



Field Survey to Prioritize Needs for Modernizing Dredged Material Evaluation Guidance

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PURPOSE: This technical note synthesizes and disseminates results of a 2020 survey of USACE dredging program and project managers to identify and prioritize needs related to the modernization and streamlining of the dredged material assessment decision guidance¹ pursuant to Section 404 of the Clean Water Act² (CWA) and Section 103 of the Marine Protection Research and Sanctuaries Act³ (MPRSA). Priorities identified through the survey and subsequent follow-on interviews— together with advances in science and technology—will facilitate development of an electronic decision guidance tool to enable consistent, timely, and cost-effective dredged material management decisions. This tool will also facilitate a standardized database for ready access to historical data.

BACKGROUND: Streamlining the environmental evaluations required by the *Code of Federal Regulations* would allow the US Army Corps of Engineers (USACE) to perform its mission to efficiently and effectively move dredged material (DM) for the maintenance of the nation’s navigation system in a more timely and cost-effective manner (US Army Corps of Engineers 2018). Inconsistent, incomplete, or inappropriate analyses associated with DM assessments, coupled with overburdened and sometimes inexperienced staff, can lead to disputes between cooperating agencies. While existing manuals provide useful guidance to DM regulators, at over 30 years old they do not reflect the scientific research and advances that have occurred since. Efforts to modernize and streamline these guidance manuals have yet to succeed because of interagency coordination challenges. The outdated and unclear guidance, and a lack of consistent reporting and decision documentation, results in project managers repeatedly revisiting previously addressed issues on a project-by-project basis. Further inefficiencies relate to managing protracted disputes between permitting and concurring agencies—leading to significant, unanticipated project delays.

To solve these issues, this technical note recommends modernizing DM assessment guidance via automation of environmental compliance assessment and decision-making in an electronic software tool. This solution would integrate the best available science and provide a platform for decision documentation to improve the consistency, speed of planning, and execution of dredging evaluations across USACE divisions. Soliciting input from experienced USACE dredging project managers who would ultimately use the tool is the critical first step to ensure the project is useful and implementable.

SURVEY: An online survey was conducted to gain insight from representative USACE dredging program and project managers with respect to critical needs supporting DM evaluations. The survey sought to represent the views of district representatives with large sustained dredging

1. Guidelines for Specification of Disposal Sites for Dredged or Fill Material, 40 C.F.R. 230 (2012).
2. Federal Water Pollution Control Act of 1972, 33 U.S.C. § 1344 (2011).
3. Marine Protection, Research, and Sanctuaries Act of 1972, 33 U.S.C. § 1401 (2010).

programs. The authors selected dredged material managers by best professional judgment. The survey was built using a free, online platform for anonymous surveys, was open for two weeks, and was distributed to 24 individuals representing all 8 USACE divisions (North Atlantic, South Atlantic, Mississippi Valley, Great Lakes and Ohio River, Southwestern, South Pacific, Northwestern, and Pacific Ocean), the Institute for Water Resources, and USACE Headquarters. A total of 18 responses (75% response rate) were received, with the survey questions. A graphical summary of the responses is provided below. Additional written feedback received was the subject of follow-up interviews to direct the final development of the tool.

Age of existing dredging guidance. USACE districts generally use guidance prescribed in Regional Implementation Manuals (RIM) or Regional Implementation Agreements (RIA) to assess DM, where such manuals or agreements exist (figure 1). In the absence of regional guidance (33% of responding districts indicated they do not have a RIM or RIA), districts rely on the nearly 30-year-old national manuals (Environmental Protection Agency and US Army Corps of Engineers 1991, 1998). At present, only 17% of respondents indicated that existing RIMs or RIAs have been updated in the past 5 years, and 75% of respondents replied that existing RIMs and RIAs are more than 15 years old or have never been updated (figure 2). These responses confirm the need for guidance modernization, given the significant advancements in the state of the science over the past 15 years. Furthermore, the traditional approach of producing static, hardcopy guidance documents is time consuming and antithetical to rapidly accommodating advances in science and technology. The USACE, as the permitting authority for DM assessments, has the responsibility to apply the best available assessment tools and resources to complete its mission quickly, efficiently, and safely.

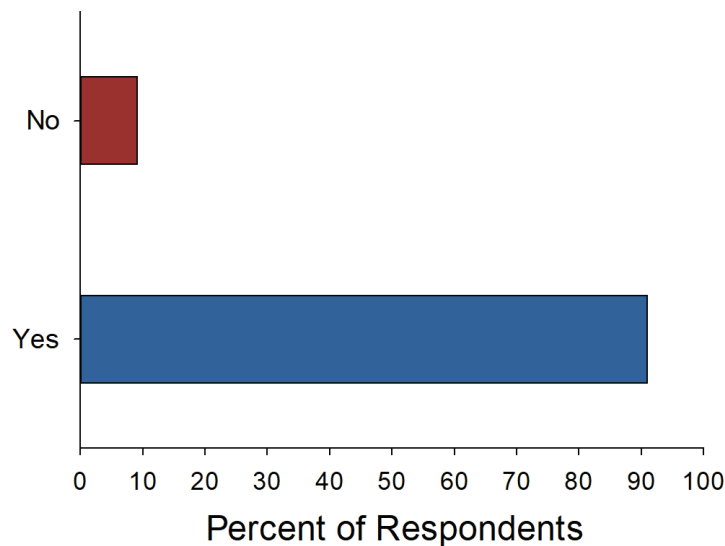
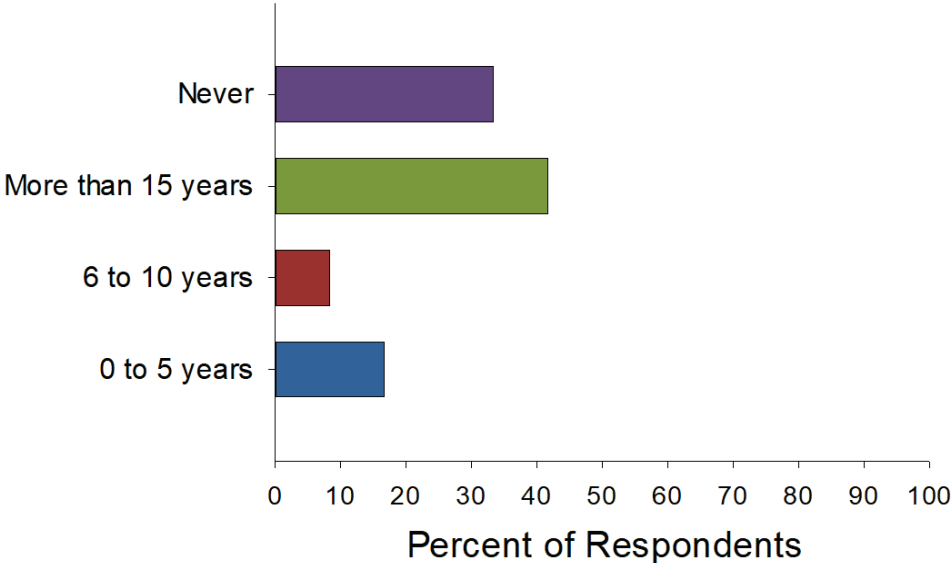


Figure 1. Survey result to question: “If your district/division has a Regional Implementation Manual or Regional Implementation Agreement, is it actively used?” (11 responses). Districts that indicated they have a RIM/RIA were Buffalo, Galveston, Jacksonville, New England, Norfolk, and Savannah. Alaska, Los Angeles, and Sacramento indicated they have no guidance document.

A.



B.

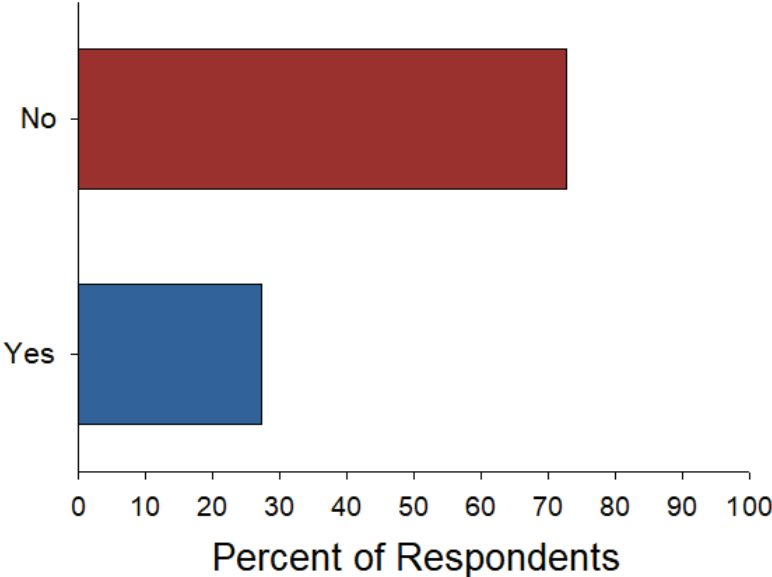


Figure 2. Survey result to question: (A) “How recently have Regional Implementation Manuals or Region Implementation Agreements been updated?” (12 responses) and (B) “Have addendums been issued” (11 responses).

Desire for modernized guidance. A majority of district dredging project and program managers want their RIMs, RIAs, and the national dredging guidance documents updated to better reflect the current state of the science (69%; 16 responses; plot not shown). In a separate question, a majority of survey respondents indicated a desire to have an electronic guidance tool to supplement written documentation (figure 3A). Respondents' desire to have both an electronic tool and written documentation suggests a need for a transitional period to fully vet and understand capabilities of an electronic tool (figure 3B and C).

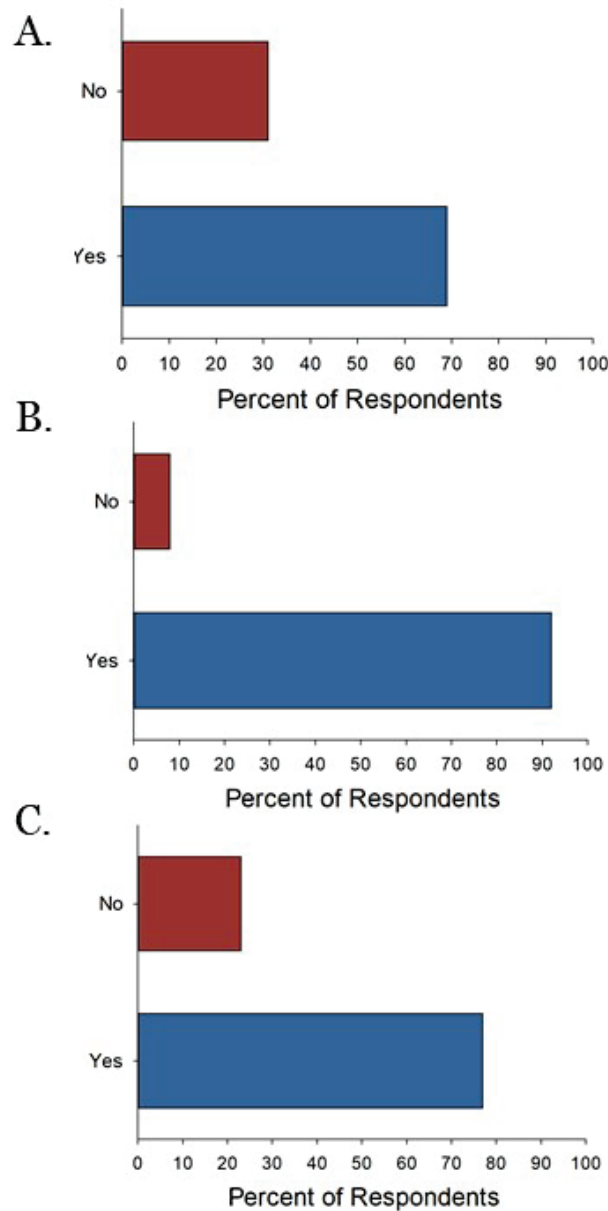


Figure 3. Survey result to question: “Would a *fully* electronic guidance tool be useful? (16 responses) (A); “Would you like it accompanied by a written companion document?” (12 responses) (B); and “Would you benefit from an electronic dredging evaluation management tool in a format comparable to TurboTax?” (13 responses) (C).

Avoidance of unnecessary testing. Under both the MPRSA and CWA, certain materials can be excluded from testing on the basis of several lines of evidence (for example, physical composition and grain size of the material, physical processes to which the sediment is exposed, proximity to sources of contamination, results from previous testing). As shown in figure 4, the amount of material potentially eligible for exclusion from testing can be significant, with a quarter of respondents indicating that 25% or more of DM volume in their district meets these criteria. However, guidance for determining whether a material satisfies the exclusionary requirements is inconsistent, potentially resulting in unnecessary testing (for example, testing of deeply buried historic strata). Having clear, universal, and consistent guidance would help avoid unnecessary testing and reduce costs.

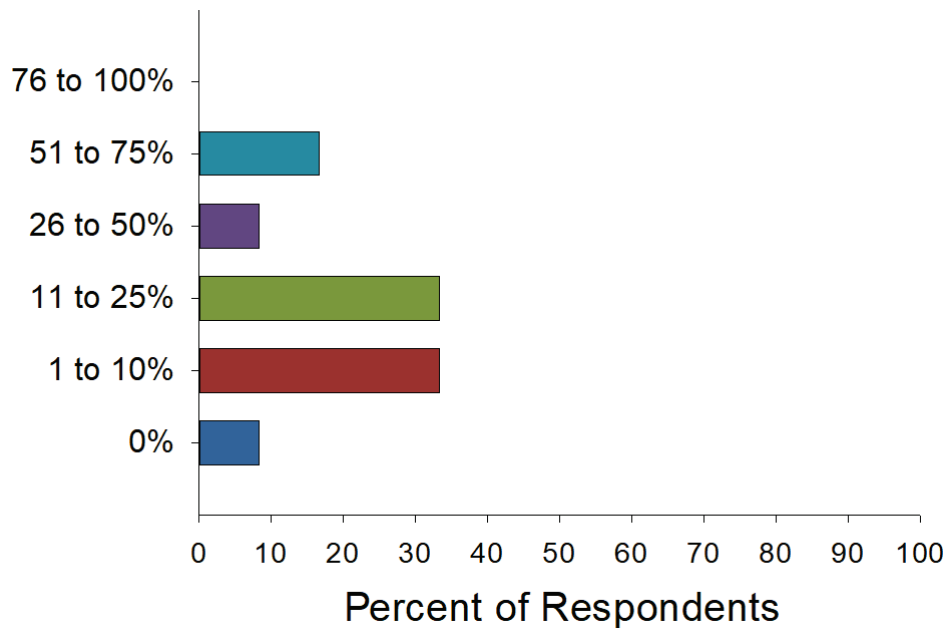


Figure 4. Survey result to question: “How much of the dredging volume meets exclusionary criteria?” (12 responses).

Need to address other persistent and recurring issues. In addition to the issues above, respondents identified several other challenges impacting the DM evaluation process (figure 5). They indicated that three of the most prominent challenges faced are (a) time required to reach a determination, (b) interagency disagreements, and (c) the cost of analysis (that is, including, planning, sampling, analysis, and reporting). Respondents also identified challenges such as the frequency of regulatory concurrences, value of repeated concurrences for annual maintenance dredging, involvement of multiple stakeholders (for example, military, state and federal agencies), planning sampling events when there is no shoaling, general logistics of sample collection, and disagreements about interagency roles. Respondents also reported challenges in reaching a determination where results were inconclusive or when observing toxicity that did not appear to be contaminant related (figure 6).

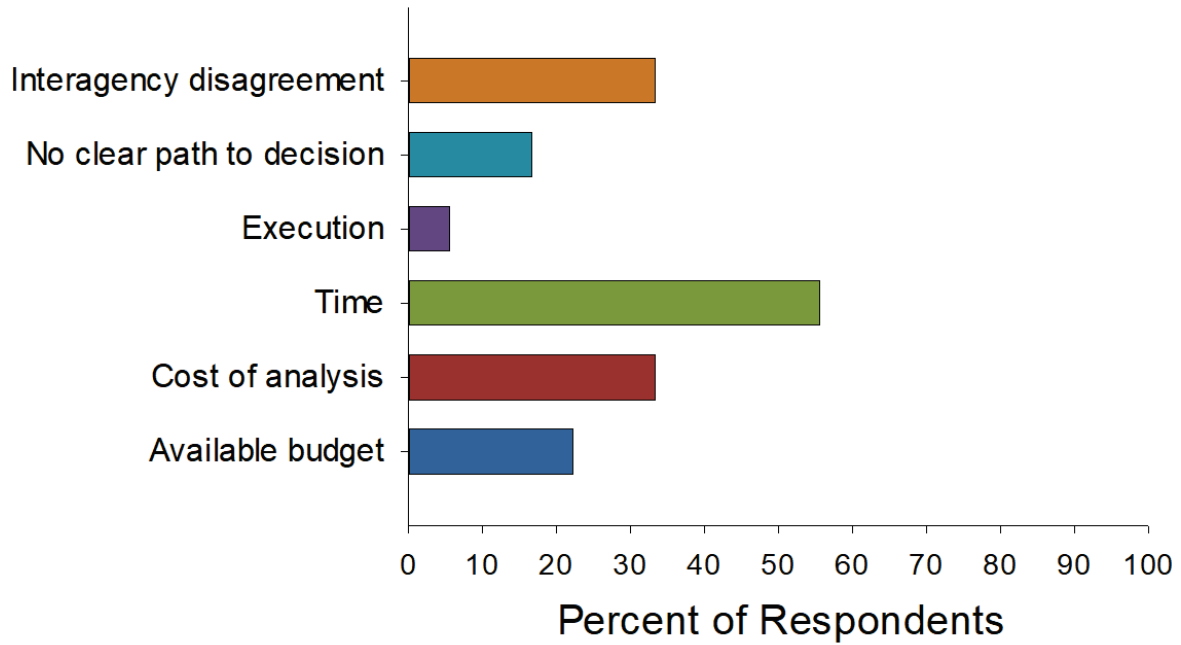


Figure 5. Survey result to question: “What are the top three recurring challenges associated with dredging evaluations / environmental assessments in your program?” (18 responses). Respondents were allowed to select multiple issues.

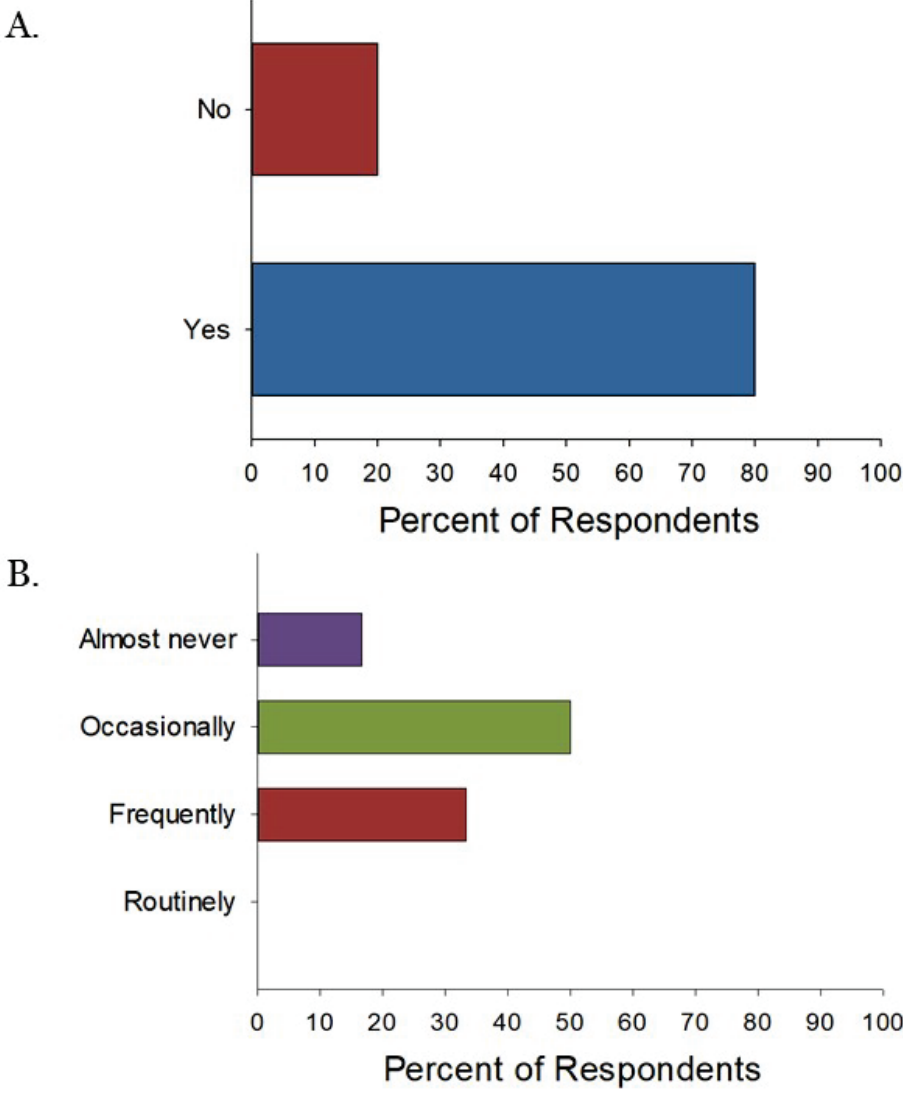


Figure 6. Survey result to question: "Do you encounter unexplained toxicity (for example, unrelated to sediment chemistry)" (15 responses) (A); "If so, how frequently?" (12 responses) (B).

Need for standardized planning/reporting templates and databases. There was consensus among respondents regarding the need for standardized reporting templates and development of a uniform data repository (figure 7, figure 8, figure 9). A number of respondents indicated that their districts and divisions have developed and are using standardized reporting templates and databases for at least a portion of the data collected (figure 8A, figure 9A). A follow-up is planned to better understand where these databases reside and how they are being used, managed, and maintained to harmonize the benefit across projects.

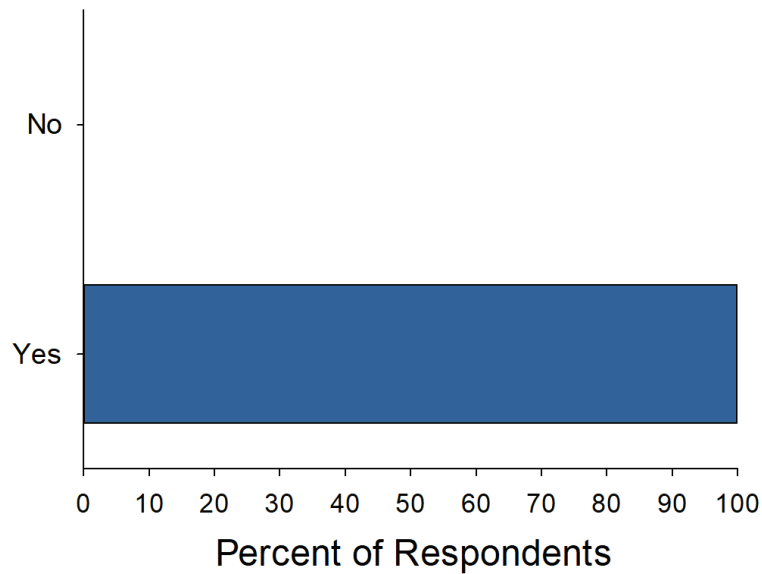


Figure 7. Survey result to question: “If your district/division does not currently have a standard template to use in development of Sampling and Analysis Plans (SAPs) would you benefit from one?” (7 responses).

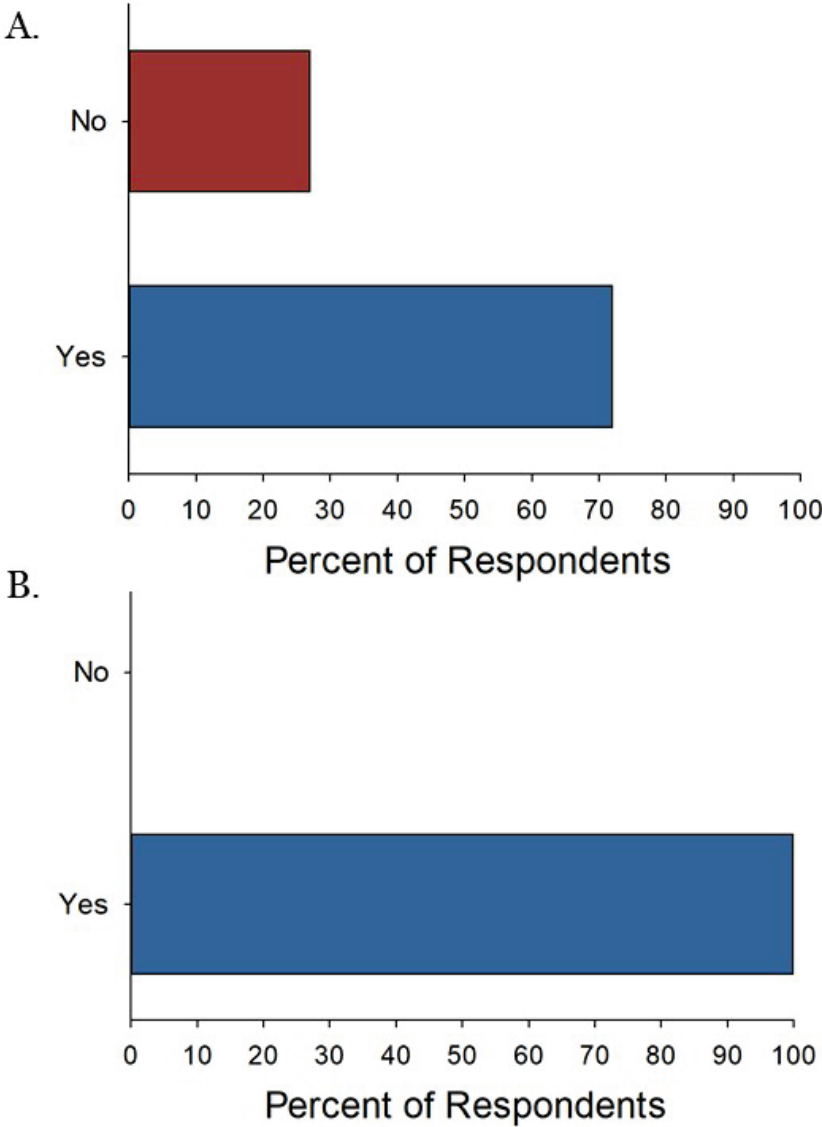


Figure 8. Survey result to question: "Does your District/Division have a standard reporting template?" (11 responses) (A); "If not, would your district/division benefit from a standard reporting template?" (7 responses). (B).

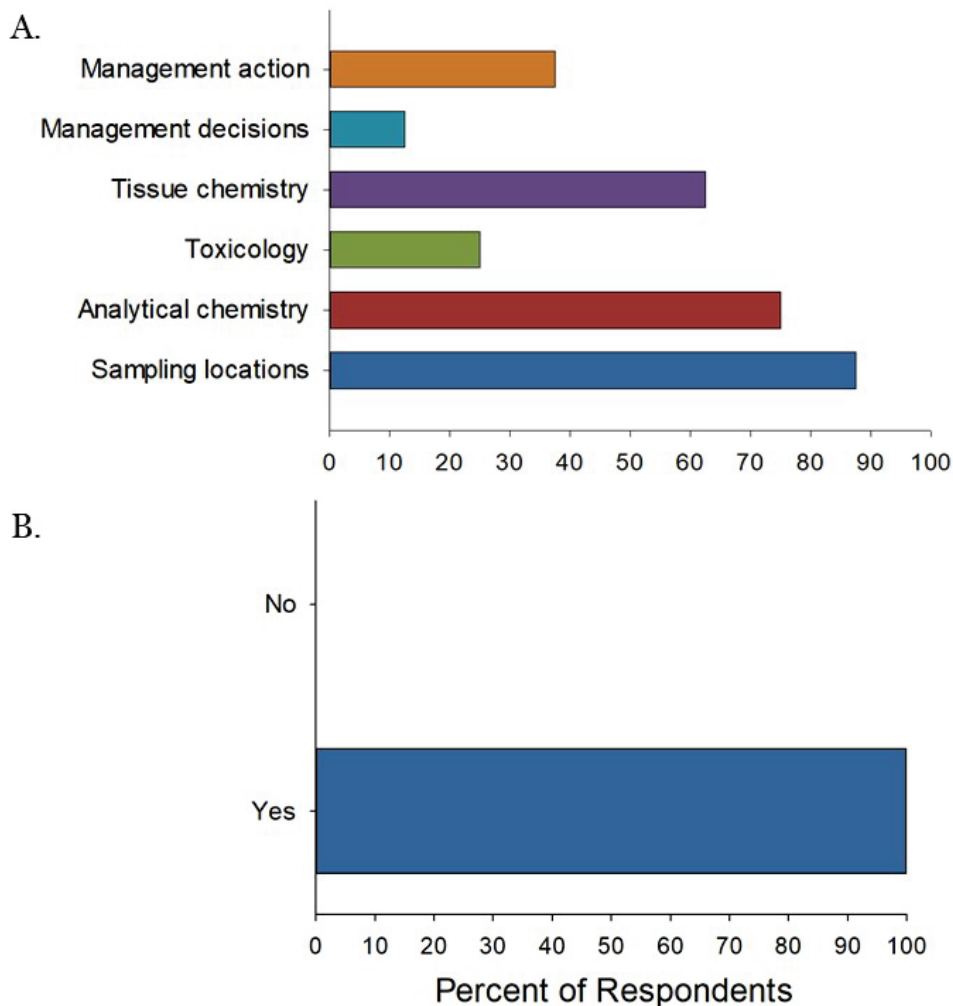


Figure 9. Survey result to question: “Does your district/division maintain electronic databases for (a) sampling, (b) sediment chemistry, (c) toxicity data, (d) tissue chemistry, (e) DM management decision (for example, suitable for ocean disposal, beneficial use, etc.), and/or (f) DM management action (for example, actual disposal/placement location).” Respondents were allowed to select multiple answers (7 responses) (A); and “Would your district/division benefit from a standard database for documentation of historic information and management decisions?” (14 responses) (B).

CONCLUSIONS: The survey respondents identified numerous inadequacies with existing DM guidance and inefficiencies with current DM evaluation processes. These issues included the outdated or irrelevant content of current regional and national guidance documents, the general cost, logistics and time involved in performing (and repeating) DM evaluations, unnecessary or unwarranted testing requirements, inconsistent decision-making driven by regulatory personnel turnover or experience, inconclusive or uncertain outcomes that do not feed directly into a management decision, interpretative disputes between agencies, and the time required for data review and decision-making.

Survey respondents expressed a consensus opinion that DM evaluations should be streamlined, and they supported revising and modernizing the written documents to include an electronic guidance tool. There was also majority agreement that implementation of standardized sampling and analysis planning and reporting templates would speed up the reporting and review process and that maintaining data in an easily accessible database following a standardized electronic format would aid discernment of historic trends. Respondents expressed limited concern regarding who would maintain the databases, how much entry and maintenance would cost, and who would have access to the database.

NEXT STEPS: While the respondents favored updating the hard-copy national manuals, the authors of this study recognize the past delays and failures in achieving interagency consensus on such revisions. Consequently, the authors recommend developing an electronic guidance tool that generally considers past process but incorporates streamlined improvements and avails itself of recent advances in science and technology. A companion USACE technical report would provide a written description of the processes used by the tool and could potentially establish the foundation for the next nationally approved DM guidance document. With regard to the development of an electronic tool to streamline and address identified deficiencies in the current dredged material evaluation process, next steps will include the following:

1. Conduct follow-on telephone interviews with USACE survey respondents to solicit additional, detailed input that would guide tool development.
2. Develop a workflow for modernizing the dredging evaluation process for the electronic tool, according to the results of the initial survey and follow-on interviews.
3. Develop a preliminary software tool prototype connected to standard reporting templates and databases to facilitate stakeholder discussion and input.
4. Conduct a USACE workshop.
5. Facilitate workshops with stakeholder groups (for example, the Environmental Protection Agency) to present the electronic tool prototype and receive iterative feedback.
6. Apply the reviewed prototype tool to a dredging evaluation, as a case study.
7. Iterate, finalize, and publish the guidance tool according to the lessons learned from the case study.

ADDITIONAL INFORMATION: The research presented in this technical note was funded by the Dredging Operations and Environmental Research (DOER) program. The DOER program manager is Dr. Todd S. Bridges, and the technical director is Mr. Eddie Wiggins. Technical reviews provided by Guilherme Lotufo and Burton Suedel (ERDC Environmental Laboratory) are gratefully acknowledged.

This DOER Technical Note should be referenced as follows:

Kennedy, Al, Moore, David W., and Rycroft, Taylor. 2020. *Field Survey to Prioritize Needs for Modernizing Dredged Material Evaluation Guidance*. DOER Technical Notes Collection. ERDC/TN DOER-R30. Vicksburg, MS: U.S Army Engineer Research and Development Center.

This DOER-TN and files for the examples may be downloaded from <https://erdc-library.erdcdren.mil/jspui/handle/11681/39341> and <http://xmswiki.com/>.

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