

ATTACHMENT NO. 6

No Rise Certification River's Edge South Harbor

NOTE: Attachment No. 6, "No Rise Analysis for River's Edge Proposed South Harbor," has an appendix with a large volume of electronic data. This information is available for review at:

www.tricityport.com/SouthHarbor

No Rise Analysis

For

**River's Edge Proposed South Harbor
Tri-City Regional Port District
Madison County, Illinois**

By

URS Corporation

for

Tri-City Regional Port District

December 5, 2008

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Introduction

This flood study is being submitted with a Section 404/401 and Section 10 permit application (joint permit application) to the U.S. Army Corps of Engineers (USACE) for the Tri-City Regional Port District's (Port District) proposed new River's Edge South Harbor (project). Also included with the submittal is a draft environmental assessment (EA) prepared under the National Environmental Policy Act (NEPA). The project involves the construction of a harbor on the Mississippi River. The River's Edge South Harbor project site is located in Madison County, Illinois, between Mississippi River Mile 183.38 and 183.98 (Figure 1). The project is located within the floodway of the Mississippi River (that part of the floodplain needed for conveyance of flood water), on the river side of the levee.

For projects located within the floodway, the Illinois Department of Natural Resources Office of Water Resources (IDNR/OWR) requires a demonstration that in the worst-case analysis (100-year flood), the increase in the water surface profile would not exceed 0.01 foot.¹ The modeling done for this flood study demonstrates that that condition is met for the proposed project.

Construction of the project will involve removal of nearly a half-million cubic yards of material from the floodplain creating more storage within the floodplain. There are four models to demonstrate that there is no impact to the 100-year flood elevations.

Project Description

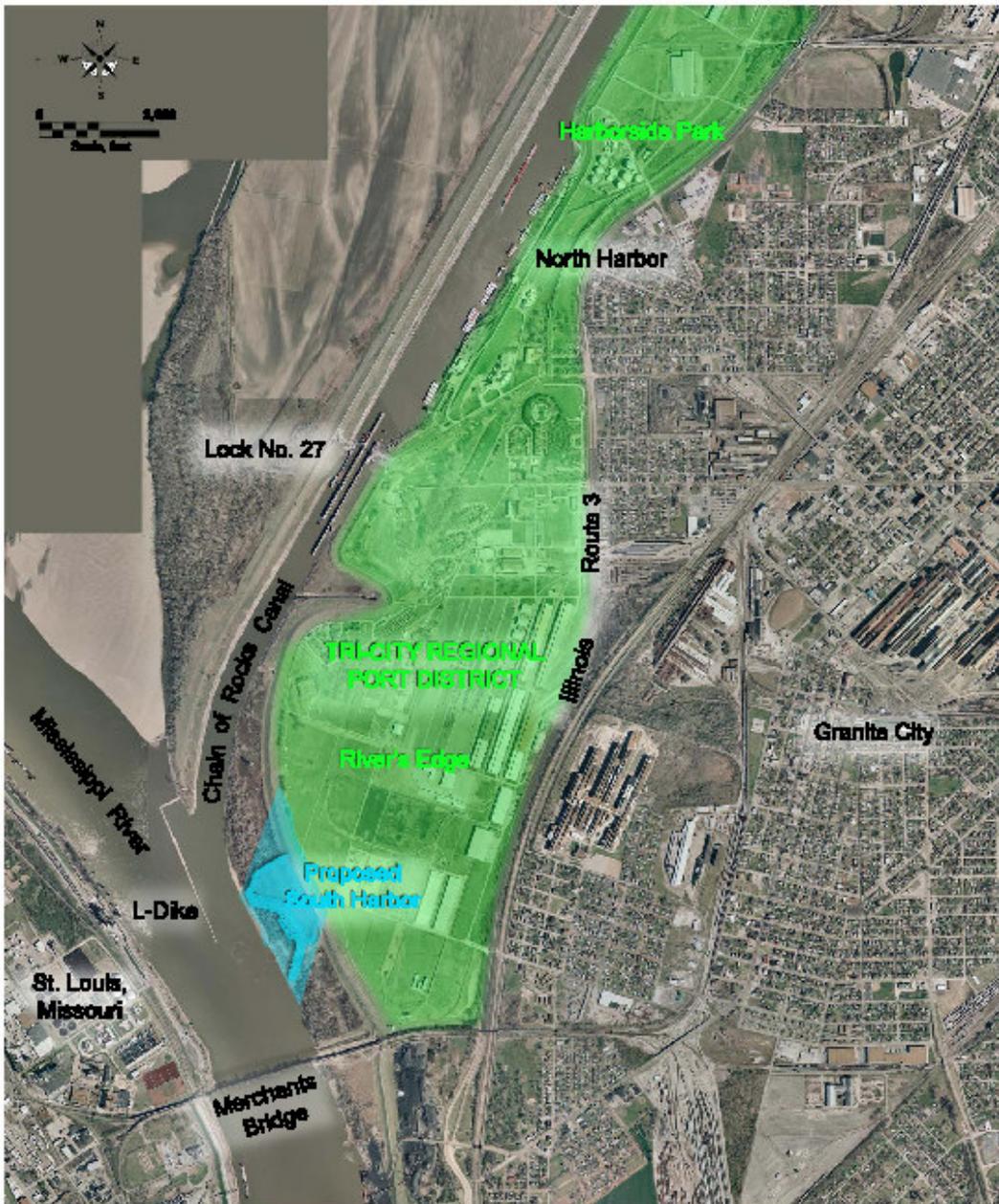
The proposed project is located along the east overbank of the Mississippi River approximately 0.5 miles south of the confluence of the Lower Entrance of the Chain of Rocks Canal with the Mississippi River (Figure 1).

Concept plans for the project are included with the joint permit application. The proposed harbor site covers approximately 64 acres and includes approximately 10 acres of open water. The remainder of the site includes land-based activities, the levee, and unused land. Approximately 35 percent of the capacity of the proposed harbor is expected to support an ethanol plant currently under construction at River's Edge. Ethanol and associated products will be transferred to the harbor by elevated pipes/conveyers and loaded into barges. The remainder of the harbor capacity will be available for other public use, by future River's Edge tenants or off-site shippers. The harbor will be approximately 1,600 feet long at the river and 400 feet deep.

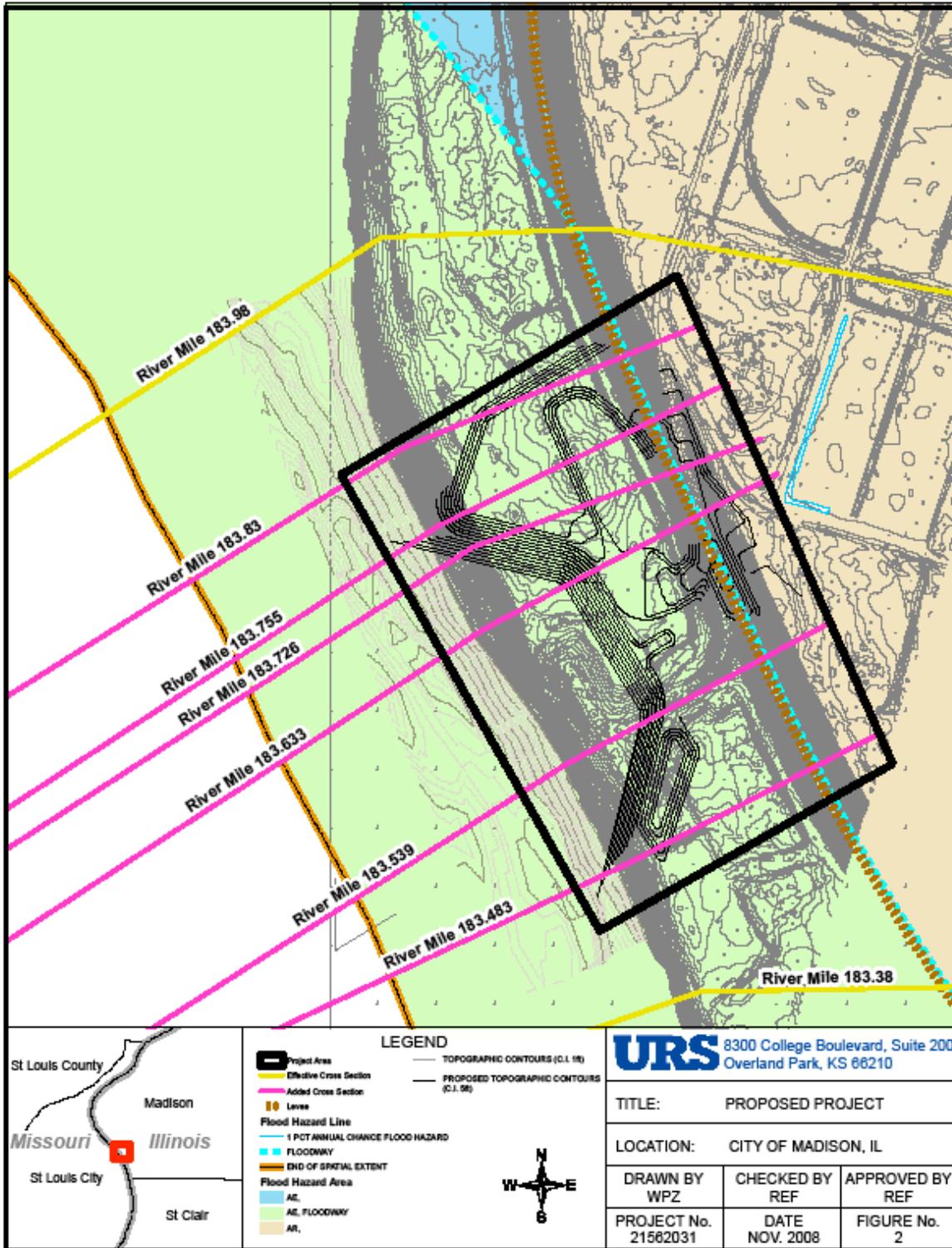
To construct the harbor, bank material will be excavated to elevation 365 feet, and a 3:1 armored bank would be constructed to elevation 420 feet. A working platform between the harbor and levee will be constructed (filled) to elevation 430 feet. After initial modeling showed a slight rise in flood elevations, an additional fill area was planned on the south end of the harbor, to elevation 430 feet. The total estimated excavation quantity

¹ 17 IAC § 3700: Construction in Floodways of Rivers, Lakes and Streams. Standards are included in § 3700.60(b) and permit application information is included in § 3700.40. The general standard is an increase of 0.1 foot in urban areas; however, in areas with levee/floodwall protection, the requirement is more stringent.

is about 761,000 cubic yards, with about 288,000 cubic yards below elevation 380 feet and the remainder excavated in the dry (above elevation 380 feet). Approximately 299,000 cubic yards of this material will remain on the river side of the levee and be used to build the platform to elevation 430 feet. The remaining approximately 462,000 cubic yards will be moved to the land side of the levee, and used as fill in the River's Edge development. Refer to Figure 2.



**Figure 1
Project Vicinity**



LEGEND

- Project Area
- Effective Cross Section
- Added Cross Section
- Levee
- Flood Hazard Line
- 1 PCT ANNUAL CHANCE FLOOD HAZARD
- FLOODWAY
- END OF SPATIAL EXTENT
- Flood Hazard Area
- AE
- AE, FLOODWAY
- AR
- TOPOGRAPHIC CONTOURS (C.I. 10)
- PROPOSED TOPOGRAPHIC CONTOURS (C.I. 50)

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TITLE: PROPOSED PROJECT		
LOCATION: CITY OF MADISON, IL		
DRAWN BY WPZ	CHECKED BY REF	APPROVED BY REF
PROJECT No. 21562031	DATE NOV. 2008	FIGURE No. 2

Methodology

Hydrology

The peak discharge for the Mississippi River used by the USACE in their modeling of the Mississippi River as part of the Upper Mississippi River System Flow Frequency Study (UMRSFFS) was used for this analysis. The peak discharge for the 100-year flood is 910,000 cubic feet per second (cfs).

Hydraulics

Currently Effective Model

There is no currently effective Flood Insurance Study (FIS) for the project area. The Mississippi River is currently in the process of being restudied and remapped as part of the USACE's UMRSSFFS and the Federal Emergency Management Agency's (FEMA) Map Modernization Program. For this reason, the UMRSSFFS was used as the currently effective model for this project area. The HEC-RAS Version 3.1.3 model of the UMRSSFFS was downloaded from FEMA's Mapping Information Platform.

Duplicate Effective Model

The Duplicate Effective Model is exactly the same as the Currently Effective Model because the UMRSSFFS results, which constitute the best and latest available model information, had already been entered into HEC-RAS Version 3.1.3.

Existing Conditions Model

The Existing Conditions Model consists of revising the duplicate effective model to reflect site specific conditions by adding sufficient new cross-sections in the vicinity of the proposed development, without the proposed development in place. Topographic information regarding the proposed site was obtained from the Tri-City Regional Port District. The UMRSSFFS topographic information was used for the portions of the cross sections outside of the project site. A determination was made regarding where to place cross sections that would best represent the proposed harbor and they were added to the model representation. The cross section information based on the topographic information was plotted. The data reflecting the existing conditions (i.e., the cross section information plots) was entered into the Duplicate Effective Model. The revised Duplicate Effective Model was run and the river elevations, flow areas, and flow velocities at each cross section representing the existing conditions were recorded. The Existing Conditions Model includes more cross sections (at the project area) than the Duplicate Effective Model had. This causes a slight change to the water surface elevations in the Existing Conditions Model in cross sections upstream of the project area when compared to the water surface elevations in the Duplicate Effective Model cross sections upstream of the

project site. These changes will also be reflected in the Proposed Conditions Model and are unrelated to the proposed project.

Proposed Conditions Model

The Proposed Conditions Model was generated by modifying the Existing Conditions Model to reflect the proposed development at the new cross-sections, while retaining the currently adopted floodway widths. The proposed harbor modifications were added by revising the cross sections, effectively changing the cross sections to reflect the proposed topography. The model was run and the river elevations, flow areas, and flow velocities were recorded.

Results

The water surface elevation, flow area, and flow velocity from the Existing Conditions Model and the Proposed Conditions Model were compared and the changes in water surface elevation were determined. Water surface elevations upstream and downstream of the harbor did not show any increase to two decimal places (0.00 ft.). The water surface elevations at the harbor location itself decreased, ranging from -0.02 ft. to -0.14 ft. The results on a cross section station by station basis are shown below in Table 1.

Table 1: Model Results Existing Compared to Proposed

Cross Section Station (river miles)	Existing Conditions Model	Proposed Conditions Model	Difference (Proposed minus Existing)	
	Base Flood Elevation (NAVD88)	Base Flood Elevation (NAVD88)	Base Flood Elevation (ft)	No Rise?
186.36	430.3867	430.3958	0.0091	TRUE
185.76	430.2729	430.2820	0.0091	TRUE
185.18	430.1018	430.1111	0.0093	TRUE
184.56	429.7448	429.7542	0.0094	TRUE
183.98	429.4213	429.4309	0.0096	TRUE
183.83	429.2477	429.2274	-0.0203	TRUE
183.755	429.1674	429.0320	-0.1354	TRUE
183.726	429.1255	429.0506	-0.0749	TRUE
183.633	429.0620	428.9506	-0.1114	TRUE
183.539	428.9727	428.8864	-0.0863	TRUE
183.483	428.9261	428.8023	-0.1238	TRUE
183.38	428.6992	428.6992	0.0000	TRUE

References

Earthdata International of Maryland, LLC. "Mississippi River DEM/DTM Project", Gaithersburg, Maryland. Data collection in 1995 & 1998.

FMSM Engineers, Preliminary Digital Flood Insurance Rate Map Database, Madison County, IL. Louisville, KY, January 2002.

Juneau Associates, Inc., P.C., Rivers's Edge South Harbor Tri-City Regional Port District Proposed Phase-1 Grading Plan, November 12, 2008.

Tri-City Regional Port District

U.S. Department of the Army, Corps of Engineers, Rock Island District. *Upper Mississippi River System Flow Frequency Study Main Report*. January 2004.

<http://www.mvr.usace.army.mil/pdw/pdf/FlowFrequency/Documents/FinalReport/default.asp>

U.S. Department of the Army, Corps of Engineers, Hydrologic Engineering Center. *HEC-RAS River Analysis System*, Version 3.1.3. Davis, California, May 2005.

APPENDIX A

Electronic Data

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