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August 15, 2016

Issues Related to Meramec River Levee System at Valley Park, MO

10 Lindworth Drive
Saint Louis, MO 63124

314-608-2500

glenn@glennon.com
www.glennon.com

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The following document is intended to provide the recipient with an overview of the problems that were experienced by the cities of Eureka, Fenton, Kirkwood and Arnold during the record flooding of Dec 2015/January 2016.

This paper will provide evidence that the City of Valley Park levee was constructed at least 5 ft. above its authorized level. It is our belief this had a direct impact on the cities previously noted

- The Valley Park levee system was authorized by the US Army Corps of Engineers (USACE) in 1981. It was finally completed in 2005 at a reported cost of $50 million. The design and construction of the levee was supervised by Patrick Conroy, a senior engineer with the St. Louis District of the USACE.

- This levee network extends for 3.2 miles. It was authorized and permitted by the USACE to be built at a maximum upstream height of 435 ft. above sea level. This level represents the 100-year base flood elevation which is 432 ft. plus 3 ft. of freeboard. (See attachment "A"). *Please note that all official measurements are noted in sea level.*

- Critics, such as Professor Bob Criss of WUSTL, adamantly contend the levee is built beyond its authorized height. This extra height, while providing significant protection for Valley Park, has notably contributed to the volume and velocity of flood waters in the communities of Eureka, Fenton, Kirkwood and Arnold. It also disabled the MSD sewage treatment plant at Valley Park pushing contaminants into the waterway.

- As reference, the Meramec River went into flood stage (16') on December 26th 2015 and crested at 44.1' on Dec. 31, 2016, a new record level. Those details of flood levels are confirmed by the following NOAA flow measures (See Attachment "B" "C" and "D")

- Since January of 2016, Professor Bob Criss of WUSTL has repeatedly expressed his concern that the levee at Valley Park has been built as much as 5' higher than was permitted by USACE. He has written several academic papers and has lectured on this subject relating it to heightened level of flooding in the Meramec basin.

- The USACE was quick to respond to Criss' concerns, suggesting the flooding was merely the result of abnormally heavy rains. But, Criss and other academics were quick to respond that USACE was unwilling to reveal the truth. Criss insisted that the city's excessively high levee (along with a "floodway" intrusion by the Landfill on the western side of the Meramec) had a direct impact on the level and severity of this record flood.

- While Criss agreed that an abnormal level of rain did fall, he insists the Meramec basin was capable of handling the additional water had it not been for the Levee and floodway intrusion by Valley Park. Instead the Cities of Eureka, Fenton, Kirkwood and Arnold saw record flood elevations, many of which were well above the USACE nebulous 100-year measurement template from which all measurement references originate. Criss insists that the 44.1' record crest level of Dec. 31, 2015 was actually a 500-year level.

- Criss believed the City of Valley Park built this levee at an elevation possibly 5' higher than the 435 ft. level authorized by the USACE.

    - He also concluded that the City of Valley Park was refusing to recognize the significant flooding impact of the huge Landfill which stretches well out into the floodway of the river.

    - Criss also notes that the landfill has expanded significantly at Valley Park since the 1982 flood. It sits half-inside an area designated as the Meramec River's floodway in a 1995 FEMA map, an area that regulations say should always have been kept clear of structures that would bump up the river level during a flood. Valley Park has clearly violated that FEMA direction with the landfill. (See "Exhibit E")

    - Efforts to secure construction documents from the city of Valley Park have fallen on deaf ears.

- The City of Valley Park vehemently denied Criss' conclusion. Its public works director (Gerald Martin) was not only highly critical of Criss' conclusions, but also suggested the surrounding communities of Eureka, Kirkwood and Fenton were absolutely wrong in concluding that the obstructions to the Meramec at Valley Park had anything to do with their flooding problems. He felt they were expressing jealousy toward Valley Park and its foresight.

- At the urging of Professor Criss, The Great Rivers Environmental Law Center in St. Louis became involved in March 2016 and sought information on the Valley Park levee from the USACE. After numerous delays, the USACE eventually denied the request saying, "*it sought critical infrastructure security information that was protected for reasons of national security*. (See Attachment "G").

    - Not to be denied, Great Rivers Environmental Law Center partnered with the Missouri Coalition for the Environment in June 2016 to file a second FOIA. A response has yet to be provided by the USACE.

- Facing these indefensible delays, private funding was solicited to underwrite the services of a professional civil engineering firm to accurately measure the levee elevations. Pickett, Ray & Silver, an engineering firm with considerable experience in hydrological issues was selected. Their conclusions are based upon NAVD88 datum.

    - Pickett, Ray & Silver completed its GPS measurements on August 9 with a conclusion that the Valley Park Levee most definitely exceeded its authorized 435 ft. level. See Exhibit "G" for complete details. Following are four specific points along the Valley Park levee that exceed the 435' approved height.

        - Point 902 Vance Road #2 was measured at **443.30 ft.**
        - Point 901 Vance Road #1 was measured at **439.85 ft.**
        - Point 907 Top Levee #2 was measured at **438.17**
        - Point 908 Top Levee #2 was measured at **437.03**

It is worth noting that had Valley Park complied with the authorized 435 ft. elevation, water would have over-topped their levee at 437 ft. on December 30 and 31. By having their levees at 438-443 ft., they stayed dry, but forced the water to surrounding communities.

Submitted by:

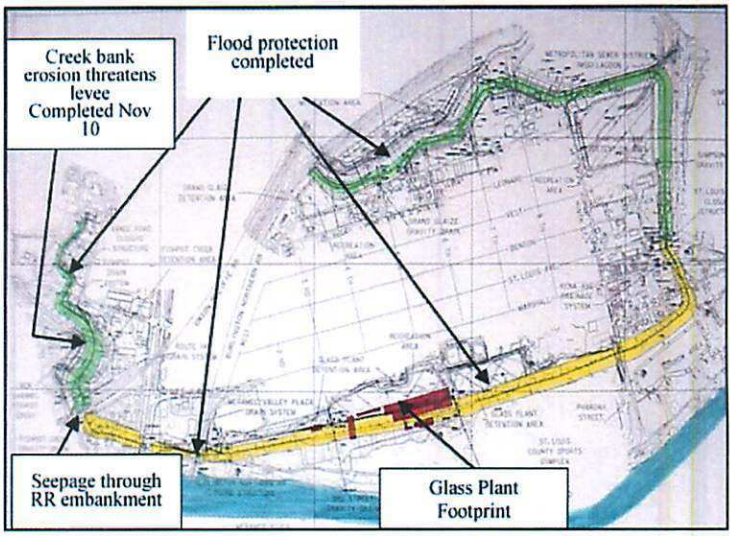
G.D. Jamboretz
August 15, 2016

Meramec River Basin, Valley Park Levee, MO

U.S. ARMY CORPS OF ENGINEERS **BUILDING STRONG®**

AUTHORIZATION:

The project was authorized in 1981 by Public Law 97-128 as amended by the Water Resources Development Acts (WRDA) of 1986 and 1999 and the Energy and Water Development Appropriations Act (E&WDAA), FY 2004.



Location and Description:

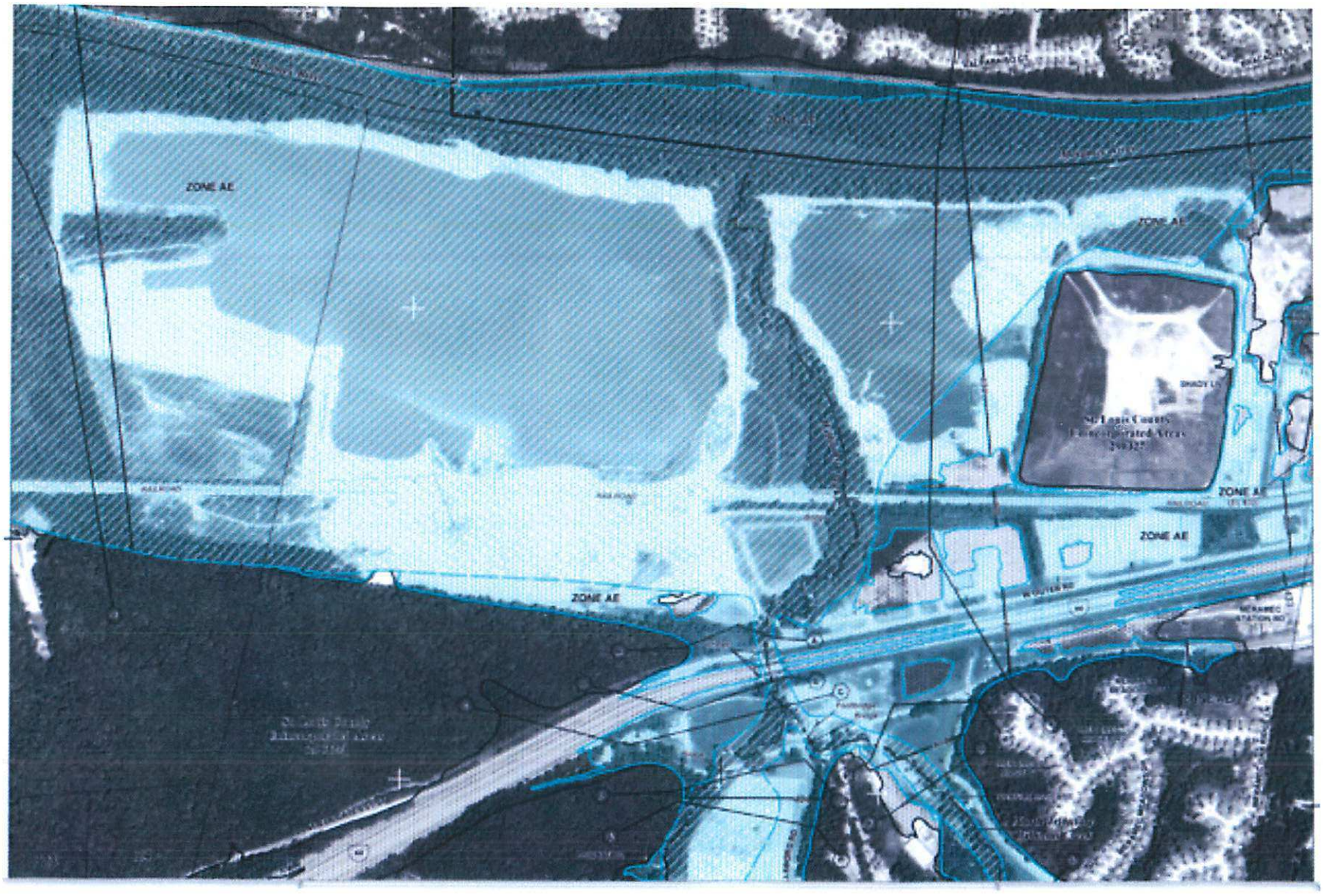
The Valley Park project is located in St. Louis County, Missouri, adjacent to the left descending bank of the Meramec River at river mile 21 above the confluence with the Mississippi River. The project includes 3.2 miles of levee with 3 feet of freeboard above the 100-year flood profile, 6 gravity drains, 3 closure structures, 5 detention areas, 41 relief wells, environmental mitigation and recreation features. Three additional flood risk management features are needed to correct problems that became apparent during the March 2008 flood and in 2009, creek bank erosion which threatens the levee, seepage into the protected area through a large railroad embankment, and erosion of the levee toe along the east flank near Kena Street.

U.S. ARMY CORPS OF ENGINEERS – ST. LOUIS DISTRICT
1222 Spruce St.
St. Louis, MO 63103
www.mvs.usace.army.mil

Historic Crests at Valley Park

(1) 44.11 ft on 12/31/2015
(2) 39.73 ft on 12/06/1982
(3) 37.85 ft on 08/22/1915
(4) 37.83 ft on 03/22/2008
(5) 37.40 ft on 04/14/1994
(6) 34.40 ft on 02/01/1916
(7) 33.00 ft on 05/03/1983
(8) 33.00 ft on 06/11/1945
(9) 32.40 ft on 09/26/1993
(10) 32.00 ft on 07/02/1957

source: NOAA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PICKETT, RAY & SILVER, INC.

CIVIL ENGINEERING, LAND SURVEYING & LAND PLANNING SERVICES

August 10, 2016
Revised 8/11/2016

The Glennon Company
Attn: Glenn Jamboretz
10 Lindworth Drive
St. Louis, MO 63124

RE: VALLEY PARK LEVEE TRAIL SPOT ELEVATIONS - RESULTS
PR&S PROPOSAL NO. 16035.GLON.00S

Dear Mr. Jamboretz:

This letter is to inform you that our field work has been completed at the Valley Park Levee. Our crew met with Professor Robert Criss on August 9, 2016 to obtain spot elevations at several locations as shown on the provided drawing. We are also providing you with a listing of the elevations that were obtained at the site.

Our crews set up a horizontal and vertical control network for the elevations that were required by Professor Criss. We performed the study by utilizing our GPS equipment; first establishing horizontal control utilizing the reference marks provided by the Missouri Department of Natural Resources, Division of Geology and Land Survey. We located Station SL-79 and held both horizontal and vertical locations at this point, checked into SL-59 and verified these benchmarks with St. Louis County benchmark system and utilized benchmarks 18239 and 18423. We have enclosed descriptions of all four of these control points for future reference and show the correlation between the four (4) benchmarks and how they check to one another. We also verified the flood gauge in Valley Park, which is referenced as Gauge #VLLM7.

Our crews were on-site an obtained a spot elevation along the Meramec River at approximately 8:28 a.m. and we have enclosed a river staging from the State of Missouri for that time, which was posted at a flood stage of 5.75. The gauge reading on-site was noted at 24.18 feet. The results of the finding are enclosed.

Also enclosed is a listing of field data obtained from the survey operations. The coordinates listed are Missouri State Plane Coordinates.

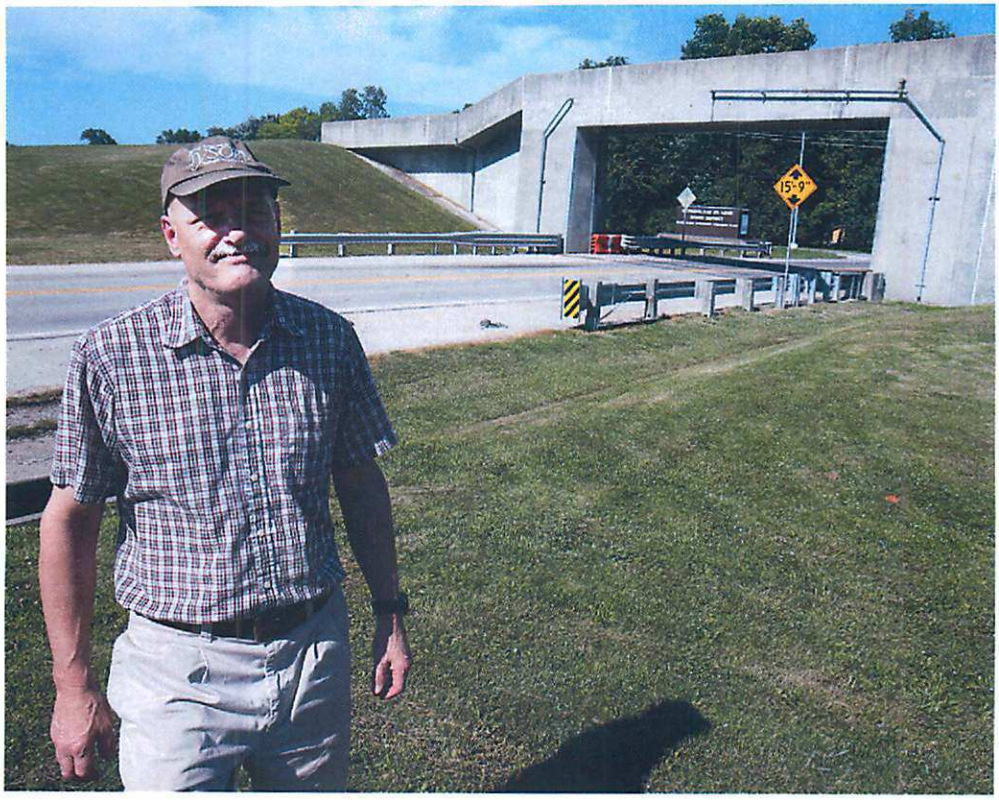
Very truly yours,

PICKETT, RAY & SILVER, INC.

David F. Skornia, P.L.S
Vice President, Director of Survey
ts

22 Richmond Center Court
St. Peters, MO 63376
Phone: 636-397-1211
Fax: 636-397-1104
Web: www.prs3.com

POINT #	DESCRIPTION	NAVD88	NGVD29
901	Vance Road #1 Top Levee	439.85	440.10
902	Vance Road #2	443.30	443.55
903	Gage BM Monument Disk	412.90	413.15
905	Staff Gage @ 24.18	415.56	415.81
906	Boat Ramp Water @ 8:28 a.m.	397.02	397.27
907	Top Levee #2	438.17	438.42
908	Top Levee #3	437.03	437.28
909	SL-79 (Held) = BM 18186	422.57	422.82
910	BM-18239 (checked)	421.59 421.68 recorded	421.84 421.95 recorded
912	BM 18423 (checked)	426.56 426.56 recorded	426.81 426.83 recorded
913	SL-59 (checked)	516.82 516.73 recorded	517.07
	GAGE VLLM7	391.38 392.67 Recorded 1.29 Difference	391.63 392.92 Recorded 1.29 Difference


15'-9"


Valley Park Levee
Slide shown for:
Science on Tap 4/27/16
Northwestern U 5/6/16
~ 440 ft
> 437.0 ft
--- 432 ft. FEMA "100-year"
--- 422 ft
Jan 2, 2016
Criss