated solid waste management plan, defining the available solid waste options -- i.e., recycling, source reduction, combustion, landfill disposal -- and the respective roles of each within the plan. (20.1)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

133. A plan to reduce through source reduction and recycling the amount of waste intended for disposal is prepared and adopted. (20.2)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

134. The agency has procedures for monitoring, measuring, and recording wastes delivered at waste handling facilities (i.e., transfer stations, MRFs, landfills, incinerators, etc.). (20.3)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

135. The agency's procedures include environmentally sound waste collection, transport, and disposal methods. (20.4)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

136. If you checked any of the boxes indicating the existence of federal, state, or local barriers, identify each barrier and the corresponding practice.

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Solid Waste Collection, Processing, and Disposal

Are you aware of federal, state, or local regulatory, administrative, or technical barriers to implementing the following management practices? Check the boxes that apply.

137. The agency develops a quality of service statement defining collection frequency, type and placement of waste containers, spillage, and noise levels. (21.1)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

138. The agency has a policy defining procedures for separating household hazardous wastes from the waste stream. (21.5)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

139. Recycling programs are evaluated periodically to determine available markets and participation rates. (22.1)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

140. The agency determines the marketability of recyclable materials prior to startup of a collection program or development of a materials recovery facility. (22.2)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

141. The agency supports policies favoring purchase of products made with recycled materials. (22.3)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

142. Collection program options (curbsort/bin, commingled, bag-based, drop-off, etc.) are evaluated based on demographics, participation rates, separation efficiencies, labor costs,and processing and marketing costs. (22.4, 22.5, 22.6)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

143. Periodic reviews of recycling programs are performed to quantify costs and waste reduction volumes and to assessthe overall efficiency and effectiveness of the programs. (22.8)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

144. Recognizing that revenues derived from recycling may not be adequate to offset program costs, the agency should try to maintain a level of service sufficient to meet community objectives while reducing regular collection and disposal costs to offset the costs of recycling collection and processing. (22.9)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

145. The agency establishes a program that describes and/or recommends options for composting organic materials. (22.10)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

146. Flow control ordinances ensure that waste-to-energy incinerators and refuse-derived fuel facilities are provided enough waste material to ensure efficient operation and financing. (22.16)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

147. Incinerator ash is disposed of in accordance with federal, state and local mandates. (22.19)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

148. New landfills are designed, constructed, operated, and closed in an environmentally sound manner and according to all federal, , state, and local mandates. (23.1)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

149. Waste disposed at landfills is screened for recyclable, hazardous (large appliances, lead acid batteries, etc.) or otherwise unacceptable materials. Such materials are separated and removed from the wastes as necessary. (22.3)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

150. Leachate is contained and treated during landfill operation and after closure and is in accordance with federal, state, and local regulations. (23.5)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

151. Landfill design includes monitoring requirements that comply with federal, state and local directives. (23.10)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

152. Landfill design includes methane management requirements that comply with federal, state, and local directives. (23.11)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

153. Compaction techniques are identified and used to create stabilized surfaces and enhance safety and litter control of the landfill. (23.12)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

154. Standard landfill liners are used to control the collection and movement of leachate and gases. (23.15)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

155. Landfill closure requirements comply with federal, state, and local directives to prevent uncontrolled movement of contaminants. (23.16)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

156. Post-closure requirements comply with federal, state, and local directives and ensure proper monitoring and maintenance of the site. (23.19)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

157. If you checked any of the boxes indicating the existence of federal, state, or local barriers, identify each barrier and the corresponding practice.

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Streets and Street Cleaning

Are you aware of federal, state, or local regulatory, administrative, or technical barriers to implementing the following management practices? Check the boxes that apply.

158. Transportation programs are coordinated with other local, state, or transportation and land use planning efforts. (24.5)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

159. Short- and long-term capital improvement programs are developed and establish a schedule for major construction and rehabilitation projects. (24.6)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

160. Operations and maintenance practices are coordinated with the activities of other agencies (i.e., police, fire, emergency services, etc.). (24.9)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

161. Standard operations and maintenance practices are adopted for street functions such as pothole repair, traffic control devices, street lighting, bridges, retaining walls, pedestrian facilities, etc. (24.10)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

162. The agency has a policy establishing the level and frequency of inspections for streets, bridges, tunnels, retaining walls, and sidewalks. (24.11)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

163. The agency establishes the conditions under which pavements may be cut. (24.14)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

164. The agency maintains a street facilities inventory, which includes a record of the location, size, installation date, type, characteristics, and maintenance and operations needs of each facility. (24.15, 24.16)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

165. The agency establishes a preventive maintenance schedule for all street facilities. (24.18)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

166. Minimum criteria are defined and met for installing traffic control devices. (24.19)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

167. The agency develops a pavement management program. (24.22)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

168. Pavement maintenance procedures are developed to ensure efficient and effective use of personnel, equipment, materials, and rate of production. (24.23)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

169. Maintenance plans and procedures are established and documented for inlets, manholes, catch basins, sewer lines,culverts, curbs and gutters. (24.29)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

170. Standards for pavement markings ensure uniform design, position, and application. (24.24)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

171. The agency adopts environmentally sound methods of collecting, controlling, and disposing of street debris. (25.2)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

172. If you checked any of the boxes indicating the existence of federal, state, or local barriers, identify each barrier and the corresponding practice.

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Stormwater

Are you aware of federal, state, or local regulatory, administrative, or technical barriers to implementing the following management practices? Check the boxes that apply.

173. The agency has a policy establishing the minimum and maximum storm magnitude requiring protective measures to prevent local flooding. (27.1)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

174. A policy defines and establishes procedures to protect the floodplain. (27.2)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

175. Water quality management techniques are developed to ensure that water quality standards are met. (27.3)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

176. Effluent sampling practices and authorized entry points to the stormwater system are identified. (27.4)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

177. Federal, state, and local regulations defining allowable discharges to the stormwater system are followed. (27.5)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

178. The agency develops a master plan for drainage basins. (27.6)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

179. The agency maintains a stormwater facilities inventory, which includes a record of the location, size, installation date, type, characteristics, and maintenance and operations needs of each facility. (27.7, 27.8)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

180. Improvements to the stormwater system are defined and present and future development funds are specified. (27.11)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

181. The agency establishes a sediment and erosion control policy. (27.12)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

182. Pollution mitigation techniques, inspection criteria, and enforcement provisions are established to improve the quality of receiving waters. (27.13)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

183. Maintenance procedures are developed for conveyance and storage facilities. (27.17)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

184. Wet and dry weather flows are monitored for pollutants. (27.20)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

185. If you checked any of the boxes indicating the existence of federal, state, or local barriers, identify each barrierand the corresponding practice.

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Potable Water

Are you aware of federal, state, or local regulatory, administrative, or technical barriers to implementing the following management practices? Check the boxes that apply.

186. A directive establishes the source of potable water and any limitations on use. (28.1)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

187. The agency develops a plan outlining procedures for managing a change in quality or quantity of available raw water and identifies procedures to minimize treatment problems. (28.2)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

188. The agency has a program describing the operation and use of reservoirs, wells, surface potable water sources, and booster stations to enable efficient delivery of treated water, including drought contingency plans and cost-efficient water conservation plans. (28.9)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

189. Maintenance practices for the water distribution system include installation, testing, and preventive maintenance activities for all elements of the system. (28.10)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

190. An inspection schedule is established for all elements of the water treatment and distribution system. (28.12)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

191. Maintenance and repair of the system is followed with disinfection measures. (28.15)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

192. Raw water supplies are regularly tested for chemical and bacteriological changes. (28.17)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

193. A program for sampling and testing water quality is established. (28.18)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

194. If you checked any of the boxes indicating the existence of federal, state, or local barriers, identifyeach barrier and the corresponding practice.

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Wastewater

Are you aware of federal, state, or local regulatory, administrative, or technical barriers to implementing the following management practices? Check the boxes that apply.

195. Defined effluent limits comply with federal, state, and local laws and directives. (29.1)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

196. The agency has a pretreatment program with special permit controls. (29.3)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

197. The agency has a plan identifying design and control measures for inflow and infiltration rates. (29.4)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

198. Operating records are maintained to verify that the treatment facility meets performance requirements. (29.6)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

199. Water pollution control facility procedures include a description of operating activities during peak flows and flooding conditions. (29.8)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

200. The agency has a program for properly disposing of sludge. (29.9)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

201. Inspection, maintenance, repair, and cleaning procedures are established. (29.11)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

202. The agency maintains a wastewater facilities inventory, which includes a record of the location, size, installation date, type, characteristics, and maintenance and operations needs of each facility. (29.12, 29.13)

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

203. If you checked any of the boxes indicating the existence of federal, state, or local barriers, identify each barrier and the corresponding practice.

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Other Practices

204. As you may have noticed, not all the practices in the manual are covered in this questionnaire. Are you aware of any management practices not mentioned here, that are relevant to your agency but which are difficult to comply with because of federal, state, or local barriers?

☐ Substantial barriers ☐ Moderate barriers ☐ Minor barriers ☐ None

205. Please identify any barriers to practices omitted from the questionnaire. You can identify a practice by simply citing the reference number assigned to it in the Management Practices manual.

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Opportunities for Improving Public Works

206. In your view, what measures would help to improve the performance and efficiency of public works agencies? (Rank your responses in order of importance on a scale of 1 to 11, where 1 = most important and 11 = least important.)

A. ____ New or increased funding for public works

B. ____ Development of new technologies

C. ____ Regulatory or administrative relief

D. ____ Better cooperation and communication with other agencies or departments

E. ____ Education/training of employees

F. ____ Use of computerized information management systems

G. ____ Better communication with the public

H. ____ Greater collaboration with and involvement of the private sector in delivering services

I. ____ Increased access to public works information resources

J. ____ Other_____

207. In your view, what strategies would promote better maintenance of public facilities, extend useful life, and reduce deferred maintenance? (Rank your responses in order of importance on a scale of 1 to 12, where 1 = most important and 12 = least important.)

A. ____ Increased investment in new public works facilities

B. ____ Increased investment in repair and rehabilitation of existing public works facilities

C. ____ Development of new technologies

D. ____ Use of life-cycle cost methods where applicable

E. ____ Use of computerized maintenance management systems

F. ____ Consideration of long-term operation and maintenance costs in selecting capital projects

G. ____ Systematic facility inspection programs to identify deficiencies and maintenance needs

H. ____ Ability to compare costs of alternative repair options with replacement options

I. ____ Innovative methods of financing public works projects

J. ____ More flexibility in using state or federal funds

K. ____ Greater collaboration with and involvement of the private sector

L. ____ Other_____

208. Do you know of other any ways to improve public works operations either through the management practices or new technology or some other approach? Please comment.

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APPENDIX E - MATRIX OF CHAPTERS TO REVIEW AT EACH SITE

Agency

Management Practices Chapter	Wake.	Fost. City	Pitt.	Atla.	Lawr.	Bil-lings	Wau-kgn	Rnd. Rock	St. Paul	Sno. Cnty.	ADOT	L.A. Cnty
1. Organ.	x	x	x	x	x	x	x	x	x	x	x	x
2. Pers. Mgmt.	x	x	x	x	x	x	x	x	x	x	x	x
3. Planning	x	x	x	x	x	x	x	x	x	x	x	x
4. Finance	x	x	x	x	x	x	x	x	x	x	x	x
5. Risk Mgmt.	x	x	x	x	x	x	x	x	x	x	x	x
6. Comm.	x	x	x	x	x	x	x	x	x	x	x	x
7. Records	x	x	x	x	x	x	x	x	x	x	x	x
8. Emerg. Mgmt.	x	x	x	x	x	x	x	x	x	x	x	x
9. Safety	x	x	x	x	x	x	x	x	x	x	x	x
10. Municpl. Eng.	x	x			x	x	x	x	x	x		
11. Eng. Design	x	x		x		x	x	x	x	x	x	
12. Bid Process	x	x		x		x	x	x	x	x	x	
13. Const.	x	x	x		x	x	x	x	x	x	x	x
14. Permits	x	x	x		x	x	x	x	x	x	x	x
15. Util. Coord								x				
16. Bldgs.	x	x			x		x	x	x	x	x	x
17. Equip.	x	x	x		x		x	x	x	x	x	x

Management Practices Chapter	Wakc.	Fost. City	Pitt.	Atla.	Lawr.	Bil-ling s	Wau-kgn	Rnd. Rock	St. Paul	Sno. Cnty.	ADOT	L.A. Cnty
18. Grnds.	x		x				x	x	x		x	x
19. S.W. Mgmt.	x		x	x	x	x		x	x	x		
20. S.W. Coll.	x		x	x	x	x		x	x	x		
21. S.W. Proc.	x		x	x	x	x		x		x		
22. S.W. Disp.	x		x	x		x		x		x		
23. Streets	x	x		x	x	x	x	x	x	x	x	
24. Snow Ctrl.	x		x	x	x	x	x	x	x	x	x	
25. Stormwater	x	x	x	x	x	x	x	x	x	x		
26. Pot. Water	x	x		x			x	x				
27. Wastewater	x	x	x	x			x	x	x			

This table depicts the chapters of the *Public Works Management Practices* manual reviewed at each of the twelve assessment sites. This table, prepared using information provided by each agency in the pre-site visit questionnaire, was used to pair agencies with comparable responsibilities and to guide the on-site assessment process. As arrangements were made with each site for the assessment, additional chapters were added when personnel from agencies with these responsibilities were available. Agencies were paired in the following manner:

1 = Wakefield, MA 2 = Foster City, CA
3 = Pittsburgh, PA 4 = Atlanta, GA
5 = Lawrence, KS 6 = Billings, MT
7 = Waukegan, IL 8 = Round Rock, TX
9 = St. Paul, MN 10 = Snohomish County, WA
11 = ADOT 12 = Los Angeles Co, CA

APPENDIX F - SAMPLE PAGE FROM SITE ASSESSMENT CHECKLIST

MANAGEMENT PRACTICE CHAPTER 1 ORGANIZATION	Is the intent of the management practice clear & understandable? (Y) Yes (N) No	Is this something you do or have? (Y) Yes (N) No (NA) Not Applicable	To have a good public works operation, is this management practice; (N) Necessary (D) Desirable (NN) Not Necessary	Describe impediments to performing this management practice; (F) Federal (S) State (L) Local (A) Administrative (T) Technical (O) Other (SUB) Substantial (MOD) Moderate (MIN) Minor
1.1 Statement Of Purpose				
1.2 Description Of Organization				
1.3 Review Process				
1.4 Organization Policies				
1.5 Code of Ethics				

APPENDIX G - BACKGROUND ON ASSESSMENT SITE VISITS

During the data collection and interview process, information was gathered on the characteristics of each assessment site. This information allowed the assessment team to get a sense of the environment within which the public works department operated. Typically the assessment team sought information on the organization of the unit of local government, the organization of the public works department, the relationship between public works issues and local decisionmaking, funding of public works, staffing levels, population of service area, and interaction with other governmental agencies. This section summarizes key features of the twelve sites. The sites are presented in the order in which assessments were conducted.

St. Paul

The first site assessment was conducted May 2-4, 1993 in St. Paul, Minnesota. At the kick-off assessment, several members of the assessment team participated. The two assessors from NAPA and a NAPA staff person participated in the assessment as did two representatives of the Management Practices Advisory Committee, a representative of St. Paul's paired assessment site, Snohomish County, Washington, and an APWA staff person.

St. Paul has a population of approximately 270,000. The Department of Public Works reports to the Mayor. The Department of Public Works had a 1993 budget of $135 million of which $90 million was in operating expenses and $45 million was in capital programs. The Department is staffed with 472 full-time employees. Major divisions of the Department include: Construction and Surveys; Street Maintenance; Street Engineering; Equipment Services; Traffic & Lighting; Sewer Engineering; Sewer Maintenance; Bridges; Infrastructure Services; and Administration.

St. Paul is in the midst of a Total Quality Improvement Initiative. The overall goals of the Initiative in St. Paul are: to provide high quality, citizen driven services; to achieve a united City, with citizens, elected officials, and City employees all working toward a common goal; to increase participation of City employees in problem-solving and making decisions about work place operations; and to create an improved service orientation for the City.

The Public Works Department has also aggressively pursued an agency self assessment using the public works management practices. A self assessment manager was appointed to coordinate this effort. The management practices self assessment is being interwoven into the overall total quality initiative.

In 1993, St. Paul was in the eighth year of a ten year Combined Street and Sewer program. This program was in response to Federal and state mandates to address combined sewer overflows. The city combined the required work to separate sewers with a street and utility projects to make it more economical and less disruptive in the long run. During 1993, St. Paul planned to complete 16 miles of newly paved streets and 18 miles of new sewer.

In addition to Department personnel, the assessment team interviewed members of the City Council, the Mayor, City Attorney, and representatives from other city departments.

Snohomish County

The second site visit was conducted in Snohomish County, Washington on May 9-11, 1993. Snohomish County is located in the central portion of the Puget Sound area and is the third most populated county in Washington. The population of the County is approximately 494,000, spread over 2,098 square miles. The County's population has grown 38% in the last ten years. Approximately 55% of the county population lives in the unincorporated area. The County has 20 incorporated cities and towns. The economy has changed from primarily farming and wood products to manufacturing and high technology industries.

Snohomish County is organized under the "county home rule charter" form of government with five elected County Council members and an elected County Executive. The County provides a wide range of services including law enforcement and criminal justice, human services, parks and recreation, road building and maintenance, and solid waste management and disposal. The Public works budget for 1993 was $81.3 million. Solid waste is budgeted separately at $30.4 million. Public works has 548 full-time staff positions and the following major divisions; Administration, Maintenance and Operations, Engineering Operations, River Improvement, Solid Waste, Design and Construction, Surface Water, and Equipment.

Snohomish County shared information they had developed on the impact of increasing costs for highway construction projects. Their analysis indicated that construction costs for a typical one mile section of multi-lane highway increased by $4 million from 1985 to 1995. This increased cost was comprised of an added $1.25 million in right-of-way expenses, $1.75 million in inflation, and $1 million in environmental studies.

During the site visit, the assessment team met with personnel from all major divisions of the public works department, the County Executive, County Council members, the Deputy Director, and personnel from Finance and Risk Management, Attorney's Office, and Personnel.

Waukegan

Waukegan, Illinois was the third assessment site. The assessment team arrived on May 16, 1993. Waukegan is located approximately 40 miles north of Chicago on the shores of Lake Michigan. It has an industrial base and a population of approximately 70,000. The city has a mayor-council form of government. The Public Works Department has 114 full-time employees.

Interviews were conducted with the mayor, chief of staff, public works directors, supervisors of all the public works divisions, and the city's finance, personnel, risk management, and emergency management department heads.

Lawrence

The fourth site visit was held in Lawrence, Kansas on June 6 - 8, 1993. Lawrence is located approximately 30 miles west of Kansas City, Missouri. It has a population of approximately 54,000. The community has a council-manager form of government with a mayor elected from a city commission of five members. The Department of Public Works reports to the City Manager. The Department has 131 full-time employees.

Los Angeles County Internal Services Department

The Los Angeles County Internal Services Department site assessment was conducted June 13-15, 1993. The County has a population of approximately 8.3 million. The Los Angeles metropolitan area population is approximately 13 million. It is governed by a with a County Board of Supervisors comprised of five members and managed by a Chief Administrative Officer..

The agency participating in the site assessment was the Internal Services Department which provides many common central services, such as purchasing, equipment maintenance, building construction and maintenance and information technology for operating departments. The department has 1,109 employees. Interviews were conducted with personnel from the Facilities Operations Service and other units of the Internal Services Department. Interviews were also arranged with staff members from the street maintenance division of the Department of Public Works and an attorney from the County Counsel's Office.

Wakefield

The Wakefield, Massachusetts site visit was the sixth one conducted and was held on July 11-13, 1993. Wakefield, with a population of approximately 24,000, is located approximately ten miles north of Boston. The Town's form of governance is based on the Board of Selectmen - Executive Secretary plan as defined under Massachusetts law. It has a Board of Public Works to which the Department of Public Works reports. The Department has 66 full-time employees.

Atlanta

The seventh site assessment was conducted in Atlanta, Georgia July 18-20, 1993. The City of Atlanta has a population of approximately 450,000 in an area of approximately 134 square miles. The Atlanta metropolitan area consists of eighteen counties and a total regional population of 2.8 million. Atlanta has a strong mayor-council form of government. The Council has eighteen members. Three senior managers report to the Mayor: the City Attorney, the Chief Financial Officer, and the Chief Operating Officer.

Public works reports to the Chief Operating Officer along with the fire, police and planning departments. The Public Works Department contains four Bureaus: Sanitary Services, Highways and

Streets, Pollution Control, and Traffic and Transportation. Bureau chiefs are appointed by the Mayor and approved by the Council. The Department has 1,762 full-time employees.

Several staff members from the City of Atlanta participated in the interview sessions. Interviews were conducted with representatives of all Public Works Bureaus as well as with Planning and Development, Office of the Mayor, Marketing and Communications, Finance, City Council, General Services, Personnel and Human Resources, City Attorney's Office, Motor Transport Services, and Purchasing. A representative of the Corps of Engineers also participated in this site assessment in conjunction with a project review meeting held in advance of the site visit.

Round Rock

The eighth site assessment was conducted July 25-27, 1993 in Round Rock, Texas. Round Rock has a population of approximately 36,000. It is located about fifteen miles north of Austin. The Department of Public Works reports to the City Manager. The Department has 100 full-time employees.

Arizona Department of Transportation

The Arizona Department of Transportation, headquartered in Phoenix, Arizona was the site of the ninth site assessment on August 1 - 3, 1993. The Arizona DOT is responsible for the Federal and state highway system in Arizona. As such it serves the statewide population of approximately 4 million. The Department Director reports to the Governor of the State. ADOT has 4,400 full-time employees.

Pittsburgh

The tenth site visit was conducted August 8-10, 1993 in Pittsburgh, Pennsylvania. The population of Pittsburgh is 370,000, with a regional population of 2.2 million. The city covers an area of 55 square miles and has 84 neighborhoods. Pittsburgh's form of government is a strong mayor with nine council members.

The Department of Public Works 1993 budget included $23 million in the operating budget and $6 million in the capital budget. The Department is responsible for 950 miles of streets and alleyways, 1200 miles of sewers, 42,000 street lights and over 100,000 signs.

The Department of Public Works is organized into four main bureaus, including Administration, Public Works Operations, Parks Maintenance, and Environmental Services. The Department has 800 full-time employees. The Department reports to the Chief Administrative Officer of the City.

Interviews were conducted with personnel from each Departmental Bureau as well as representatives from other city departments such as Planning, Mayor's Budget Office, Public Safety, Finance, City Council, General Services, Law Department, Personnel, and Engineering and Construction.

Foster City

Foster City, California was the site of the eleventh site visit which was conducted August 15-17, 1993. Foster City, located on San Francisco Bay between San Francisco and San Jose, has a population of 29,000. The Public Works Department reports to the City Manager. The Department has 48 full-time employees.

Billings

The twelfth, and final site visit was held in Billings, Montana on August 18-20, 1993. Billings has population of 81,000 and is the largest metropolitan area in Montana. The community is growing about two percent per year. It has an area of approximately 32 square miles. Billings operates under the council-manager form of government and has 13 city departments. Water and sewer are separate from public works. Department heads report to the City Administrator. The Department of Public Works is organized into six major divisions; Administration, Building, City Engineers, Public Works Operations, Street-Traffic, and Solid Waste.

The Department of Public Works annual 93/94 budget includes $7.7 million for operations, $1 million for street lights, $1.1 million for street maintenance, and $6.6 million for projects, for total expenses of $16.4 million. The Department has 61 employees in the 93/94 budget. Public Works is responsible for 444 miles of streets, 7 miles of highways, 114 signalized intersections, and an estimated 25,000 traffic signs. The Department does all construction in public right of way.

Interviews were conducted with the City Administrator, Personnel Department, Legal Department, Finance Department, and Emergency Services.

APPENDIX H - SUMMARIES OF SURVEY DATA AND SITE ASSESSMENT RESPONSES

Arizona Department of Transportation (ADOT)

Survey Data. Staff from ADOT reported impediments to 53 management practices on the questionnaire. About 62 percent were internal, administrative impediments, though many were difficult to distinguish from state impediments, since ADOT is itself a state agency. Another 28 percent related to various state rules and mandates. Federal impediments were mentioned in five instances.

Among the administrative impediments, ADOT frequently cited lack of funding and staff -- for example, to developing more effective pavement maintenance practices and to better organizing the current stormwater drainage facilities inventory. Geographic and organizational diversity were also mentioned as impediments to complying with practices in the areas of risk management, emergency management, and safety. For example, to a question asking whether hazardous materials are handled, stored, identified, and disposed of according to approved directives, ADOT answered that the size of the Department and the "wide dispersal of worksites" meant that good communication was sometimes lacking and that some sites may not get proper attention. This was also cited as a barrier to developing multi-hazard emergency plans, participating in emergency exercises, and establishing mutual aid agreements with other agencies.

With respect to state impediments, ADOT referred to state personnel rules which hinder compliance with numerous practices relating to personnel management, such as developing a job classification plan, a job compensation plan, and establishing procedures for employee evaluations, promotions and demotions, and grievances. Bid process procedures were also mentioned in connection with state contract requirements.

ADOT made only a few general references to federal mandates and requirements that inhibit its ability to comply with the management practices. Most were concerned with problems encountered in trying to coordinate planned projects with federal agencies such as the United States Forest Service.

Site Assessment Responses. In contrast to the survey data, the site assessments revealed a stronger emphasis on state and federal requirements, with less discussion of internal, administrative barriers. Many of these were addressed in Chapter Four under discussions of ISTEA, federal permitting requirements, the Davis-Bacon Act, and the Fair Labor Standards Act. Few additional administrative concerns emerged, except with respect to situations involving damage to ADOT structures, signage, and so forth. The Department reported that it suffers losses of several million dollars each year because of

damage often caused by railroad accidents. ADOT said that it is difficult to collect compensation for such damages.

Atlanta

Survey Data. The Atlanta questionnaire revealed mostly local, administrative impediments. Over 90 percent of the 69 impediments cited were administrative, while federal impediments were mentioned with respect to only four management practices. In areas such as organization, personnel management, purchasing, finance, and recordkeeping, Atlanta's Public Works Department lacks control over many administrative functions. This makes it difficult, for example, for the Department to establish a recruitment plan, assign responsibility for selecting and hiring employees, and verify that new employees meet professional certification requirements, these functions are under the control of the City's Personnel Department. Similar problems affect its ability to make its own purchasing decisions, as that is handled by a separate purchasing agency.

Lack of time and availability of personnel also limit the Department's ability to fully comply with certain engineering design practices, such as conducting feasibility studies, following design standards that incorporate techniques for hazard mitigation, and ensuring that projects include quality assurance plans and peer review. Atlanta also remarked on problems budget constraints cause for replacing essential equipment.

The Department indicated numerous solid waste management practices to which barriers to compliance exist. Most of these barriers involve inadequate resources. For example, the department said that developing an integrated solid waste management plan would require funds that it currently lacked. Inadequate funding plus the "dynamic nature of environmental regulations" hampers its ability to ensure that it follows environmentally sound waste collection, transport, and disposal methods. The Department also mentioned that municipal bidding requirements could interfere with development of a policy favoring purchase of products made with recycled materials.

The limited federal impediments mentioned on the questionnaire concerned the problems Atlanta was experiencing in complying with the NPDES Stormwater Regulations; the problem was primarily the lack of funding. Also mentioned in connection with the City's wastewater treatment operations were effluent limits on metals as mandated by EPA. The City's Pollution Control Department believed them to be based on "unsound criteria."

Site Assessment Responses. As at several other sites, deeper and more frequent concerns about the impact of federal mandates were expressed at the Atlanta site assessment than were expressed on the questionnaire. Not surprisingly, unfunded mandates dominated the respondents' concerns. A representative from the city's planning department said, for example, that "ADA and EPA mandates had helped improve the City, but lack of federal funding for these mandates had reduced its ability to provide necessary infrastructure services." The Acting Commissioner of Public Works noted that "federal mandates typically passed to local government have a direct impact and an indirect impact by displacing local priorities."

Federal regulations governing wastewater, combined sewer overflows (CSOs), and stormwater have had the most significant impact on Atlanta. About 30 percent of the City's sewers are combined sanitary and storm sewers, while the remaining portion is separate. Department staff, in several

instances, mentioned challenges it faces in managing CSOs. EPA effluent limits on metals and other potential toxics was also brought to the attention of the site visit team in at least five instances. In addition, Atlanta said it was spending $240 million on a phosphate reduction program and $140 million on CSO abatement.

As for local impediments, Atlanta indicated that its most important concern was the City Council's recent decision to close the City's only landfill, which had several years of remaining capacity. Staff also complained that low bid requirements create otherwise avoidable facility and vehicle maintenance problems.

Billings

Survey Data. The Billings survey data revealed 94 impediments, of which about 40 percent were administrative, 21 percent were federal impediments, 24 percent were state impediments, and 11 percent were combined federal and state impediments. The barriers identified fell into a broad range of administrative and public works functions. Only a sampling is possible here.

In relation to personnel matters, Billings cited low pay scales as the reason the City could not attract experienced personnel and federal regulations such as FLSA as a barriers to creating a less cumbersome job classification plan.

State competitive bid requirements were cited as burdensome to the City's purchasing procedures as was the local requirement that a department head sign all purchase orders. Staff also reported that liability concerns "make recording, tracking, and answering public inquiries more complex than necessary." And "lack of coordination with the Public Utilities Department and the Montana Department of Transportation complicates communication with these agencies."

With respect to emergency management, Billings staff said that local funding was not available for emergency training. Also mentioned was the difficulty in obtaining "intergovernmental agreements between City, County, and State agencies." Federal and state regulations governing work in confined spaces were described as "expensive" and difficult to interpret because of their complexity.

Billings staff said that state regulations prevent local governments from placing too many limitations on zoning variances, making it difficult for the City to regulate lot areas and other development items. Staff said that "staffing and work loads inhibit the implementation of feasibility studies and alternative designs." Quality assurance and peer review are not done for lack of funds. Another issue concerned a State "Public Service Commission ruling allowing private utilities in the public right of way." When "coupled with lack of coordination with the Montana Department of Transportation and the Public Utilities Department" the ruling "complicates the permitting process."

Billings mentioned a number of solid waste impediments the City faces. Many of these were concerned with the Subtitle D regulations governing landfills. The staff said that the installation of groundwater monitoring devices at the City's landfill was probably unnecessary because of the dry climate and remoteness of groundwater sources from the landfill. Recycling collection programs were also said to be more costly because of the lack of markets in the area.

With respect to stormwater, Billings staff discussed problems relating to defining the local floodplain. Staff said that FEMA had been unable to decide on the boundaries. Billings was also concerned about the eventual impact of the stormwater permitting regulations on cities with populations similar to Billings.

Site Assessment Responses. The Billings site assessment mirrored the questionnaire responses in most cases. Additional barriers that were noted by staff included: loss of 30 percent of engineering staff combined with increased volume of work due to annexation of land; cutbacks in construction traffic control and construction inspection; lack of funds for improving filing and records system; difficulties in obtaining information from utilities about facilities and activities in the right-of-way and elsewhere; concerns about the flexibility with which ADA accessibility requirements will be implemented, especially in streets; and concerns that ISTEA funds are not being spent where they are most needed.

Foster City

Survey Data. Of the 57 impediments and barriers Foster City identified in its questionnaire, just over half were local, administrative barriers. About one-third involved federal requirements (combined with some state mandates). State mandates also constituted a significant class of impediment for Foster City. A substantial portion of the barriers concerned administrative functions rather than public works functions. The respondents provided detailed explanations of most the impediments. What follows is a sampling of their answers to the questionnaire.

Under personnel management, Foster City staff mentioned problems affecting the City's job classification plan. One concerned the difficulties ADA creates for the City as it tries to define "responsibilities, qualifications, and skills" for jobs. Staff also referred to changes that "engineering certification agencies" keep making to "job titles they allow to be used with the engineering classes." Also, according to staff, the City's compensation plan, work hours, and shift schedules are complicated by FLSA.

With respect to planning functions, staff mentioned significant communication problems the City had with the Corps of Engineers. As the City itself was built on fill, any development within the City requires a 404 permit from the Corps. The principal complaint with the Corps was not so much the regulations as the frustration of attempting to obtain a "timely response from the Corps on virtually anything" and the fact that the "staff is often unavailable to even talk with City staff for long periods of time." The Foster City staff stressed, however, that the problems appear to be a direct result of extreme understaffing at the Corps, a high turnover rate, and low morale among the staff.

In the area of finance, City staff referred to difficulties experienced in estimating project costs "without knowing requirements of various regulatory agencies." Similarly, developing a capital improvement plan can be hampered by "unforseen or changed site conditions which may require modification of plans for long-term facility and equipment needs."

Problems in coordinating City projects and activities with other agencies was also discussed. Since "most agencies tend to function autonomously," they "may not always provide necessary information to the City," staff pointed out. "Availability of funds" and project schedules are also factors that influence the extent of communication with other agencies.

Without providing specific examples, Foster City staff said that the "procedures and approvals" that must be obtained to qualify for federal or state aid for emergencies were a barrier to establishing local procedures for restoring community lifeline facilities.

Under engineering design, staff noted the effect lengthy delays due to permitting process can have on project scoping. Staff also said that "budget constraints do not always allow for analysis of a full range of alternative approaches" to meeting project needs. Among other barriers, staff mentioned inadequately defined state bidding requirements, the degree to which the evaluation of project proposals are "dependent upon the particular circumstances," and budget restraints that affect construction inspection.

With respect to City buildings, staff cited to difficulty in developing sound budget figures for projects where regulations involving removal of asbestos, ozone depleting chemicals, and other hazardous materials apply. Staff also mentioned the high cost of making buildings "100% accessible" in accordance with ADA requirements. If that cannot be achieved, the alternative might be to make such facilities accessible to no one.

No barriers were identified in sections covering equipment, streets, stormwater, and potable water. In the wastewater category, staff mentioned the high cost and lack of resources for correcting inflow and infiltration problems with sewer pipes. The City also lacks a reliable means of disposal for sludge from wetwells.

Site Assessment Responses. Discussion at the Foster City site visit focused largely on the same issues reported on the questionnaire: the impact of ADA on job classification; FLSA standards with respect to overtime; communication with Corps over 404 compliance and application of wetlands definition to Foster City; uncertainty involved in predicting the effect of new regulations on capital improvements; and ADA accessibility requirements. However, several items not mentioned on the questionnaire were brought to the attention of the site visit team. These included: mandates for testing and filtration of water supply; Lead and Copper Rule sampling requirements; a disagreement with FEMA over the height of the local levee; and the potential impact of NPDES stormwater regulations.

Lawrence

Survey Data. The Lawrence questionnaire identified 17 local, administrative barriers. Several of these related to aspects of engineering design: use of current design standards; feasibility studies; quality assurance plans; and quality control. The Department was concerned that a shortage of staff could compromise the quality of some projects. Related issues concerned the bidding process and the Department's efforts to get around the low bid requirement to ensure quality. Lack of resources was cited as a barrier to developing a building inventory and inspection program. Similar remarks were made with respect to equipment management.

Site Assessment Responses. During site assessment interviews, Lawrence Public Works Staff discussed two personnel-related federal mandates: the Fair Labor Standards Act (FLSA) and the Davis-Bacon Act. Staff said that FLSA was being administered too inflexibly, with too many restrictions on the classification of exempt employees. Davis-Bacon was criticized for the effect it had on labor costs. Other impediments included mostly ones that appeared on the questionnaire -- that is, lack of resources and personnel.

Los Angeles County Internal Services Department (LAISD) and Los Angeles County Public Works Department (site visit only)

Survey Data. LAISD reported only two instances of impediments to the management practices. Both were minor administrative barriers involving centralization of the agency's records.

Site Assessment Responses. During the site assessment, LAISD discussed a small number of additional barriers to complying with applicable management practices. Most of these were internal, administrative barriers such as the lack of resources and staff to review and revise job classification plans and for providing a career development program for staff. Other concerns related to, for example, the lack of resources to improve building maintenance management; one comment was that "maintenance is done as needed -- not as planned." The Department recognized a need for new systems to manage and maintain facility inventories and inspection programs. As for federal barriers, LAISD mentioned that many facilities were not in full compliance with ADA. Concern was expressed that some modifications required by the law may be excessive.

The L.A. County Public Works Department was invited to discuss impediments to complying with practices related to streets and transportation. Several concerns were expressed about certain provisions of the ISTEA legislation, such as the requirement for developing management systems for pavements, traffic management, bridges, and so forth. The Department was also concerned about the flexibility with which some provisions of ADA would be applied (ramps at street crossings, etc.) and with NPDES stormwater regulations that affect street debris.

Pittsburgh

Survey Data. The City of Pittsburgh's Public Works Department identified only 23 barriers to complying with the management practices. All were administrative in nature. For example, the Department said that the "politics of the City Council" hampered its efforts to establish a process for reviewing and revising the Department's organizational chart. "Resource limitations" were cited as a barrier to developing strategic plans and a capital improvement plan. Other impediments included the "need for better storage facilities" for departmental records and the "need for a better follow-up system" for recording, tracking, and responding to public inquiries. Funding was also mentioned as a problem for developing better building and grounds maintenance practices.

Site Assessment Responses. The Pittsburgh site visit focused on state and federal requirements rather than local, administrative issues. Not unexpectedly, the central issue was how to handle "unfunded mandates" from both the state and the federal government. Department staff said that state mandates on playground safety, contaminated land, and water reservoirs involve high costs that the City will have to absorb. The Department said that the preliminary estimate for covering three reservoirs was approximately $120 million.

With respect to federal barriers, Pittsburgh discussed their uncertainty over the eventual impact of the far-reaching provisions within ADA. At this point, the City lacks the funds needed to make public facilities more accessible to the disabled. Although Pittsburgh received a stormwater permit exemption from EPA, the City is concerned about new EPA requirements for CSOs. With 135 overflow outfalls and 1,200 miles of combined sewers, the Department is not sure how it will find the resources to monitor the entire system.

Round Rock

Survey Data. The survey of Round Rock identified about 40 management practices subject to impediments and barriers. About 63 percent of these were mostly minor administrative barriers, while approximately 18 percent were federal and 13 percent involved state imposed impediments. The questionnaire did not specify the administrative impediments in sufficient detail to be described here, except that almost all of them fell into the organization, personnel management, planning, and finance categories.

As for federal barriers, Round Rock cited difficulty in understanding certain OSHA regulations as impediments to complying with some of the safety-related management practices. The City mentioned that it had experienced difficulties in working with FEMA in defining the local floodplain and establishing procedures to protect it. Finally, EPA guidelines for water quality sampling of stormwater were described as "poor."

State impediments were not specified in much detail, though mandates on disposal of asphalt were mentioned as a minor problem in disposal of street debris.

Site Assessment Responses. Round Rock staff identified several additional categories of impediments during the site assessment visit. For example, the finance administrator for the City said that the State was pressuring local water and wastewater utilities to charge water and sewer rates that reflect the full cost of service. In many jurisdictions, utilities charge customers for only a portion of that cost, requiring a subsidy to cover the remaining portion. The administrator indicated that this could become a problem for the City if forced to raise rates.

Shortages of personnel and funds were mentioned as principal barriers to adopting improved maintenance management practices. The staffperson responsible for City buildings said that "repairs are made as components fail" and there is "no preventive maintenance except for air conditioning." The City also said that it lacks the engineering expertise for some of the management practices relating to stormwater control and floodplain management -- for example, developing a drainage basin master plan.

Round Rock also commented generally about the problems caused by restrictions on bid acceptance. It said that it tries to write tight specifications, but that this does not ensure that the most qualified bidder is awarded the contract. The City said that it is not permitted to pre-qualify bidders.

St. Paul

Survey Data. St. Paul provided detailed descriptions of all barriers identified on its questionnaire, over 80 percent of which were local, administrative, and about 12 percent of which involved problems with federal requirements.

Administrative impediments ranged from inflexible union demands pertaining to promotion and hiring, outdated civil service rules, non-working communication links among computers, and the "number and complexity of governmental organizations" with which the Department of Public Works must interact. St. Paul said it had experienced problems in dealing with multi-jurisdictional emergencies. It reported on its inability to respond in a timely manner to a sewer spill, attributing the problem to misunderstandings among the multiple jurisdictions involved in remedying the situation. The Department blamed inadequate

resources as the principal impediment to better equipment management, citing the need for an equipment management information system.

In terms of federal barriers, St Paul referred to the "unfunded program" requirements of the NPDES stormwater permitting process. Specific concerns included the potentially high cost of intensified street sweeping, changes in public and private turf maintenance practices, sewer maintenance, and erosion and sedimentation controls for construction sites.

Site Assessment Responses. At the site assessment, St. Paul reported on many of the same barriers and impediments described in responses to the questionnaire. With respect to administrative areas, Department staff discussed the lengthy, difficult process required to change job classification plans; "problems in getting reliable and useful information on federal requirements" for safety training; improving the accuracy of operating inventories; the need for new technology to manage service area maps and recordkeeping; and the lack of staff and computer resources for facility and equipment maintenance.

Several management practices relating to engineering design, construction, and permits were identified as subject to barriers -- primarily administrative. For example, project scoping is hindered by inadequate "information on changes in codes and standards." And the Department reports resistance to changes that would create standards for plan format, legends, line weights, and so forth from designers within the Department. Building maintenance was also said to suffer from frequent changes in vendors and contractors due to low bid requirements.

More concerns were expressed about the effect of stormwater regulations, particularly in relation to finding funds to implement permit requirements and in getting a clear understanding of the regulations from federal and state agencies. There was also concern about the extent of the City's responsibility for enforcing and monitoring industries that must obtain permits and for regulating illicit discharges to storm sewers. ADA, too, left many on staff with questions about its eventual impact.

Snohomish County

Survey Data. The Snohomish County questionnaire identified only two barriers to complying with the management practices. One concerned what the County Department of Public Works perceived to be a conflict between "state DOT standard language and county's standard language in consultant contracts." The other related to floodplain management and stormwater permitting issues, where the concern was the availability of resources to implement permit requirements.

Site Assessment Responses. At the site assessment, Snohomish County expanded the number of barriers and impediments substantially. Staff commented on problems the County experiences in meeting environmental requirements of both the State and the federal government, both of which have incompatible processes for doing so. In addition, the County "must spend more for barriers and landscaping" because of community resistance to projects.

Discussion also pointed to difficulties in achieving coordination during emergency events. Other issues involving cleanup of contaminated sites and the liabilities imposed by the State's Model Toxic Control Act were discussed in detail.

The County is uncertain about how it might benefit from ISTEA. One comment was that "the time, confusion, and paperwork for the new ISTEA process has increased over the old system." The Director of Public Works said that the flexibility in ISTEA makes it "hard to project funding and develop reliable budgets." But, he was optimistic that "ISTEA will be an improvement after the growing pains."

Staff mentioned a number of areas involving the management practices where lack of resources was an impediment to compliance. These included: centralized records management; better maps; information management systems for infrastructure; planned maintenance program for buildings; facility inspections; and street facilities inventory. As on the questionnaire, the County expressed doubts about the impact of the stormwater permit requirements they will have to implement.

Wakefield

Survey Data. Wakefield identified 61 impediments, of which 57 were local, administrative impediments. A substantial number of these involved lack of funding and personnel. Public works staff said, for example, that limited funds prevent full implementation of a career development program or complete compliance with the Town's affirmative action plan. In other areas -- emergency management, for example -- staff indicated that insufficient funds and personnel hamper participation in emergency exercises. The Town also lacks the personnel needed to monitor new regulations concerning hazardous materials and communicate new information to others. Lack of funds was also mentioned as an obstacle to performing tests on all utility pavement cuts, completing a facility inventory for buildings, and reviewing and analyzing equipment inspection reports.

Other administrative barriers included the current budget format used by the Town and the Town's accounting system, which, according to staff, make it extremely difficult to provide timely and up-to-date budget reviews.

Staff indicated that to recycle more of the Town's waste, legislation "requiring the use of recyclable materials" in new products would be needed. Staff said that the Town and other communities are incapable of creating the necessary markets for collected materials. On the other hand, even though recycling collection programs are costly and markets are weak, the Town recognizes how difficult it is to "scale back and minimize total waste management costs."

Long-range planning for street improvements are difficult because of the uncertainty of funding from the State for maintenance and rehabilitation. For the same reason, the Town is unable fully implement preventive maintenance for its streets.

Again, staff cited shortages of funding and personnel as the main impediments to complying with the stormwater management practices referred to in the questionnaire.

Site Assessment Responses. The site visit to Wakefield reconfirmed much of what was reported on the questionnaire. In personnel management, public works planning, finance, recordkeeping, safety, building and fleet maintenance, streets, snow removal, and stormwater the Town lacks the resources needed to comply with many of the practices in the APWA manual. Compounding the problem is a state law (Proposition 2½) limiting annual increases in property tax assessments to 2½ percent.

In addition, staff referred to several state requirements that hamper their compliance with the management practices. One is the requirement that the Town accept the lowest qualified bidder for most purchases. For, though the "bidder is qualified based on the specifications, the bidder may not be the most qualified contractor/vendor who will deliver the best service/product." Staff also discussed problems resulting from the Town's relationship with the state water authority, which supplies about 80 percent of the Town's drinking water. Like Waukegan and Foster City, Wakefield finds the burden of testing water at the consumer's tap for lead content excessive. The Town is also concerned about the possible future impact of federal stormwater regulations and the resources they would need to meet them.

Waukegan

Survey Data. Nearly all of the impediments identified by Waukegan's questionnaire were local, administrative impediments. The City's Public Works Department cited lack of time and other priorities as barriers to creating a departmental statement of purpose, developing strategic plans, creating a job classification program, and establishing procedures for employee evaluation, promotions, terminations, etc.

The Department noted its lack of authority over issuance of permits and inspections for work performed in the right-of-way. It indicated that it was unable to provide the staff needed to establish a planned maintenance program -- one that enables the Department to schedule replacement of building components and maintain a facility inventory and facility inspection program. And while the department manages an inventory of streets and street facilities, it said that it lacked the resources to keep it updated and accurate. A similar comment was made about the City's stormwater facilities inventory and about developing a long-range plan to improve stormwater drainage. Lack of funds for properly trained staff and computers were mentioned as the chief barriers.

Site Assessment Responses. Barriers identified by the Waukegan site visit team approximately matched those found on the Waukegan questionnaire; administrative roadblocks -- mostly, lack of resources -- were cited as the main problems in complying with the management practices. There were only one or two areas where additional concerns were heard by the site visit team, one of which involved federal mandates. The first was raised in connection with the practice of establishing a policy defining the minimum storm magnitude requiring protective measures and necessary treatment. Waukegan said that "public misinformation about development review fees" often hinders its ability to comply with this practice. Secondly, the City's Water Plant Superintendent discussed the frustration the City faced in attempting to comply with the federal government's lead content regulations for drinking water. Aside from the cost, the Superintendent complained that the source of the problem was in household plumbing and not the City's water distribution system (see Chapter Four).

APPENDIX I - ACRONYMS

ACIR	Advisory Commission on Intergovernmental Relations
ADA	Americans with Disabilities Act
APWA	American Public Works Association
ADOT	Arizona Department of Transportation
BAT	Best Available Technology
BOMA	Building Owners and Managers Association
CADD	Computer Aided Design and Drafting
CFR	Code of Federal Regulations
CSO	Combined Sewer Overflow
CWA	Clean Water Act
EEO	Equal Employment Opportunity
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FIS	Federal Infrastructure Strategy
FHWA	Federal Highway Administration
FLSA	Fair Labor Standards Act
GIS	Geographic Information System
IMS	Infrastructure Management System
ISTEA	Intermodal Surface Transportation Efficiency Act
LAISD	Los Angeles County Internal Services
MBE	Minority Business Enterprise
MCL	Maximum Contaminant Level
mg/l	Milligrams Per Liter
MPO	Metropolitan Planning Organization
MSWLF	Municipal Solid Waste Landfill
MWRA	Massachusetts Water Resources Authority
NAFSMA	National Association of Flood and Stormwater Management Agencies
NAPA	National Academy of Public Administration
NCPWI	National Council on Public Works Improvement
NHS	National Highway System
NPDES	National Pollutant Discharge Elimination System
OSHA	Occupational Safety and Health Administration
OTA	Office of Technology Assessment
PMS	Pavement Management System
R&D	Research and Development
RCRA	Resource Conservation and Recovery Act
SDWA	Safe Drinking Water Act
SMS	Sewer Management System
STP	Surface Transportation Program
TIP	Transportation Improvement Program
USDOT	United States Department of Transportation

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4. For a full description of the FIS program and accomplishments to date, see U.S. Army Corps of Engineers Institute for Water Resources, *Framing the Dialogue: Strategies, Issues and Opportunities*, IWR Report 93-FIS-1 (Fort Belvoir, Virginia: 1993) pp. 1-83.

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32. Much of this section is taken from the report for this project submitted by The National Academy of Public Administration.

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13. ABSTRACT *(Maximum 200 words)*

This report provides a description of the constraints and obstacles that limit the effectiveness of municipal public works agencies. The analysis, conducted by the American Public Works Association (APWA), includes information gathered from twelve municipal/county/state public works agencies who represented a broad range of populations, geographic locations, forms of governance, and public works functions. Specifically, the report identifies the legislative (Federal and state), administrative, and technical impediments to improving public works performance.

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