Missouri River Freight Corridor Assessment and Development Plan

Summary Report

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16. Abstract:

The purpose of the Missouri River Freight Corridor Development effort is to redevelop the river as a freight corridor with logical market nodes and reliable service that supports a sustainable market and logistics system. Four focus areas have been identified to support increased river use and corridor development:

1. **Redevelop and expand traditional freight markets,**
2. **Identify port infrastructure needs, operations support, and equipment required to initiate, support and expand freight services on the river,**
3. **Evaluate potential new markets and strategies to promote market expansion, and**
4. **Identify conceptual approaches to river management that optimize freight movement on the river.**

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Introduction

This final report summarizes extensive information and resources provided to MoDOT in the form of concepts of operations and technical memos. For more information contact MODOT's Freight Development Unit at: http://modot.gov/othertransportation/freight/

Growth of waterborne freight is the outcome of a combination of regional and global economic forces outside the control of any single link in the transportation chain. It is influenced by investment and operating decisions made at the individual port or terminal level – a port that serves a high economic growth region but is encumbered by poor infrastructure is unlikely to grow in line with its counterparts.

History has shown that the Missouri River can support waterborne commerce, but challenges exist that hinder its ability to do so. In order for freight to return to the River, ports and terminals must be capable of handling cargo – the necessary waterway infrastructure must be present.

The Missouri River Freight Corridor Assessment and Development Plan is intended to redevelop the river as a freight corridor with logical market nodes and reliable service that supports a sustainable market and logistics system. Four focus areas were used to identify factors that could support increased river use and corridor development:

1. Redevelopment and expansion of traditional freight markets,
2. Evaluation of potential new markets and strategies to promote market expansion
3. Identification of port infrastructure needs, operations support, and equipment required to initiate, support and expand freight services on the river,
4. Identification of conceptual approaches to river management that optimize freight movement on the river.

The Plan was completed through a series of tasks including:

- Review of Existing Literature and Practices and Initial Stakeholder Involvement
- Inventory of public and private port facilities, infrastructure, and intermodal connectors on the Missouri River
- Evaluation of Market Nodes, River Management Strategies, and Assessment of Infrastructure Needs
- Assess Market Potential and Integrate into an Overall River Development Approach

The culmination of these tasks produced key findings that identified system capacity, opportunities and constraints and led to the development of conceptual approaches to river management and operations that could encourage freight movement on the River. Based on these four focus areas, tasks were derived that resulted in a series of technical memos culminating with a final Concept of Operations that presents a plan to return freight to the River. The Technical Memos are as follows:

Task 1: Review of Existing Literature and Practices and Initial Stakeholder Involvement

Approximately 150 documents and previous studies were collected and reviewed pertaining to Missouri River history, development, US Army Corps of Engineers, management, navigation, hydrology, environmental concerns, and many other issues related to the River. The purpose was to obtain a thorough understanding of the River's history, navigation and operational status, system capacity, system constraints, and environmental concerns.

Initial stakeholder involvement included a series of meetings across the state to introduce the project and seek stakeholders' participation as well as disbursement of survey instruments to further determine opportunities and challenges for increasing freight movement on the Missouri River. In general, water transportation was deemed a favorable mode choice and one that is vital to economic growth.

However, perception of water transportation on the Missouri River is negative. Respondents indicated that river depth and reliability must be enhanced. Loading and unloading facilities are needed as well as reliable barge lines to run the river and to foster the return of freight traffic to the River. Trucking and rail weren't thought of in any more favorable terms. Initial results from surveys indicated that shipping has been increasingly challenging due to declining transportation reliability, fuel volatility, and driver shortages among other issues. Many indicated that interstates are overcrowded with trucks, congestion is significant, and highway conditions are degrading causing delays in service. Rail service also posed concerns. Declines in rail service frequency and perceived unreasonable rail rate increases were also cited as common issues. Water transportation would be considered as a primary mode choice given service reliability and cost savings to the shippers.

Task 2: Inventory of Public & Private Port Facilities, Infrastructure, and Intermodal Connectors on the Missouri River

Site visits, personal communication, and online and printed resources were used to develop a thorough inventory in order to identify infrastructure, equipment, operations support and conceptual river management approaches needed to facilitate the most likely market development scenarios. Public and private port facilities, their infrastructure and intermodal connections were documented and evaluated for suitability and sufficiency to facilitate and support the successful implementation of freight growth strategies.

Findings included 79 facilities that exhibit some sort of port infrastructure along the Missouri River. Of these 79 facilities, 29 are actively conducting some sort of freight activity; 30 are inactive, and 20 are classified as unknown, whereby the operational status was unable to be determined at the time of the inventory.

Of the 29 active facilities, 17 receive sand as their primary cargo. Eight of the remaining 12 active facilities are special purpose facilities built to move a specific commodity, while four have the capability to handle more than one cargo. Only two fleeting areas were identified amongst the active facilities, in addition to one active fueling service.

The inventory report provided detail on all River facilities inventoried. The findings indicated that the fundamental general condition to support freight growth is acceptable on the river. It is important to recognize these fundamentals vary based on commodity classification, freight recovery adaptation, and the commercial vitality interests of public and private owners.

For the greatest density of facilities such as sand and gravel operations, freight activity has been sustained. The numerous facilities in this market are very active and not requiring infrastructure investment or enhancement. Infrastructure to support freight growth in this market is adequate, and commercial interests are apparently very adaptable to location adjustments or increased market opportunity.

Facilities and infrastructure supporting agricultural related dry bulk, such as fertilizers and grain, are resilient. The evaluation indicates many of these facilities are well suited to adjust to freight growth opportunity with minimal investment.

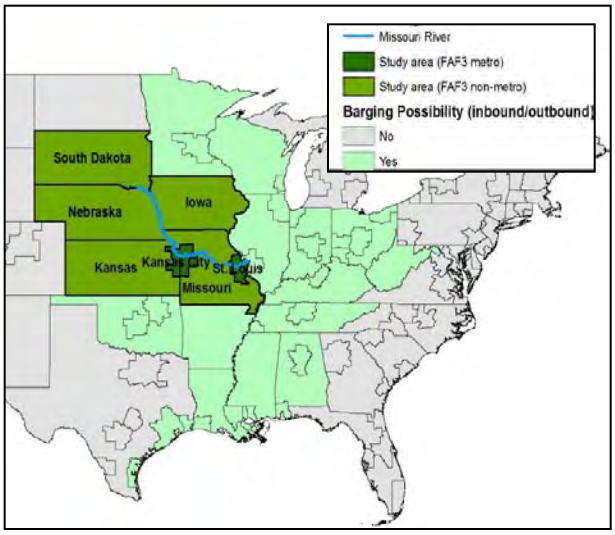
Liquids infrastructure varies significantly based on specific commodity characteristics. Liquid fertilizer terminals, particularly those which relied heavily on marine transportation, are in a significant state of disrepair. The number of viable liquid terminals positioned to take advantage of freight growth opportunities is modest. Those which have maintained multi-modal options of rail, truck and/or marine have done well and maintained the infrastructure to continue service which can support freight growth strategies.

An infrastructure weakness is found in the capability to handle general cargo which may include steel, containers, palletized or other loose cargo which may require unitized type handling. Few of the existing facilities have marine infrastructure suitable to accommodate large capacity lift machines or to support the weight and footprint associated with cranes, truck turn around space, cargo staging area, or large material handling rolling stock. Appropriate structures in good condition are available in the Jefferson City and St. Joseph areas. Other facilities that may develop into having such capability are in or near Kansas City, MO. Another facility that may be used for general cargo service is being planned in the Kansas City area. It is presently moving to public port control, but substantial investment would be required to upgrade the facility to serve the general cargo market.

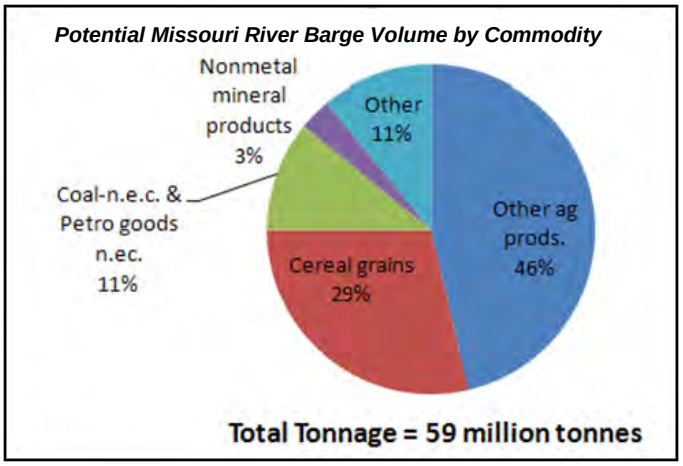
Although the Missouri River has a substantial number of waterside facilities of varied condition and suitability; the existing infrastructure related to towing operational support is minimal. The securing of barges and support services required to conduct towing operations under a line haul model is an important element for improved economics. These services also reduce risk and downtime related to vessel breakdown and cargo operations.

Task 3: Market Potential

To assess market potential, domestic and international freight data was gathered and analyzed in regard to freight moving to and from Missouri by port, trade region, and commodity value. The purpose was to develop a model for Missouri trade. A “baseline” condition was established for shipping to and from the Missouri River region to analyze the relative freight volume shares of exports and imports of rail and truck by port and



commodity.



The technical memo identifies the potential market and the drivers of demand for barge services on the River. The Missouri River's region has a broad economic base due to its geography and central location in the US. These factors along with access to other parts of the country via well-developed roadways, railways and waterways are the reasons that substantial volumes of a wide variety of freight is moved within, to and from the region. Despite the fact that the region has a barge-accessible geographical reach that stretches from the Gulf Coast to as far east as West Virginia and as far north as Minnesota, very little of the freight flowing through it is carried on barges. Out of a database of 900,000 identified freight shipments in 2007, about 163 barge compatible shipment routes were identified based on size, geographic location, type of commodity, trip duration, and trip purpose. The technical memo describes the process through which these types of freight and their barge demand characteristics were identified in the Missouri River Barge region, as well as the geographical distribution of the demand.

Task 4: Evaluation of Market Nodes, River Management Strategies, Assessment of Infrastructure Needs

The evaluation of market nodes, river management strategies, infrastructure needs, economics, environmental impacts, and other modal transportation logistics conducted throughout this study provides a foundation for the suggested strategies and Concepts of Operations aimed at increasing Missouri River freight.

The resulting Concepts of Operations are intended to be used as a framework for returning freight to the River.

Concept 1: Traditional Markets on the Missouri River

Traditional markets (including agricultural dry bulk, non-metallic mineral products, fertilizer, petroleum products, animal feeds, and gravel and crushed stone) are those that have played a significant role in the Missouri River freight history. These markets are generally supported by an established, although currently underutilized, infrastructure and transportation network. Therefore, given competitive economics and proven river reliability, these commodities have significant potential to return to the river. The traditional freight markets have the potential to add approximately 817,000 tons annually by the end of the first five years of development.

To determine the market potential of these commodities, a ranking criteria was established based on market characteristics, terminal capability needs, competitive position, and general commodity characteristics. Specific traditional commodity markets identified as shiftable to barge were evaluated in relation to each criterion. Realizing the potential of these markets will need to be guided by the following strategic actions:

- Commitment to restoration and/or upgrade of material handling equipment at appropriate facilities to accommodate barge activity.

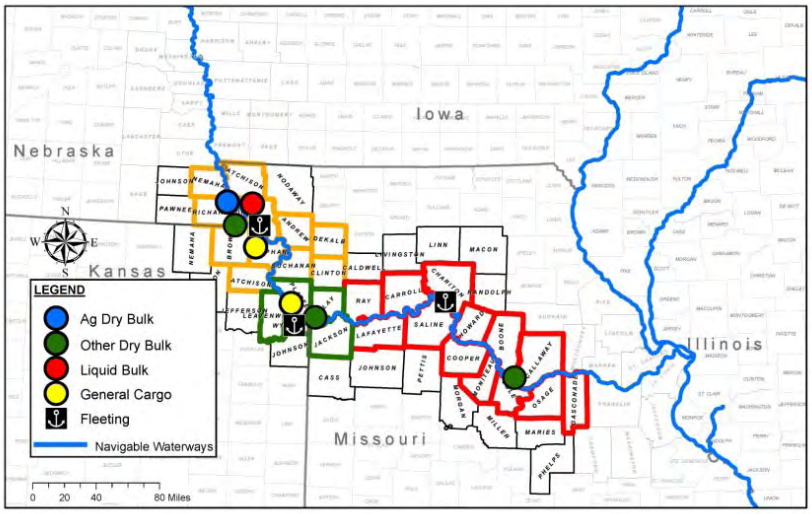
- Improvements made at specific terminal storage facilities and installation of appropriate material handling equipment, as well as fleeting improvements.

- Domestic and international shipping changes resulting in improved waterborne rate development at Lower Mississippi River (LMR) ports (ocean shipping rate enhancement based on expanded Panama Canal, improved channel depth at the LMR, and increased growth in markets such as India and Africa) – which are not specifically served well by ports in the Pacific Northwest.

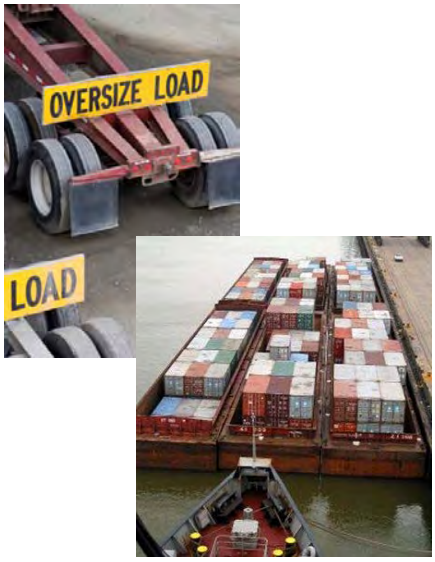
Concept 2: Infrastructure and Required Terminal Capabilities

Due to a potential freight shift from land transportation modes to the Missouri River system, necessary infrastructure and material handling modifications are presented with the intent of creating a competitive advantage, improved distribution networks, and enhanced service capability. In turn, this can guide stakeholders to make appropriate capital investments to promote sustainable maritime commercial activity.

Although suggestions vary by regional location and type of commodity, the overall method of analysis was consistent. In each region (Central Missouri, Kansas City, and Northwest Missouri), the number of facilities, shiftable market, and throughput capacity were used to determine the projected barge activity necessary to accommodate the shiftable tonnage within each commodity type. In addition, all facilities will require material handling capability improvements, with necessary fleeting capacity nearby. Further improvements are also identified on a regional and location specific basis.



Concept 3: Emerging Markets on the Missouri River



Emerging markets represent an important part of the overall Missouri River freight development opportunity. Emerging markets are defined as freight opportunities that represent new commodity markets within the baseline market area. As compared to traditional markets, emerging market commodities generally differ in form and material handling requirements. Therefore, the emerging market will not be able to capitalize on much of the existing infrastructure and will be more challenging to develop. However, the emerging markets represent current opportunities with potential freight volumes of approximately 517,000 tons annually over the first five years. Shifting these cargoes to water will also result in increased public safety, improved air quality, and economies of scale that may result in reduced costs to consumers.

Concept 4: Economic Development and Advocacy

This portion of the study identifies locations appropriate for development, or redevelopment, of the overall Missouri freight market. The locations include the previously described regions of Central Missouri, Kansas City, and Northwest Missouri. In addition, municipal locations including Jefferson City, Kansas City and St. Joseph are specifically addressed.

An overview of potential public and private funding mechanisms is provided, as well as a description of the important role of advocacy groups in promoting long-term sustainability. Financial resources are necessary for infrastructure, equipment, loan programs, tax abatements, and other mechanisms to promote growth. The investments will need to come from both the private and public sectors. Possible public resources may include a new reauthorization of the federal transportation bill, programs like the Congestion Mitigation and Air Quality Improvement (CMAQ) program, the Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grants program, new programs recognizing highway maintenance savings, and a continuation of support from the state of Missouri. Additionally, increased participation in advocacy groups and/or the creation of an advocacy group with the sole agenda of Missouri River freight development and sustainability is highly recommended.

Concept 5: Navigation Sustainability

One of the main goals of this concept is to provide freight stakeholders with guidance for maintaining freight movement when water levels of the Missouri River are either above or below optimal conditions. Public and potential shipper/carrier perception of Missouri River reliability is critical to sustainable freight development, and all stakeholders must take an active role in building confidence and changing the perception of unreliability. Reliability is dependent on the weather, the federal management of the river, and the perception of the stakeholders. Only one of those three elements is directly under the control of the freight stakeholders - perception. There are two keys to improving the reality and perception of the river as a viable freight transportation option; one is to increase reliability through doing a great job of communicating navigation challenges and resolving issues with the Corps and the Coast Guard, the other is to keep freight moving on the river as often as possible.

Sustaining navigation: the Missouri River has a history of experiencing periods of inadequate water flow. Recently this occasional challenge has resulted in stakeholder perception of future risk regarding business activity returning to the River. Overall, freight volumes have fluctuated over the years for a variety of reasons, most recently decreasing due to the significant drought event from roughly 2000 to 2007. This, along with changes to the River's service level and environmental challenges are currently perceived as affecting the future success of freight growth on the River.

Working together: an "all resource" response procedure should be followed for when Missouri River navigation is negatively impacted. The response protocol will require coordination between regulatory agencies, made up of appropriate personnel from both the USACE and USCG, and navigation stakeholders, represented in the Navigation Committee. Additionally, a process should be established to address issues occurring outside of regularly scheduled meetings and to ensure that conditions, challenges, and outcomes are communicated to the navigation stakeholders.

Identifying and growing sustainable markets: maximizing shipments that can fully utilize barge capacity during low water conditions is critical. These commodities include over-dimensional/over-weight, container-on-barge, and dried distiller grains. Special equipment should also be used to successfully transport all types of freight when optimal water levels do not exist throughout the Missouri River. These same markets and boats can be used in all navigable conditions on the river.

Conclusions:

- Market potential exists to add significant volume to existing Missouri River freight movements over the next five years and beyond. Some of the growth opportunities are in traditional markets that have moved on the river, while others are in emerging markets.

- Much of the infrastructure and equipment necessary to support growth is already in place, some of the infrastructure and equipments need relatively minor maintenance, and some markets will require investment in new equipment and infrastructure.

- There are some obvious geographic locations that make sense for specific development of freight capability to address wide market demand. Other locations will also be advantageous due to specific strategic advantage in particular market segments.

- The challenges of navigation reliability and perceived risk can be mitigated by organized cooperation among navigation and freight stakeholders. Advocacy by Missouri River freight stakeholders is necessary and can have profound impact on the success of the system.

- Necessary investment will likely need to come primarily from the private sector, but municipal, state and federal assistance could be appropriate and beneficial. Precedent exists for both public and private investment in waterway freight movement and the associated economic development.

Additional Project Information:

There are several additional resources available regarding the Missouri River Freight Corridor Assessment & Development Plan at:

http://modot.gov/othertransportation/freight/

- **Implementation Summaries** – Handy information and graphics for understanding the opportunities, strategies, and benefits regarding *Traditional and Emerging Markets; Infrastructure and Market Centers;* and *Sustainable Navigation and Advocacy* for Missouri River Freight Growth

- **Project Technical Memos** – Documentation of the *Literature Review and Stakeholder Involvement; Inventory of Public and Private Infrastructure on the Missouri River; Market Potential; and Evaluation of Market Nodes, River Management Strategies, Infrastructure Needs, and Concepts of Operations*