

Chapter X:

Introduction:

Channel maintenance has been a primary activity of the U.S. Army Corps of Engineers' Navigation mission since 1824. The two major elements of UMR navigation today are maintenance of a series of locks and dams to impound water and dredging the navigation channel. Increased costs of doing business and severe floods and droughts have affected both elements, but dredging is also challenged by rates of sedimentation, and plans that have reached their lifespan. Emergency dredging and channel closures have caused impacts to both the environment and navigation system users. Land use changes in watersheds and climate-driven shifts in weather and hydrology increase delivery of water and sediment to a system whose plans and policies are largely based on historic conditions. Further, accelerated rates of sediment delivery to off-channel areas pose threats to habitat and raises public concerns about loss of deep backwater areas.

Perspectives of Today

The Upper Mississippi River System (UMRS) states assert that today's challenges are compounded by the utilization of planning documents that relied on historic data while the river system has encountered vast changes. Emergency dredging situations place the states and the Corps in a difficult, reactive position of having to expedite environmental reviews in order to issue required permits and comply with environmental compliance requirements; also making it more challenging to optimize beneficial use of material. Challenges associated with escalating severity of flood and drought conditions, sedimentation, costs, and limited placement sites have increased over time. To date, the Corps and partners have worked within the constraints to continue to maintain a safe and reliable navigation system, but there is a continued need for proactive planning that addresses the key drivers below.

Today's condition is driven by: (3 para)

Existing policies: The existing policies that govern channel maintenance, agency budgets and planning processes make it challenging to reach mutually desirable solutions within budget. The development of a Federal Standard for each dredging project establishes a set dollar per cubic yard of material that becomes the metric against which all alternatives are compared and limits the amount of Corps' Navigation funding that can be utilized for beneficial use opportunities. Thus, it is critically important that all costs be included in this Standard. When only short-term costs are included, the cost may be artificially low and may fail to reflect the full life-cycle costs for the material. A good example is when the use of an upland site might require future trucking contracts to restore capacity in the placement site.

Beneficial use for habitat restoration often does not carry through full DMMP planning and cost analyses due to the inability of those projects to serve the full 40-year dredging volume and/or the Corps' Real Estate policy that seeks fee title ownership for all dredged material placement sites. Beneficial use through markets (construction, industry) may require evaluation of longer hauling distances or processing in order to serve the market and is restricted by both Corps Real Estate policies and by state permitting requirements. Corps restrictions on the execution of Alternative Financing methods such as P3 (public, private partnerships) and P4 (public, public, private partnerships), create a challenging environment in which to fully evaluate beneficial use through traditional DMMP processes that are tied to establishment of a Federal Standard. The result of these conditions is that beneficial use cannot be carried through planning to provide a consistent, dependable, actionable strategy for dredged material

management. If beneficial use is carried through the DMMP process, it will cause significant delays. Without a middle ground on level of planning and analysis, we are challenged to be able to be responsive and strategic without bogging down existing processes.

The acquisition process for non-fee interest is cumbersome and time consuming, requiring approval from the Corps' Headquarters Office in Washington, D.C. Likewise, lengthy reviews for Dredged Material Management Plans cause delays in actions and limit agency responsiveness. Taxpayers have raised concerns that DMMPs have failed to fully account for social and community impacts from current channel maintenance decisions. This seems to primarily derive from the fact that social and community impacts are non-monetized and therefore do not have the same effect on the final cost of managing dredged material. Taxpayers and agencies have communicated support for increased beneficial use, which is seen to achieve a positive use for a dredging byproduct that can avoid, minimize, and/or mitigate social and environmental impacts.

Policies governing river management differ between Corps districts – e.g., management and placement of dredged material, use of wing dams and other river training structures. There are environmental and operational trade-offs with in-river placement and placement outside the floodplain. Policies are complicated, but it reflects the need for flexibility and interagency dialogue to determine the best approaches for individual dredged material management projects. State permitting requirements (e.g., short- and long-term impacts from in-water placement, solid waste restrictions, etc.) and Corps' federal guidelines (e.g., cheapest alternative for large volumes, real estate policies, etc.) may restrict innovative and cost-effective solutions to dredged material placement that provide ecological restoration and protection. Land use and agricultural policies continue to trend more toward intensification and development, which will exacerbate sedimentation and water delivery issues.

Increased flows and delivery of sediment: This driver cuts across multiple issue areas, including off-channel habitat loss and flood risk mitigation. From a channel maintenance standpoint, increased flows directly contribute more sediment to the navigation channel (and backwaters), thereby increasing dredging needs and reducing placement site capacities. Increased flows also limit the operations of locks and dredging equipment, intensifying navigation delays and aggravating poor channel conditions. Additionally, high energy flows increase the frequency of channel-border island erosion (dissection), thereby increasing sediment delivery to backwaters and reducing main channel energy that would otherwise keep sediment moving downstream. Increased flows are occurring as a result of changing climate as well as land-use changes and physical alterations to the River and its tributaries. Wetland loss, increased tile drainage, urban & suburban stormwater increases and reductions in lands enrolled in agricultural conservation programs have all contributed to increased flows. The delivery of sediment is tied to these physical alterations as well, as changes in land management and failures to control water where it lands lead to increased erosion and stream power. Paired with land use changes, alterations to watersheds through ditching, straightening, and filling wetlands can result in significant changes to sediment delivery. Once higher flows and sediment enter the River floodplain, they are further influenced by dams, levees, RR embankments and bridges in ways that can impact channel operability, habitat conditions and flood dynamics. These observations were made across several issue areas within the PAS Open Space forums held in the summer of 2019. Across the public, stakeholders and agencies, there is significant agreement on a need to respond to the increased flows and sediment inputs that are affecting River operations and habitats.

Funding: Funding affects all areas of channel and sediment management through its connections to policies and land management decisions. The inability to dedicate planning resources consistently due to competing planning needs and lack of available funding creates friction among agencies. Channel

maintenance budgets struggle to keep pace with increased labor and material costs. These increased costs often require the Corps to manage dredged material in the most cost-effective manner in the short-term, even if it leads to increased costs in the long-term, with particular impact to beneficial use. States and other federal agencies do not receive adequate funding to partner with the Corps to enable broad-scale beneficial use opportunities, thus restricting most beneficial use to scenarios where the Corps fully underwrites the project/activity. All agencies lack personnel and financial resources dedicated to promoting beneficial use of dredged material, which hinders planning and implementation and leads to missed opportunities.

While not a River program, per se, limited or inconsistent funding for agricultural conservation programs makes it difficult to retain protective cover on erodible lands. The economic driver of increased crop yields has led to intensified agricultural drainage projects and increased land in production, which manifests in greater delivery of water and nutrients to the River. Similarly, flood mitigation or recovery programs do not receive enough funding to actively restore water and sediment holding capacities in tributaries or along the mainstem, which is a missed opportunity to address sediment management. Other funding mechanisms that affect land management decisions, such as Payment-In-Lieu-of-Taxes, may be important to maintaining sediment and water holding processes on the landscape in a way that reduces the overall federal burden to managing sediment inside the River floodplain.

Known Opportunities

Through the PAS planning process, the planning team solicited feedback from stakeholders and experts. That information was compiled with recommendations from agency Onsite Inspection Teams (OSIT) and previous studies to develop a set of action steps that will begin to resolve current channel maintenance and off-channel sediment issues. The following opportunities enjoy common support and have been elevated for further development.

- **Evaluate and identify streamlined State permitting processes (e.g. solid waste) for beneficial use of dredged material**
 - Streamline permit process
 - Establish new or additional MOUs when needed
- **Evaluate and identify streamlined process for completing DMMPs**
 - Integrate channel and environmental pool plans for proactive placement approach
 - Levels of review? Excessive?
- **Establish a beneficial use working group in each USACE District then share and adopt regionally**

Aspects can be organized as:		
<u>Engineering with Nature</u>	<u>Marketing & barriers to use</u>	<u>Sand traps/mining/harvest</u>
-Modify river engineering	-Tax incentives	-Engineered soils
-Seed islands/CM features	-Cost barriers	-Sediment traps at key locales
-Staged delivery	-Public-private partnerships	-Sand company at Chippewa River
-Beneficial habitat projects	(Alma, DPC, etc)	-Sorted sand fractions
-Rock budget	-Quality or policy barriers	-Delivery to industry
	-New markets	

- **Collect and analyze data & policies to evaluate increased bankline placement to protect eroding shorelines**

<u>Site Identification</u>	<u>Program/budget authorities</u>	<u>Qualifiers</u>
Investigate sites with shore erosion	Integrate shoreline protection	Wetland & littoral impacts
Determine approp. Dimensions	No wake policies to reduce erosion	Mitigate aquatic impacts
Habitat needs driven	Ability to combine funds	Policy restrictions

— **Evaluate and identify real estate and Corps policy issues**

-Real estate restrictions on beneficial use	-Contracts, crews & equipment policies that hinder some Districts from efficiently operating
-Federal Standard limitations to beneficial use	-Unclear decision structure for who decides what crews and equipment to be mobilized for some Districts
-Compensation for flowage & sediment storage	-Streamlined DMMP processes & reviews
-Comprehensive CMS work (shift from small scale to larger reaches)	

Defining The Future

There are several opportunities above that require additional research or planning. These are some priority elements that could be developed as part of the scope of a future 729 study.

- 1) Full cost matrices for beneficial use opportunities and channel maintenance, including a table identifying the triggers and procedures that take place when the Federal Standard may be reworked following a planning process
- 2) Streamline permit processes that are known hindrances to beneficial use, such as solid waste permitting
- 3) Clarify processes in each state for construction use of dredged material
- 4) Assess opportunities for sediment deposition on flowage easement lands
- 5) Develop a consistent funding and planning process for DMMPs and habitat-driven beneficial use projects
- 6) Improve collaboration between Mississippi River partners and land- and watershed-management agencies on water and land stewardship
- 7) Comprehensive sediment models that accurately depict current sediment transport dynamics and can be utilized to assess ecosystem impacts and test future scenarios
- 8) Hydrologic study to better quantify climate condition and assess tributary inputs under a variety of scenarios and BMP implementation scales
- 9) Utilize biological and physical data to identify environmentally- and geomorphically-sound bankline placement locations within channel border areas
- 10) Assess increased infrastructure and dredging costs against future navigation scenarios and analyze whether there are locations with diminishing returns or alternative modes
- 11) Estimate capture efficiencies and sediment-steady state conditions for each navigation dam under future hydrologic conditions
- 12) Modify USACE accounting system to credit dredging program (missed opportunities)
- 13) Develop standing plans for beneficial use for each high volume pool that incorporate habitat opportunities and leverage potential markets
- 14) Construct policies that overcome the “color of money” silos that limit sharing across Mission areas, recognizing that expenditures for responsible management of sediment will avoid costs for restoration or unmitigated social or environmental impacts

- 15) Conduct economic feasibility for a transload facility from river to rail, offering markets farther away from the river (or to sediment-starved locations)
- 16) Broader scope CMS to address training structures & efficiencies to improve channel competency, decrease sediment delivery to backwaters
- 17) Identify non-federal funding sources (subsidies) that could expand beneficial use opportunities
- 18) Develop a comprehensive marketing effort to advertise “free” dredged material given “proximity to source” issue
- 19) Identify sources and collaborate with stakeholders, including USDA and State farm programs, to keep more water and sediment on the landscape
- 20) Identify programs that have the ability to affect watershed land use and stream stabilization practices
- 21) Establish a better funding source for revenue sharing to counties to alleviate the problem of taking land off tax roles when purchased by the federal government
- 22) Identify policy changes to authorize Corps’ to reduce sediment loading from upland sources
- 23) Identify funding and information gaps to develop sediment budget
- 24) Identify best (cost-effective) approaches for moving sand down river to areas that are sediment starved