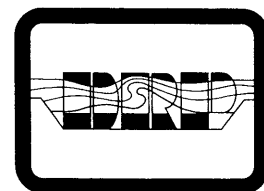




# *Dredging Research Technical Notes*



## **A Guide to the DRP**

### **Purpose**

This technical note describes the work, products, and personalities of the Dredging Research Program (DRP). It has been prepared to assist you, the user of DRP products, to better understand how the DRP works. It is our hope that a well-informed user can better use DRP products and be in a position to provide much-needed feedback on DRP activities and products. For the DRP to be successful, it must be responsive to present and future user needs. Therefore, continual feedback from the field is essential for developing effective and usable products.

### **Background**

Established in Fiscal Year 1988, the DRP is a seven-year program with the objective of developing products that reduce the cost of dredging operations. DRP work units address a diverse range of dredging problems and are grouped into the following five technical areas:

- Analysis of Dredged Material Placed in Open Water (Area 1).
- Material Properties Related to Navigation and Dredging (Area 2).
- Dredge Plant Equipment and Systems Processes (Area 3).
- Vessel Positioning, Survey Controls, and Dredge Monitoring Systems (Area 4).
- Management of Dredging Projects (Area 5).

### **Additional Information**

For additional information concerning the contents of this technical note, contact the author, Mr. Russell K. Tillman, (601) 634-2016, or the manager of the Dredging Research Program, Mr. E. Clark McNair, Jr., (601) 634-2070.



## **DRP Products**

The DRP uses a wide range of products to convey research results to the Corps dredging community. The following paragraphs describe traditional publication products, as well as a series of new products that customize the delivery of DRP results toward special audiences and situations. (Refer to the Bibliography, page 7, for a current listing of all distributed DRP products.)

### **Instruction Reports (IRs)**

These reports outline or propose techniques or procedures for implementing usable DRP-developed technology for solving field problems. IRs are used by the DRP to provide documented guidance for field use.

### **Technical Reports (TRs)**

These reports contain the methodology of research investigations. TRs provide documentation of what was done in the program research work unit but may not provide directly applicable cost-saving techniques. TRs document the work unit methodologies and foundations, and serve as a reference for developing DRP products which provide specific cost-savings assistance.

### **Miscellaneous Papers (MPs) and Contract Reports (CRs)**

MPs are investigation reports that are usually less technical than TRs but provide specific guidance. CRs are prepared by DRP contractors and describe work aimed at achieving specific goals of DRP work units.

### **Technical Notes (TNs)**

Technical Notes are one of the quickest mechanisms to relay research results to the DRP users. While most IRs provide the user with results at the end of a work unit, TNs are short (approximately 5 to 10 pages), loose-leaf documents published at any time during a work unit. TNs allow the DRP to provide interim products, methodologies, and guidance that are of use to the field when normal distribution of the results would not occur until later, when published in a formal product.

Users should be aware that TNs are not limited to DRP activities. Rather, all Corps personnel are encouraged to submit TNs that describe innovative or cost-saving dredging activities occurring at their project.

## **HQUSACE Proponent Guidance**

At request, the DRP prepares draft Engineer Manuals, Engineer Technical Letters, and Engineer Circulars for distribution by HQUSACE proponents.

## **Information Exchange Bulletin (IEBs)**

The newspaper of the DRP, *Dredging Research*, is distributed to over 5,000 readers. Unlike TNs, which are designed to provide specific guidance, *Dredging Research* provides newsworthy information about the DRP and the Corps dredging program. It is a goal of the DRP to make *Dredging Research* a two-way forum for discussing a wide range of dredging activities. Therefore, readers are always invited to submit articles and newsworthy information.

## **Executive Notes (ENs)**

DRP Executive Notes provide brief summaries about ongoing DRP events. ENs are designed to quickly inform Corps dredging-related management personnel about upcoming DRP activities, products, and events.

## **Video Reports**

The DRP uses video reports to provide quick overviews on specific accomplishments to a wide audience. Furthermore, video reports easily highlight and stress research accomplishments and concepts that may normally not be brought out in formal publications.

## **Personal Computer (PC) Programs**

The DRP prepares numerous computer programs, allowing methodology to be customized to the user's specific situation. All programs are designed for use on IBM 286, 386, or 486 compatible systems.

## **Demonstration Disks**

Slide shows describing DRP PC Programs have been placed on floppy disks. Demonstration Disks allow DRP users to review and learn DRP PC Program capabilities at their own pace. Presently, demonstration disks are being prepared for all DRP PC Programs.

## **Workshops**

While DRP products are designed to stand alone, user workshops provide direct assistance in learning or refining new techniques. DRP workshops remain flexible and, depending on interest, can be conducted on a

Corps-wide, Division, or District level, and can include non-Corps entities where appropriate.

### **Field Demonstrations, Experiments, and Prototype Testing**

From time to time, cost-saving techniques and equipment developed by DRP work units require refinement by testing in real-world conditions. Assisted by Corps District office personnel, the DRP conducts field demonstrations and experiments on cost-saving techniques that are monitored in a test environment. Products documenting these exercises are prepared, and the knowledge gained from these demonstrations or experiment is used to refine existing and future DRP products.

### **DredgeNet**

A computer-based teleconferencing network, DredgeNet, provides informal and timely exchange of information regarding the Corps' dredging program. The 75-plus DredgeNet members allow for an important and unique two-way forum to rapidly relay, critique, discuss, evaluate, and exchange ideas about DRP activities. The DRP Management monitors DredgeNet daily and shares its discussion with DRP Technical Area Managers and Principal Investigators. In addition, an update of DRP activities is provided to DredgeNet members every three months.

### **Displays, Brochures, and Pamphlets**

A display describing DRP activities is available for workshops, conferences, and conventions. A single-sheet pamphlet, five-page color brochure, and TV/VCR program describing DRP activities support this display.

### **Mailing Lists**

A crucial link in the delivery of DRP products is mailing lists. Even the best DRP product is totally useless if it is not delivered to the appropriate audience. Therefore, users are strongly urged to notify the DRP Management of address changes or corrections. The DRP has targeted Corps offices involved with dredging to receive various products. Furthermore, all Corps libraries receive DRP publications. When requested, the DRP will add names to mailing lists.

### **DRP Personalities**

The success and effectiveness of the DRP lies in a team effort with numerous people having specific roles and responsibilities. If users are to provide constructive feedback on DRP products and ongoing work, it is necessary for them to know and understand this team and its role and responsibilities. The following paragraphs provide a brief description of each role. Table 1 provides the names of all the current DRP contacts.

## **Users**

Users play a crucial role in the DRP and provide work unit and product evaluation. Users must provide much-needed feedback on the effectiveness and clarity of DRP products, as this feedback will be used to improve future products. In addition, comments on any manpower, time, and cost savings resulting from use of the product are also needed. The DRP looks to its users to assist in evaluating work unit direction by participating in Program Reviews, Field Review Group meetings, workshops, and other DRP activities. While sometimes it is not feasible to attend these meetings, users are encouraged to relay their comments to their respective Field Review Group member or other meeting participants.

## **Directorate of Research and Development (CERD)**

CERD, one of the five HQUSACE directorates, is the financial sponsor of the DRP and is ultimately responsible for the DRP and other Corps research programs. One way that CERD ensures DRP responsiveness to field needs is by conducting semiannual program review meetings where a Corps-wide audience reviews, evaluates, and recommends research priorities.

## **Technical Monitors and Advisors**

To assist and monitor the direction of the DRP, HQUSACE has appointed technical monitors and advisors. Located at HQUSACE, each technical monitor has been assigned responsibility for one of the five DRP technical areas. While this is an "other duties as assigned" position, these individuals perform a very important role in program direction by establishing work unit priorities and funding levels and reviewing draft user products.

## **Field Review Group (FRG)**

Composed of Corps personnel representing diverse backgrounds in dredging operations, the FRG provides constructive guidance to Technical Monitors on DRP activities. A unique aspect of the FRG is that members are assigned to specific DRP technical areas, in which they provide candid advice to Technical Monitors, DRP management, and Principal Investigators on specific program or work unit activities. While the FRG meets twice a year to review DRP progress, members also provide much-needed support to the DRP concerning any activities occurring in their respective Division or District.

## **Program Management Office**

Located at the Coastal Engineering Research Center, U.S. Army Engineer Waterways Experiment Station, the DRP Management Office is

responsible for the day-to-day management of the program. The main objective of DRP Management is to ensure program continuity, success, and effectiveness by planning and managing work units, approving initial draft products, and managing product deadlines and expenditures. DRP Management is also responsible for coordinating Program Review and Field Review Group meetings.

### **Technical Area Managers**

Each of the five DRP Technical Areas has a Technical Manager who reports directly to the DRP Manager. Technical Managers oversee, coordinate, and provide direction to Principal Investigators' work unit methodology and activities.

### **Principal Investigators (PIs)**

PIs are responsible for planning and conducting DRP research. In addition, PIs develop user products which are the end result of DRP work unit efforts. Working under tight time constraints, PIs must plan and implement their study methodology within the delivery deadlines of work unit products established with DRP management. In addition, to ensure effective production development, PIs constantly seek informal day-to-day contact and evaluation with Corps personnel on the direction of their work unit.

# Dredging Research Program Bibliography

## Instruction Reports

(None to date)

## Technical Reports

TR DRP-90-1, "Practices and Problems Associated with Economic Loading and Overflow of Dredge Hoppers and Scows," Michael R. Palermo and Robert E. Randall, October 1990.

TR DRP-90-2, "Results of Monitoring the Disposal Berm at Sand Island, AL; Construction and First Year's Response," Edward Hands, December 1991.

TR DRP-91-1, "NMLONG: Numerical Model for Simulating the Longshore Current; Report 1, Model Development and Tests," Nicholas C. Kraus and Magnus Larson, June 1991.

TR DRP-91-2, "Simulation of Time Sequences of Wave Height, Period, and Direction," Norm Scheffner and Leo Borgman, August 1991.

TR DRP-91-3, "Mobile, Alabama, Field Data Collection Project, 18 August - 2 September 1989, Report 1 Dredged Material Plume Survey Data Report," Edited by Nicholas Kraus, September 1991.

TR DRP-92-1, "Feasibility of a Kinematic Differential Global Positioning System," David E. Wells and Alfred Kleusberg, March 1992.

TR DRP-92-2, "Global Positioning System Bibliography," Wendlynn Wells, David E. Wells, and Alfred Kleusberg, March 1992.

TR DRP-92-3, "Boundary Stresses and Velocity Profiles in Estuarine Flows; Report 1, Interim Calculation Methods," William H. McAnally, Jr. and Earl J. Hayter.

TR DRP-92-4, "Laboratory Testing of Methods to Increase Hopper Dredge Payloads: Model Hopper Bin Facility and Centrifugal Solids Concentrator," Stephen H. Scott, Walter Pankow, and Thad C. Pratt, August 1992.

TR DRP-92-5, "Analysis of Cross-Shore Movement of Natural Longshore Bars and Material Placed to Create Longshore Bars," Magnus Larson and Nicholas C. Kraus, September 1992.

TR DRP-92-6, "ADCIRC: An Advanced Three-Dimensional Circulation Model for Shelves, Coasts, and Estuaries; Report 1, Theory and

Methodology of ADCIRC-2DDI and ADCIRC-3DL," R. A. Luettich, Jr., J. J. Westerink, Norman W. Scheffner, November 1992.

TR DRP-92-7, "Tylers Beach, Virginia, Dredged Material Plume Monitoring Project, 27 September to 4 October 1991," Michelle M. Thevenot, Terri L. Prickett, Nicholas C. Kraus, December 1992.

TR DRP-92-8, "Preliminary Design for Dredged Material Placement Physical Modeling Facilities," Mills Soldate, James R. Pagenkopf, Michael R. Morton, December 1992.

### **Contract Reports**

CR DRP-91-1, "Simple Models for Turbulent Wave-Current Bottom Boundary Layer Flow," Ole Secher Madsen and Palitha Nalin Wikramanayake, December 1991.

CR DRP-92-1, "Dredge Mooring Study Conceptual Design Phase I Report," SOFEC, Inc., May 1992.

CR DRP-92-2, "Dredge Mooring Study, Recommended Design, Phase II Report," SOFEC, Inc., May 1992.

### **Miscellaneous Papers**

(Unnumbered), "DRP Product Inventory," Russ Tillman, January 1991.

MP DRP-92-1, "Dispersion Analysis of Humboldt Bay, California, Interim Offshore Disposal Site," Norman W. Scheffner, June 1992.

### **Technical Notes**

#### **Technical Area 1: Analysis of Dredged Material Placed in Open Water**

DRP-1-01, "Construction and Monitoring of Nearshore Placement of Dredged Material at Silver Strand State Park, San Diego, California," Leonard Juhnke, Thomas Mitchell, and Michael J. Piszker, August 1990.

DRP-1-02, "Numerical Disposal Modeling," Billy Johnson, August 1990.

DRP-1-03, "Fine Sediment Erodibility Characterization," Allen Tee-ter, July 1990.

DRP-1-04, "Numerical Disposal Modeling Needs Revealed by Mobile Bay Field Data," Billy Johnson, James Tallent, and Moira Fong, February 1992.



DRP-1-05, "Acoustic Resuspension Measurement System (ARMS): Announcement and Availability," Robert E. Van Evra III and Keith W. Bedford, April 1992.

DRP-1-06, "The *PLUme Measurement* (PLUMES): First Announcement," Nicholas C. Kraus and Michelle Thevenot, April 1992.

DRP-1-07, "Erosion of Cohesive Dredged Material in Open-Water Disposal Sites," Allen Teeter, April 1992.

DRP-1-08, "Monitoring of Alabama Berms," Edward Hands, Mary Allison, Joy Brogdon, Renee Cox, Patricia Terrell, and Darryl Bishop, July 1992.

DRP-1-09, "Prediction of Cross-Shore Movement of Dredged Material Berms," Nicholas C. Kraus, May 1992.

DRP-1-10, "Analysis of Dredged Material Deposition Patterns," Eric Nelson and Billy Johnson, July 1992.

## Technical Area 2: Material Properties Related to Navigation and Dredging

DRP-2-01, "Suggested Methods for Use of the Point Load Tester in Dredging Applications," Hardy Smith, August 1990.

DRP-2-02, "Point Load and Unconfined Compression Strength Data Base," Hardy Smith, July 1991.

DRP-2-03, "Hydrologic Surveys Applicable to Dredging," Thomas Harmon and Robert Ballard, December 1991.

DRP-2-04, "The Viscous Characteristics of Channel-Bottom Muds," Allen Teeter, July 1992.

DRP-2-05, "Evaluation of New Fluid Mud Survey System at Field Sites," Allen Teeter and Mike Alexander, November 1992.

## Technical Area 3: Dredge Plant Equipment and Systems Processes

DRP-3-01, "Jet Pump Sand Bypassing, Nerang River Entrance, Australia," James Clausner, November 1989.

DRP-3-02, "Hopper Dredge Mooring," Thomas Chisholm, January 1990.

DRP-3-03, "Fixed Sand Bypassing Plant — an Update," James Clausner, September 1990.

DRP-3-04, "An Inclined-Plate Technique for Increasing the Settling Rate of Fine-Grained Sediments in Hopper Bins," Stephen Scott, November 1990.

DRP-3-05, "Controlled Tests of Eductors and Submersible Pumps," James E. Clausner, Timothy L. Welp, and Darryl Bishop, May 1992.

DRP-3-06, "Applying Ultrasonic Surface Detectors to Hopper Dredge Production Monitoring," Stephen H. Scott, August 1992.

DRP-3-07, "Applying Electrical Resistivity Methods for Measuring Dredged Material Density in Hopper Bins," Stephen Scott, November 1992.

DRP-3-08, "A Single-Point Mooring System for Direct Pumpout of Hopper Dredges," James Clausner, November 1992.

DRP-3-09, "Fluidizer System Design for Channel Maintenance and Sand Bypassing," James Clausner, December 1992.

DRP-3-10, "Water Injection Dredging Demonstration on the Upper Mississippi River," James Clausner, March 1993.

#### Technical Area 4: Vessel Positioning, Survey Controls, and Dredge Monitoring Systems

DRP-4-01, "Laboratory Tests of Production Meter Instruments," Virginia Pankow, November 1989.

DRP-4-02, "Application Criteria for the Automated Real-Time Tidal Elevation System (ARTTES)," Andrew Garcia, May 1990.

DRP-4-03, "Dredge Production Meter Survey," Virginia Pankow, November 1990.

DRP-4-04, "ENDECO Tide Gauge Evaluation," William Grogg, July 1991.

DRP-4-05, "Production Meter System Evaluation on the Dustpan Dredge *Jadwin*," Virginia Pankow, August 1991.

DRP-4-06, "Evaluation of Production Meter Performance in a Fine-Grain Sediment Environment," Stephen H. Scott, May 1992.

DRP-4-07, "Improvements to the Automated Real-Time Tidal Elevation System (ARTTES)," Andrew Garcia, May 1992.

#### Technical Area 5: Management of Dredging Projects

DRP-5-01, "Engineering Design Considerations for Nearshore Berms," Neil McLellan, January 1990.

DRP-5-02, "Interim Design Guidance for Nearshore Berm Construction," Neil McLellan, August 1990.

DRP-5-03, "Design Requirements for Capping," Michael Palermo, February 1991.

DRP-5-04, "Site Selection Considerations for Capping," Michael R. Palermo, November 1991.

DRP-5-05, "Equipment and Placement Techniques for Capping," Michael R. Palermo, November 1991.

DRP-5-06, "Length and End Slope Considerations, Interim Design Guidance Update for Nearshore Berm Construction," Cheryl Burke and Mary C. Allison, April 1992.

DRP-5-07, "Monitoring Considerations for Capping," Michael R. Palermo, Tom Fredette, and Robert Randall, June 1992.

#### Miscellaneous

DRP-6-01 (1993 revision), "A Guide to the DRP," Russ Tillman, January 1993.

#### Information Exchange Bulletins

88-1, "The Dredging Research Program," August 1988.

89-1, "Third Field Review Group Meeting," June 1989.

89-2, "Jet Pump Sand Bypassing, Indian River Inlet, Delaware," November 1989.

90-1, "Physical Test Facility for Modeling Open Water Placement of Dredged Material," & "What's Being Dredged?" January 1990.

90-2, "Hopper Dredge Direct Pumpout for Beach Placement," July 1990.

90-3, "Submersible Pumps for Sand Bypassing" "Submersible Pump Dredging Operation in San Francisco Bay - A DRP Site Visit," August 1990.

90-4, "Dredge Operations Silent Inspector System (DOSIS) — An Automated Aid for Dredge Operations Inspection," "Demonstrations of Equipment and Techniques for Capping Contaminated Dredged Material," December 1990.

91-1, "A Generalized Approach to Site Classification — Dispersive or Non-dispersive," March 1991.

91-2, "Rock Dredging Exploration Using the Drilling Parameter Recorder," July 1991.

91-3, "Laboratory Tests of an Automated Method for Monitoring Hopper Dredge Payload," "Capping of Contaminated Bottom Sediment in Elliott Bay, Washington," September 1991.

91-4, "Navigable Depth Concept for Channels with Fine-Grained Sediment," October 1991.

91-5, "Selection and Use of a Production Meter System — A Case Study," "Monitoring a Dredged Material Plume from a Single-Point Discharge at Tylers Beach, Virginia," December 1991.

92-1, "Laboratory Investigations of Techniques for Increasing Hopper Dredge Payload," March 1992.

92-2, "Dredge Data-Logging System; A Prelude to the Silent Inspector," May 1992.

92-3, "Corps of Engineers Dredging Data Management Related Software," June 1992.

92-4, "Improving Hopper Dredge Overflow Operations with Production Monitoring Technology," November 1992.

93-1, "Nearshore Berm Testing at SUPERTANK," February 1993.

### **Executive Notes**

No. 1, May 1989, Improved Draghead Design, and others.

No. 2, July 1989, DRP Field Data Collection Project, and others.

No. 3, December 1989, Contaminated Material Capping Demo, and others.

No. 4, March 1990, DRP Brochure and Video, and others.

No. 5, June 1990, Improved Educators and Systems for Sand Bypassing, and others.

No. 6, February 1991, Miami Harbor Placement Monitoring, and others.

No. 7, June 1991, Site Characteristics, and others.

No. 8, July 1991, CERB Dredging Theme, and others.

No. 9, September 1991, LONGTERM DREDGE Hits the Road, and others.

No. 10, November 1991, DRP, EPA & NOAA Team-up, and others.

No. 11, January 1992, Expert Based System on Dredgeability, and others.

No. 12, March 1992, Multiple Dredging Program Reviews Planned, and others.

No. 13, May 1992, DRP Technology Used in Chicago Flood Response, and others.

No. 14, July 1992, Coastal Engineering Education Program, and others.

No. 15, January 1993, PLUMES Goes to Deeper Depths!, and others.

## **Videos**

Video Report DRP-90-1, "The Dredging Research Program," Robert Baylot, Jr., March 1990.

Video Report DRP-90-2, "Plume Tracking off Mobile, Alabama," Nicholas Kraus and others, March 1990.

Video Report DRP-91-1, "Submersible Pumps as an Alternative to Dredging," James Clausner, July 1991.

Video Report DRP-91-2, "The Silent Inspector," Russ Tillman, November 1991.

Video Report DRP-91-3, "Subbottom Site Characterization Using Acoustic Impedance," Robert Ballard, December 1991.

Video Report DRP-92-1, "SUPERTANK," Sally Duncan, April 1992.

Video Report DRP-92-2, "Protecting Sea Turtles Through Improved Hopper Dredge Operations," Jeff Jorgeson, April 1992.

Video Report DRP-92-3, "Dredged Material Plume Tracking off Tylers Beach in the James River, Virginia," Terri Prickett and Russ Tillman, May 1992.

Video Report DRP-92-4, "America's Ports and Waterways: Open Channels to Trade," Rod Koon and Eileen Denne, January 1993.

Video Report DRP-93-1, "Water Injection Dredging," James Clausner and Anne Marie Murphy, April 1993.

## **PC Programs**

"Single Short-Term FATE of Dredged Material (SSTFATE)," Nick Kraus, June 1990.

"Height, Period, Direction PREprocessor (HPDPRE) & Height, Period, Direction SIMulation (HPDSIM)," Norm Scheffner, September 1990.

"Personal Computer DREDGED Material Estimation (PCDREDGE)," Norm Scheffner and J. Tallent, October 1990.

"Cohesive Sediments PC Programs (HPROF, COSED1H)," Allen Teeter, October 1990.

"Numerical Model of the LONGshore Current (NMLONG)," Nick Kraus, March 1991.

"Point Load and Unconfined Compressive Strength Database," Hardy Smith, October 1991.

"GEODREDG: A Windows Program to Determine Dredgability of Material (Beta Version)," Joseph Spigolon, Reda Bakeer, and Jack Fowler, September 1992.

### **Demonstration Disks**

DRP-Demo-92-1, An Integrated Package to Determine the Fate of Dredged Material, James Tallent and Russ Tillman, December 1991.

DRP-Demo-92-2, GEODREDG: A Windows Program to Calculate the Dredgeability of Materials, Joseph Spigolon, Reda Baker, and Jack Fowler, August 1992.

### **Workshops**

"Bottom Descriptor Workshop," Jack Fowler, September 1989, New Orleans, LA.

"Silent Inspector Workshop," Jay Rosati, March 1990, Denver, CO.

"Technical Area 1 Interim Guidance Workshop," Nicholas Kraus and others, June 1990, Vicksburg, MS.

"Silent Inspector Workshop," Jay Rosati, August 1991, Denver, CO.

"Dredging Descriptor Workshop," Jack Fowler, November 1991, New Orleans, LA.

"GEODREDG Workshops," Jack Fowler, August and September 1992, Seattle, WA, and New Orleans, LA.

"DRP Decimeter GPS System Workshop and Demonstration," Sally Frodge, Duck, NC.

### **Field Demonstrations/Experiments**

Berm Seabed Drifter Releases Near Sand Island, AL, Edward Hands, 30 episodes between March 1987 and May 1990.

Monitoring Long-Term Wave and Bottom Current Conditions at Sand Island Berms, AL, Edward Hands, March 1987-October 1990.

Monitoring of Long-Term Berm Migration Near Sand Island, AL, Edward Hands and others, January-October 1988.

Long-Term Directional Wave Measurements at National Berm Demonstration Project, Mobile, AL, Edward Hands, May 1988-September 1990.

Seabed Drifter Release for Nearshore Site Selection, Humboldt Bay, CA, Edward Hands, November 1988.

Drilling Parameter Recorder Rock Dredging Exploration Field Test, New York Harbor, NY, Hardy Smith, November-December 1988.

Monitoring of Long-Term Berm Migration Near Sand Island, AL, Edward Hands and others, January-August 1989.

Berm Material Characterization for Silver Strand Nearshore Berm, San Diego, CA, Edward Hands, January 1989.

Monitoring Long-Term Berm Migration at Nearshore Site, Humboldt, California, Edward Hands, March-October 1989.

Monitoring Long-Term Changes on Disposal Mound SF-3, CA, Edward Hands, March-October 1989.

Fluid Mud Definition Tests, Calcasieu, LA, Charleston and Georgetown, SC, and Savannah, GA, Allen Teeter, May-November 1989.

Drilling Parameter Recorder Dredging Rock Exploration Field Test, Grays Harbor, WA, Hardy Smith, August 1989.

Mobile Bay Field Data Collection Experiment; Nicholas Kraus and others, August-September 1989.

Drilling Parameter Recorder Dredging Rock Exploration Field Test, Wilmington Harbor, SC, Hardy Smith, September 1989.

Production Meter Evaluation on the Dustpan Dredge JADWIN; Virginia Pankow, September 1989.

Field Demonstration of the Reconnaissance Probe and the Towed Nuclear Depth Density Probe, Calcasieu, LA, Allen Teeter, September 1989.

Drilling Parameter Recorder Demonstration and Test Exploration, Kings Bay, GA, Hardy Smith, October 1989.

Contaminated Material Capping Demonstration, Neil McLellan, December 1989.

Monitoring of Long-Term Berm Migration Near Sand Island, AL, Edward Hands and others, March-July 1990.

Plume Tracking Measurements from Miami Harbor Deepening Project, Miami, FL, Terri Prickett, April-May 1990.

Monitoring Long-Term Changes on Disposal Mound SF-3, California, Edward Hands, June 1990.

Monitoring Long-Term Berm Migration at Nearshore Site, Humboldt, California, Edward Hands, June-October 1990.

Gulfport, MS, and Mobile, AL, Harbors Acoustic Impedance Survey to Determine Density and Material Types, Bob Ballard, July 1990.

Oakland Harbor Acoustic Impedance Survey to Determine Density and Material Types, Oakland, CA, Bob Ballard, August 1990.

Monitoring of Long-Term Berm Migration Near Sand Island, AL, Edward Hands and others, February-September 1990.

Gulfport Harbor Acoustic Impedance Survey to Determine Material Types, Gulfport, MS, Bob Ballard, April 1991.

Boat/Pier GPS Positioning Test, Fort Belvoir, VA, Carl Lanigan, June 1991.

GPS/Photogrammetry Accuracy Test, Rockville, MD, Carl Lanigan, July 1991.

Drilling Parameter Recorder In-Lab Test on Selected Uniform Materials, Vicksburg, MS, Hardy Smith, July-September 1991.

GPS Field Test Comparison to Krupp-Atlas Polarfix Positioning System, Wilmington District, Carl Lanigan, August 1991.

Geodimeter/GPS Positioning Comparison, Duck, NC, Carl Lanigan, September 1991.

Monitoring Long-Term Changes on Disposal Mound SF-3, California, Edward Hands, September 1991.

Submersible Pump and Eductor Production Tests, Franklinton, LA, Jim Clausner, September 1991.



Monitoring Long-Term Berm Migration at Nearshore Site, Humboldt, CA, Edward Hands, September 1991.

Tylers Beach Dredged Material Plume Monitoring, Williamsburg, VA, Terri Prickett, October 1991.

Savannah Harbor Acoustic Impedance Survey to Determine Density and Material Types, Savannah, GA, Bob Ballard, November 1991.

Plumes Measurement System Laboratory Calibration, San Diego, CA, Michelle Thevenot, March-July 1992.

Improved Eductor Demonstration, Indian River Inlet, Delaware, Jim Clausner, May 1992.

Wave Measurement Profiles and Samples of Nearshore Receiving Material Pumped for the Santa Ana River Project, Ed Hands, David McGehee, and Chuck Mesa, May and December 1992.

Survey and Seabed Drifter Releases in Vicinity of Disposal Sites Along the Mississippi River Gulf Outlet, Ed Hands and Linda Glenboski, May-December 1992.

Modeling and Seabed Drifter Releases in Vicinity of Planned Breton Island Berm, Ed Hands, Greg Williams, Cheryl Pollock, and Linda Glenboski, May-December 1992.

Water Injection Dredging Demonstration, New Orleans, LA, Jim Clausner, Henry Schorr, Charles Settoon, Greg Breerwood, Patrick Langan, Herbie Maurier, and Larry Rabalais, June 1992.

Plumes Measurement System Survey of Cook Inlet, Anchorage, AK, Nicholas Kraus and Michael Tubman, July 1992.

Water Injection Dredging Demonstration, Minneiska, MN, and Savannah, IL, Jim Clausner, Dan Krumholtz, M. Sardinas, and Dick Baker, July-August 1992.

Deep-water Plumes Measurement System Field Trials, Michael Tubman and Terri Prickett, September 1992.

Survey and Sampling of SF-3 to Monitor Continued Erosion and Dispersion Sands from High-Relief but Abandoned Dredged Material Mound, Ed Hands and Roger Golden, October 1992.

Survey and Sampling of New Hoods Disposal Site, Ed Hands and Roger Golden, October 1992.

Full-Bottom, Roll and Heave Compensated, GPS-Positioned Survey of Sand Island Berms, Ed Hands, Wendell Mears, and Mike Nettles, November 1992.

Improved Eductor Long-Term Field Test, Indian River Inlet, Delaware, Jim Clausner, January 1993.

### **Displays, Brochures, and Pamphlets**

DRP Display Themes:

- **DRP Overview.**
- **Technical Area 1 Overview: Analysis of Dredged Material Placed in Open Water.**
- **DRP Hydrographic Surveying Work.**
- **Why Dredge? (Economics of Dredging).**
- **Technical Area 2 Overview: Material Properties Related to Navigation and Dredging.**
- **Dredging and Navigation Branch.**
- **Beneficial Uses of Dredged Material.**
- **GPS: Meters Today Decimeters Tomorrow.**
- **Submersible Pumps as an Alternative to Dredging.**
- **Subbottom Site Characterization Using Acoustic Impedance.**
- **Results of the Tylers Beach Plume Tracking Study.**
- **Water Injection Dredging.**

DRP Pamphlet, May 1989.

DRP Brochure, March 1990.

Table 1

## Dredging Research Program Key Personnel

	<i>Office</i>	<i>Office Symbol</i>	<i>Telephone No.</i>
<b>DRD Coordinator, HQUSACE</b>			
Jesse A. Pfeiffer, Jr.	Civil Works Program	CERD-C	(202) 272-1846
<b>Technical Monitors and Advisors, HQUSACE</b>			
Robert H. Campbell	Operations, Construction, and Readiness Division	CECW-OD	(202) 272-0397
John H. Lockhart, Jr. (Area 1)	Engineering Division	CECW-EH-D	(202) 272-8503
Barry W. Holliday (Area 2)	Operations, Construction, and Readiness Division	CECW-OD	(202) 272-8834
Dave A. Roellig (Area 2)	Engineering Division	CECW-EG	(202) 272-8684
Gerald Greener (Area 3)	Operations, Construction, and Readiness Division	CECW-OD	(202) 272-8830
M. K. Miles (Area 4)	Engineering Division	CECW-EP-S	(202) 272-8885
David Mathis (Area 5)	Office of Environmental Policy	CECW-PO	(202) 272-8843
<b>Program Management</b>			
E. Clark McNair, Program Manager	Coastal Engineering Research Center	CEWES-CP-D	(601) 634-2070
Lyndell Z. Hales, Asst. Manager	Coastal Engineering Research Center	CEWES-CP-D	(601) 634-3207
Russell K. Tillman	Coastal Engineering Research Center	CEWES-CP-D	(601) 634-2016
Karen R. Wood	Coastal Engineering Research Center	CEWES-CP-D	(601) 634-4271
<b>Field Review Group</b>			
Patrick Cagney (Area 1)	Seattle District	CENPS-EN-PL-ER	(206) 764-3624
Douglas M. Pirie (Area 1)	South Pacific Division	CESPD-CO-O	(415) 705-1443
J. Patrick Langan (Area 1)	Mobile District	CESAM-OP-O	(205) 690-2591
Robert E. Parker (Area 1)	Seattle District	CENPS-OP	(206) 764-3455
Robert M. Parry (Area 1)	Seattle District	CENPS-OP-NP	(206) 764-3400
Timothy Pope (Area 2)	South Atlantic Division	CESAD-EN-FG	(404) 331-6703
Braxton Kyzer (Area 2)	Charleston District	CESAC-PM-N	(803) 724-4489
Gregory E. Breerwood (Area 2)	New Orleans District	CELMN-OD-ON	(504) 862-2302
Robert A. Neal (Area 3)	North Central Division	CENCDCO-MO	(312) 353-6378
Larry A. Rabalais (Area 3)	Lower Mississippi Valley Division	CELMV-CO-O	(601) 634-5814
David C. Beach (Area 3)	Portland District	CENPP-OP-N	(503) 326-6082
Robert J. Hopman (Area 4)	North Pacific Division	CENPD-CO-O	(503) 326-3778
Herbie A. Maurer (Area 4)	Galveston District	CESWG-CO-M	(409) 766-3966

**Table 1 (Continued)**  
**Dredging Research Program Key Personnel**

	<i>Office</i>	<i>Office Symbol</i>	<i>Telephone No.</i>
<b>Field Review Group (Continued)</b>			
Ronald G. Vann (Area 4)	Norfolk District	CENAO-ED-C	(804) 441-7057
Jacob F. Redlinger (Area 4)	North Pacific Division	CENPD-CO-O-N	(503) 326-3779
Charles E. Settoon (Area 5)	New Orleans District	CELMN-ED-C	(504) 862-2726
Kenneth H. Patterson (Area 5)	Portland District	CENPP-OP	(503) 326-3404
Paul J. Warren (Area 5)	Mobile District	CESAM-FO-MO	(205) 957-6019
Carl G. Boutilier (Area 5)	New England Division	CENED-OD-N	(617) 647-8330
James Reese (Area 5)	North Pacific Division	CENPD-PE-R	(503) 326-2832
John Tavoraro (Area 5)	New York District	CENAN-OP	(212) 246-9020
Susan Rees (Area 5)	Mobile District	CESAM-PD-EC	(205) 690-2724
<b>Technical Managers</b>			
Nicholas C. Kraus (Area 1)	Coastal Engineering Research Center	CEWES-CV-CS	(601) 634-2018
Don C. Banks (Area 2)	Geotechnical Laboratory	CEWES-GS	(601) 634-2630
William D. Martin (Area 3)	Hydraulics Laboratory	CEWES-HE-E	(601) 634-4157
George P. (Pat) Bonner (Area 4)	Instrumentation Services Division	CEWES-JV-Z	(601) 634-2538
Thomas W. Richardson (Area 5)	Coastal Engineering Research Center	CEWES-CD	(601) 634-2019
<b>Principal Investigators</b>			
	<i>DRP Work Unit</i>	<i>Technical Area</i>	<i>Telephone No.</i>
Nicholas C. Kraus CEWES-CR	Calculation of Boundary Layer Properties (Noncohesive Sediments)	1	(601) 634-2018
Micheal W. Tubman CEWES-CD-P	Measurement of Entrainment and Transport (Noncohesive Sediments)	1	(601) 634-3009
Allen M. Teeter CEWES-HE-P	Calculation of Boundary Layer Properties (Cohesive Sediments)	1	(601) 634-2820
	Measurement of Entrainment and Transport (Cohesive Sediments)	1	
	Measurement and Definition of Navigable Depth in Fluff and Fluid Mud	2	
Billy H. Johnson CEWES-HR-M	Numerical Simulation Techniques for Evaluating Short-Term Stability of Dredged Material Disposed in Open Waters	1	(601) 634-3425
Norman W. Scheffner CEWES-CR-P	Numerical Simulation Techniques for Evaluating Long-Term Stability of Dredged Material Disposed in Open Waters	1	(601) 634-3220
Edward B. Hands CEWES-CD-SE	Field Techniques and Data Analysis to Assess Fate of Open-Water Disposal Deposits	1	(601) 634-2088
Robert F. Ballard CEWES-GG	Rapid Measurements of Properties of Consolidated Sediments	2	(601) 634-2201

**Table 1 (Concluded)**  
**Dredging Research Program Key Personnel**

	<i>DRP Work Unit</i>	<i>Technical Area</i>	<i>Telephone No.</i>
<b>Principal Investigators (Continued)</b>			
Jack Fowler CEWES-GS-S	Descriptors for Bottom Sediments to Be Dredged	2	(601) 634-2703
Hardy J. Smith CEWES-GS-R	Descriptors for Rock Materials to Be Dredged	2	(601) 634-2431
Glynn E. Banks CEWES-HE-E	Improved Draghead Design	3	(601) 634-3597
James E. Clausner CEWES-CD-SE	Improved Eductors for Sand Bypassing Dredging Equipment for Nearshore/ Onshore Placement	3 3	(601) 634-2009
Stephen H. Scott CEWES-HE-E	Technology for Monitoring and Increasing Dredged Payloads in Fine Grain Sediments Production Meter Technology	3 4	(601) 634-4286
Andrew W. Garcia CEWES-CD-P	Integrated Vertical Control System	4	(601) 634-3555
Sally Frodge CETEC-TL-SP	Horizontal/Vertical Positioning System Utilizing GPS Satellite Constellation	4	(703) 355-2819
James R. Rosati CEWES-CD-P	Silent Inspector	4	(601) 634-2022
Gary C. Lynch CEWES-HR-N	Dredge Plant Manuals	5	(601) 634-4165
Sandra K. Lemlich CEWES-CD-SE	Open Water Placement Site Planning, Design, and Operation	5	(601) 634-2090
Cheryl Pollock CEWES-CD-SE	(Berm Management)		(601) 634-4029
Russell K. Tillman CEWES-CP-D	Dredging Technology Transfer	Program Management	(601) 634-2016

