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Waterways Experiment Station

RECNOTES
RECREATION MANAGEMENT SUPPORT PROGRAM

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Natural Resources Management on Corps Projects

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Introduction

The Corps of Engineers operates more than 460 water resources development projects in 43 states. These projects consist of nearly 8 million acres of land and water resources that have been entrusted to Corps stewardship. About half of this acreage is permanent surface water associated with project reservoirs and river reaches. The other half is a riparian border of surrounding upland and wetland acreage that on most projects provides shoreline protection from development and other impacts.

Management of Corps land and water resources is a cooperative effort of national, Division, District, and project offices. At the national level, Headquarters, U.S. Army Corps of Engineers, provides policy guidance that establishes broad natural resources management goals and provides administrative guidance for achieving those goals. Division and District staff direct the implementation of management policy and provide an important source of natural resources expertise to assist local managers. In most instances, project natural resource managers have primary responsibility for executing natural resources management programs on Corps projects. This responsibility includes monitoring natural resource conditions, developing and implementing management practices appropriate for management objectives and local resources, and adapting management efforts to meet changing user needs and resource conditions.

Because much of the Corps' natural resource management program has been developed and implemented by projects, it has been difficult to completely characterize the Corps' natural resources management program on a national level. To improve understanding of the Corps' overall program, natural resource management on Corps projects was surveyed as part of a work unit in the Natural Resources Research Program (now the Recreation Management Support Program). The survey was administered in a 40-page questionnaire that asked project natural resource management staff for information about the overall project management program as well as details regarding the management effort associated with aquatic, terrestrial, and wetland resources, and threatened and endangered species. For each subject area, information was requested about available inventories and management surveys, current resource conditions and trends, types of resources targeted for management, management objectives, management methods, and current and emerging natural resource issues of concern to the management staff. The survey was mailed in January 1996 to a stratified random sample of 66 Corps projects. Sixty-two projects completed and returned the questionnaire through August 1996, a response rate of approximately 94 percent. Results reported here

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were taken from Kasul, Martin, and Jackson (1998).

Survey Results

Management Staff and Budget

All projects responding to the survey indicated that natural resources management activities took place on their project. However, the amount and type of effort varied greatly with project size (170–153,000 acres), the type and condition of available natural resources, personnel and funding, participation by management partners, and the natural and cultural environment of the region surrounding the project.

The surveyed projects reported that an average of 55 percent of their annual budget was spent on operations and 31 percent on park management. An average of only 6.6 percent (range of 0 to 29 percent) of the project budget was spent on natural resources management activities. Of the natural resources management expenditures, half (50 percent) was spent on terrestrial resource management activities, and the other half was divided among management activities associated with aquatic (27 percent), and wetland resources (12 percent), and threatened and endangered species (12 percent).

Project personnel were the primary source of expertise and effort for the formulation and/or execution of natural resource management activities on Corps projects. Approximately 23 percent of projects had one or more natural resources management specialists, typically associated with the management of forest, wildlife, and/or aquatic resources. The remaining projects managed all natural resources with personnel who divided their efforts between park and natural resources management. More than 95 percent of personnel involved in some aspect of natural resources management had bachelor's (81-97 percent) or master's degrees (2-19 percent), and typically more than half (47-68 percent) held degrees in disciplines related to the resources they managed.

Generally, projects with a larger natural resource base had a larger management program supported with more funds and more management personnel. These projects were more likely to have natural resource specialists with an advanced education in disciplines closely related to their area of responsibility. Projects with a smaller natural resource base had smaller budgets and were more likely to be managed by personnel responsible for both park management and natural resource management. These personnel more frequently had an educational background in parks and recreation rather than in natural resources.

Management Partners

While the Corps has ultimate responsibility for management of project natural resources, other government agencies and private organizations participate in the management of these resources. Responses to the survey showed that non-Corps management partners contributed a significant share of the total management effort on Corps projects, and as a result, they helped shape the overall makeup of the Corps' natural resources management program. Most influential were state fish and wildlife agencies who participated in some aspect of natural resources management on nearly all projects. State agencies were major contributors to the management of aquatic and terrestrial resources, and also important contributors to the management of wetland resources and threatened and endangered species. The U.S. Fish and Wildlife Service also participated in the management of wetland resources and threatened and endangered species on some projects.

State agency contributions to the management of Corps natural resources were primarily intended to support outdoor recreation, particularly recreational fishing and hunting. Two categories of management contributions by the states were noteworthy. First, state fishery agencies were responsible for most aspects of fishery management on Corps projects. Second, state agencies played an important role in the management of other Corps resources through the management of natural resource outgrants. Approximately 63 percent of surveyed projects had outgranted tracts ranging from 100 to 98,500 acres that were leased mostly to state fish and game agencies who managed them primarily for wildlife and hunting recreation. In many instances, outgrants contained some of the most valuable resource lands available on the project.

The voluntary efforts of numerous private organizations also contributed to natural resources management on Corps projects. Volunteer groups supported natural resources management on 78 percent of surveyed projects. The most frequent volunteers were Boy and/or Girl Scout troops (55 percent of projects), outdoor sporting clubs (39 percent), conservation organizations (24 percent), and

school groups (11 percent). These organizations supported project management in two ways: by performing tasks that freed up staff time for more technically demanding jobs, and by performing tasks that would not otherwise be accomplished. These groups contributed unskilled labor for tasks such as trail maintenance (48 percent of surveyed projects), tree planting (34 percent), general cleanup (24 percent), stacking brush for fish shelters (19 percent), and other activities. Some groups also provided semi-skilled or skilled labor for tasks such as nest box construction and maintenance (56 percent of projects), development and maintenance of food plots (11 percent), wildlife surveys (10 percent), controlled burns (5 percent), and water quality monitoring (3 percent). Projects indicated that about half of the activities supported by volunteer organizations would be discontinued without continuing support from these organizations.

Management Goals and Priorities

On a scale of 1 to 10, respondents rated their aquatic resource as the most significant resource on Corps projects (7.9). This was followed by riparian corridors (6.9), wetlands (6.7), and finally various types of terrestrial resources (3.2-6.4), of which forests (6.4) were viewed as most significant. The perceived importance of aquatic resources was not surprising since the aquatic resource base is the centerpiece of most Corps projects, accounts on average for about half of project acreage, supports a significant level of water-based recreation use, and is important for other public uses.

Although the aquatic resource base was considered to be the most significant resource on Corps projects, terrestrial resource management was typically the highest natural resources management priority. Approximately half of natural resources management funds were spent on the management of terrestrial resources. As a result, survey respondents described a terrestrial management program that was larger and more varied than management programs associated with other project resources.

Survey respondents indicated that natural resource management on Corps projects was motivated primarily by public use and resource stewardship goals (Figure 1). In many cases, these were complementary goals in which resource stewardship goals supported public use goals.

Public use management goals typically involved support for outdoor recreation, including sport fishing, recreational hunting, and a wide range of nonconsumptive recreational activities. Natural resource management objectives supporting outdoor recreation were most often described in terms of individual species, groups of species, or the habitats of selected species. Game species were typically regarded as most important. Ratings of potential management objectives associated with different resources generally listed game species as one of their two most important management objectives. For terrestrial, aquatic, and wetland resources, respondents respectively identified game animals, warm-water fishes, and waterfowl as principal management targets. In the management of terrestrial resources, respondents directly rated game species as more important than nongame wildlife. Less direct evidence suggested that this was also probably true in the management of most other categories of resources.

Figure 1. Natural resource management on Corps projects is motivated primarily by public use and resource stewardship goals

While threatened and endangered species were an important component of natural resources management on projects where they occurred (73 percent of surveyed projects), they were not rated as high a priority as warm-water sport fishes, upland game animals, waterfowl, or nongame wildlife. Much of the management effort toward threatened and endangered species involved meeting statutory requirements and addressing actual and potential conflicts between threatened and endangered species and other activities occurring on project lands.

The most important stewardship objectives identified by respondents dealt with the condition of project resources. For aquatic, terrestrial, and wetland resource management, these included water quality, habitat diversity, and species biodiversity. Two of these, water quality and terrestrial habitat

diversity, generally supported important public use goals. Water quality objectives were typically associated with hydropower operations and other project purposes and with water-based recreation. Terrestrial habitat diversity was most often considered to be a means of providing a range of recreation opportunities for project visitors.

Management Practices and Techniques

Survey respondents reported the use of a wide range of traditional habitat and wildlife management practices and techniques. In general these can be grouped into inventory and monitoring efforts, conservation and protection measures, landscape and habitat management, and species management activities.

Resource inventories are a primary source of information for documenting resource conditions and evaluating management needs. Survey responses indicated that inventory availability varied widely among projects. About half of the projects had species inventories for birds (58 percent), mammals (55 percent), plants (53 percent), reptiles/amphibians (50 percent), and invertebrates (32 percent). About half (50 percent) of projects with forested lands had timber surveys, and less than half (40 percent) of projects with wetlands had wetland inventories. In general, fewer than a third of the available inventories were considered to be complete, and many were cursory or based on informal methods. As might be expected for locally developed inventories from a wide geographic range, there was little standardization of inventory methods.

Monitoring activities are also important for documenting resource conditions, identifying resource trends, and evaluating management needs. Most projects listed one or more surveys conducted annually or periodically to monitor specific resources. Most were species surveys for fishes, terrestrial and wetland animals, and threatened and endangered species. Monitoring data on sport fishes was collected on 87 percent of projects. About 70 percent of projects monitored other species resources, particularly bald/golden eagles (29 percent of projects), songbirds/neotropical birds (21 percent), deer (19 percent), quail (13 percent), and waterfowl (13 percent). Additional comments from respondents indicated that many projects conducted annual or periodic visual inspection surveys to provide management information they required.

Projects with a small resource base, small staff and budget, and no available management partners put much of their management effort into resource protection and conservation. Resource protection efforts included the control of boundary encroachments, wildfires, animal damage, and other natural and cultural threats to project natural resources. Resource protection also included visitor regulation and enforcement measures to control vandalism, resource destruction and theft, and trash dumping. An important conservation measure overlooked by many survey respondents was the surrounding land border incorporated into most Corps projects. This land border was by design a conservation measure for protecting reservoir and river shorelines from uncontrolled detrimental uses. Projects that have a thin land border are able to passively protect their shoreline resources using fewer staff resources than those projects that lack this conservation design feature (Hamilton and Reinert 1997).

Projects with a more substantial resource base, available staff and funding, and suitable management partners employed habitat and landscape-level activities to develop and maintain an appropriate mix of habitats and associated fish and wildlife. Much of this effort included terrestrial cover type management and wetland creation and management activities. Also important were water level management practices designed to provide fish spawning habitat, improve aquatic cover and water fertility, and provide visitor access.

Where feasible, commercial forestry and agriculture made an important contribution to overall habitat management efforts. About half of projects with forested land employed commercial timber harvests as a habitat and wildlife management tool. Agricultural leases were also offered on about half of projects. Leased agricultural acreage was most often used for hay or grazing (46 percent) and for cultivated crops (54 percent), primarily soybeans, cotton, corn, and wheat. Most projects used agriculture as a tool for maintaining grasslands, habitat edges, and early successional habitats. More than half (61 percent) also reported having lease requirements designed to benefit wildlife. Most often required were crop residuals, cover strips, and restrictions on grazing and haying. Nearly a quarter of the cultivated land acreage on Corps projects was regarded as marginal for farming. Three-fourths of projects currently forming on marginal lands indicated that some land was

being taken out of agriculture as farmers declined to renew leases primarily on agriculturally marginal lands.

In addition to habitat management, most projects (91 percent) either through their own efforts or those of their management partners, carried out management activities directed at particular species or groups of species. Many of these activities were directed at both game and nongame species and included efforts to maintain or increase species abundance and concentrate target species for recreational purposes. These efforts included placement of nesting/roosting structures (79 percent), development of food plots (68 percent), prescribed burns (58 percent), edge maintenance (55 percent), snag management (42 percent), and development and maintenance forest openings (39 percent).

Management Issues, Needs, and Trends

Water management was a natural resources issue on nearly all Corps projects, most often in regard to fisheries and/or water level fluctuations. Water management issues involved upstream concerns on 24-27 percent of projects, within-project concerns on 82-90 percent of projects, and downstream concerns on 60-63 percent of projects. More than half of projects (55 percent) listed restrictions on project operations that were intended to accommodate recreation and natural resources. Most restrictions involved requirements for a minimum water release (39 percent of projects) to support the downstream fishery, or requirements for the seasonal maintenance of reservoir pool level (18 percent) for fisheries, recreation, and waterfowl. These are expected to remain important resource management concerns on Corps projects, particularly where water management tradeoffs are contentious or are difficult to achieve.

Three-fourths of surveyed projects (76 percent) were involved in managing conflicting uses of their aquatic resources. These fell into three general categories involving conflicts between different recreation user groups (61 percent of projects), between project operations and natural resource management (24 percent), and between operations and recreation users (24 percent). More than half of these involved recreational fishing or fisheries management issues.

Changing land uses and conditions on lands adjacent to Corps projects were noted by most projects. Eighty-seven percent of projects indicated that land use changes were occurring along project boundaries. Development along project boundaries was noted on 71 percent of surveyed projects and was expected to increase on most of these projects during the next 10 years. Logging of lands adjacent to Corps projects was noted by 23 percent of respondents and about half (57 percent) of these expected the incidence of logging to increase on adjacent lands over the next 10 years. Some projects indicated that these and other land use changes along project boundaries were already affecting their management of project natural resources. These effects are likely to become more important and widespread as land use intensifies in the region surrounding Corps projects.

Wetlands were one important project resource that may be increasingly affected by changing regional conditions. Survey respondents noted two principal threats to their wetlands, both a result primarily of off-project influences. Forty percent of projects with wetlands indicated that land use changes along project boundaries were causing increased wetland sedimentation, increased pollution, reduced water quality, and other effects. Also, 38 percent of projects with wetlands reported infestations of nuisance plants or animals and most of these projects anticipated increased levels of wetland infestation during the next 10 years.

All projects indicated that they had one or more needs they were currently unable to meet in the management of their aquatic (76 percent of projects), terrestrial (60 percent), and wetland (48 percent) resources and threatened and endangered species (32 percent). The need to improve project fisheries through habitat improvements, beneficial water level manipulations, and various management practices was identified by more projects (58 percent) than any other category of perceived management needs. Needs also commonly listed by respondents were inventories for threatened and endangered species (21 percent), additional manpower and funding for terrestrial resource management (19 percent), wetland development projects (15 percent), wetland inventories (11 percent), and terrestrial habitat restoration (10 percent).

Management in Transition

This survey was conducted in 1996, the last year in which natural resources management on Corps projects was guided by the policies contained in Engineer Regulation

(ER) 1130-2-400 titled "Project Operations-Management of Natural Resources and Outdoor Recreation at Civil Works Water Resource Projects" (U.S. Army Corps of Engineers 1986). Shortly after the survey was completed, new policy guidance for the management of natural resources on Corps projects was issued under ER 1130-2-540 titled "Project Operations–Environmental Stewardship Operations and Maintenance Policies" (U.S. Army Corps of Engineers 1996). As a result, this survey documents the final status of a Corps natural resources program that was largely put in place under ER 1130-2-400, and it identifies initial conditions for management under ER 1130-2-540.

ER 1130-2-400 directed that "management of all natural resources will be integrated with other project activities within a multiple use concept." Project operations, outdoor recreation, and fish and wildlife were recognized as the primary uses of project natural resources that would be supported by project management. Based on the information reported by project natural resources management personnel, management programs on individual Corps projects, and consequently the management program of the agency as a whole, were largely consistent with this regulation.

Management goals and resulting management efforts developed under the older regulation primarily supported a wide range of outdoor recreation activities. Fish and wildlife management efforts, including habitat management, were also conducted largely in support of outdoor recreation. Due in part to the prominent role of state fish and wildlife agencies, management in support of sport fishing and recreational hunting was a substantial part of the overall natural resource management program (Figure 2), although in many instances, these same management efforts also supported nongame wildlife and associated nonconsumptive recreational activities.

Natural resource management policies described in the newer regulation (ER 1130-2-540) continue to recognize multiple use management, but extend the concept only to forest resources, instead of all project natural resources. However, the new policy also continues to recognize the importance of public use of natural resources, particularly outdoor recreation, and it endorses natural resource management activities that support recreation and other public uses. This provides a broad framework for continuation of natural resource management goals and activities put in place under the older regulation.

In looking to the next 10 years, survey respondents anticipated that management support for outdoor recreation would continue to be among their most important natural resource management goals. However, they also saw a need for, and anticipated an expansion of, their stewardship activities. These included the completion of natural resource inventories, expansion of threatened and endangered species efforts, and increased management of nongame wildlife (Figure 3).

The increasing importance of stewardship ideals reflects a growing awareness and acceptance of emerging ecological ideas by project managers. This is encouraging since the new regulation requires that future management activities incorporate ecologically based management concepts. The new

Figure 2. Management in support of sport fishing and recreational hunting is a substantial part of the overall program

Figure 3. Management of nongame species is becoming increasingly important at Corps projects

regulation recognizes the importance of maintaining an ecologically sound and sustainable resource base long-term. It further recognizes the importance of species biodiversity and the need to incorporate regional environmental values into project management activities. Under the new regulation, managers are directed to incorporate these values into project natural resources management by adopting ecosystem management principles as part of a proactive, goal-driven approach to sustaining ecosystems and their values.

Eighty percent of Corps projects are located within 50 miles of a metropolitan center, many in areas where human populations and associated development are rapidly encroaching into the rural landscape. This is at least partly responsible for increased development and other land use changes that survey respondents observed to be occurring along project boundaries. If current trends continue, land use changes along project boundaries could adversely affect project resources and hinder the effectiveness of project management activities. Because Corps projects typically have a long property boundary relative to project area, the effects of changing land-use conditions along project boundaries are potentially substantial.

Ecosystem management is thought to be most applicable to ecologically functional landscape units such as an entire watershed (Slocombe 1998). In general, Corps projects comprise only a small portion of the watersheds in which they occur. Even a series of projects along a waterway may comprise only a portion of the total drainage area. Where the functional ecosystem extends beyond project boundaries, its management should incorporate the management goals and activities of all applicable institutions in the watershed. This is the management scale needed to effectively address project resource issues resulting from land use changes along project boundaries and other effects of regional development.

The new regulation requiring ecosystem-based management of project resources appears to be an appropriate response to current trends and future management needs. But before ecosystem management can become a reality on Corps projects, much work remains to identify the appropriate role of ecosystem management, the environmental and organizational goals that it will address, the spatial scale it will encompass, the management partnerships it may require, and the management methods it will employ. These issues will not be easy to address, but success in doing so will help maintain project resources in a condition necessary to continue providing high quality recreation experiences and other public benefits.

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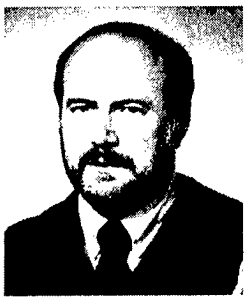

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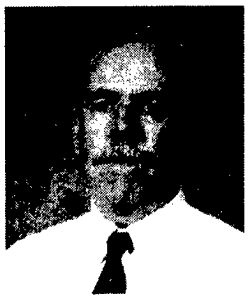

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Calendar of Events

March 28 - April 2, 1999	1999 Department of Defense Natural Resources Training Workshop and Annual Meeting of the National Military Fish and Wildlife Association, Burlingame, CA
April 19-23, 1999	USACE Prospect Course - Riparian Zone Ecology, Restoration, and Management, 281/CECW-PD, Session 99-01, Augusta, GA.
April 21-24, 1999	International Boating and Water Safety Summit, hosted by the National Safe Boating Council and the National Water Safety Congress, Albuquerque, NM. POC: IBWSS1999@aol.com
June 14-18, 1999	USACE Prospect Course - Riparian Zone Ecology, Restoration, and Management, 281/CECW-PD, Session 99-02, Fresno, CA.
July 26-30, 1999	USACE Prospect Course - Ecosystem Planning and Management Issues, 264/CECW-PD, Vicksburg, MS.

Heads Up! OMBIL's Here!

by Darrell Lewis, Chief, Natural Resources Branch, Headquarters, U.S. Army Corps of Engineers

A primary purpose of this column is to transmit information that otherwise might not make it throughout the Natural Resources Management (NRM) family. This column concerns something the majority of NRM folks may not even have heard about, although it will affect all of them.

First, what is it? The Operations and Maintenance (O&M) Business Information Link (affectionately known as OMBIL) is a database of information dealing with all five of the O&M business functions - navigation, flood damage reduction, hydropower, recreation, and environment - gathered in one place, accessible to everyone. The idea is that any piece of information will only be entered once into a data reporting system. This single entry will prevent redundancy of effort, as well as the maintenance of multiple databases with possibly conflicting data.

OMBIL grew out of the 1992 O&M Plan of Improvement, which received Vice President Gore's Hammer Award in 1996. The O&M Plan of Improvement is intended to simplify and clarify the budgeting process, streamline bureaucracy, reduce internal regulations, enhance customer satisfaction, and measure performance. OMBIL assists in accomplishing these goals by providing a way to link budget, expenditure, and performance data at all levels within the Corps, to actually accomplish performance-based budgeting as required by the Government Performance and Results Act.

The Natural Resources Management System (NRMS) will not only be replaced by OMBIL; it will be expanded. More information about recreation and natural resources programs will be available than ever before. And it will be information to monitor performance against budgets in a standard and corporately accepted way. In other words, a documentable link between expenditures of funds and outcomes will finally be available. That's what performance measurement is all about.

Two teams of NRM field folks have functioned as subject matter experts for the recreation and natural resources business programs in OMBIL for the past 2 years. These folks from projects, Districts, and Divisions have worked directly with OMBIL contractors (Planning and Management Consultants, LTD) to identify the data needed, at what level it is needed, how often it needs to be updated, where the data come from, and how the data will be used. Two business programs (Recreation & Natural Resources) are scheduled to be operational in January 1999. The database was available for review and preliminary data entry (Beta test) this fall. **It is critical that users take the time to review and provide constructive input during this test period** (i.e., this is no job for junior staffers!) The Corps will be living with OMBIL for the foreseeable future. The development teams have done their part; the Beta test gave NRM management an opportunity to do their part to make sure OMBIL would meet their needs.

In addition to the Beta test, NRM management needs to ensure correct data entry into the system when the time comes. **Performance ratings could depend upon it!** Users will need to know how to access the database and how to enter and retrieve data. Training will be provided to assure that these responsibilities can be fulfilled.

What are the advantages of OMBIL? For openers, at each level, OMBIL should cut down on the number of unique data calls from any level. Everyone is frustrated by the need to stop everything and respond to a data call. OMBIL is designed to allow those data calls without bothering others. This is accomplished by programming for standard reports that can be called up without contacting other offices. It will also be helpful to the Operations Manager to finally have a system that will allow monitoring the link between funds and results. That will prove to be handy at budget justification time later on. And...single entry of information will be a boon to any office responsible for data entry.

So...when you see or hear the name OMBIL, please recognize it as a new management tool that will help get the job done just a little bit easier! **Be on the lookout for OMBIL; it has arrived!**

RMSP

RECREATION MANAGEMENT
SUPPORT PROGRAM

RECNOTES

This bulletin is published in accordance with AR 25-30. It has been prepared and distributed as one of the information dissemination functions of the Environmental Laboratory of the Waterways Experiment Station. It is primarily intended to be a forum whereby information pertaining to and resulting from the Corps of Engineers' nationwide Natural Resources Research Program can be rapidly and widely disseminated to Headquarters, and Division, District, and project offices as well as to other Federal agencies concerned with outdoor recreation. Local reproduction is authorized to satisfy additional requirements. Contributions of notes, news, reviews, or any other types of information are solicited from all sources and will be considered for publication so long as they are relevant to the theme of the Recreation Management Support Program, i.e., to improve the effectiveness and efficiency of the Corps in managing the natural resources while providing recreation opportunities at its water resources development projects. This bulletin will be issued on an irregular basis as dictated by the quantity and importance of information to be disseminated. The contents of this bulletin are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products. Communications are welcomed and should be addressed to the Environmental Laboratory, ATTN: D.J. Tazik, U.S. Army Engineer Waterways Experiment Station (CEWES-EV), 3909 Halls Ferry Road, Vicksburg, MS 39180-6199, or call AC (601) 634-2610.

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