Neil Van de Voorde
[redacted]

U.S. Army Corps of Engineers – New Orleans District
Attn: Ms. Amy Dixon
CEMVN-PMR-C
7400 Leake Ave.
New Orleans, LA 70118

Subj: St. Tammany Parish, Louisiana Feasibility Study

Dear Ms. Dixon,

I am writing to request the USA COE reconsider their Optimized TSP for St Tammany and specifically Eastern Slidell. The *Revised Draft Integrated Feasibility Report and Environmental Impact Statement* dated July 2023 states as a Final Array of Alternatives for Eastern Slidell was not included in the Optimized Tentatively Selected Plan (TSP).

The modeling methodology used to select alternatives does not adequately reflect the current nor future conditions in Eastern Slidell. It also fails to incorporate actual flooding events that Slidell has faced since the 1980s.

Appendix F contains the Economics modeling. The region my house is located at is within #20 of the Study Area Reaches (see Figure F:3-1). The TSP uses Expected Annual Damages (EAD) as the primary basis for alternative selection. The underlying assumptions for damages may not be relevant to the area and Eastern Slidell in particular. Section 1.5 states that "(the) Optimized TSP would not induce development, but would rather reduce the risk of the population being displaced after a major flood event." It is my contention and others in Eastern Slidell that this plan INCREASES the risk of flooding and displacement. Section 2 contains the Asset Inventory discussion. In Section 2.2 Structure Value Uncertainty, it states:

> "The most-likely depreciated value was based on the average construction class and a 20 percent depreciation rate (consistent with an observed age of a 20-year old structure in average condition)"

There is no supporting citation for this assertion. Home values in Eastern Slidell have continue to rise year after year since I have lived here since approximately 1990. Eastern Slidell has a mixture of large subdivisions as well as smaller more semi-custom homes. A better approach would have been to aggregate the average home values with each of the Study Area Reaches that form Eastern Slidell (i.e. 20, 21 and 22). Additionally, the home values are not depreciating over time, but either appreciating or remaining stable.

Since displacement is a large factor in the study, Vehicle Value Uncertainty is included to model and capture potential damages:

> "The most likely value was $8,269, which is the average value of a used vehicle, $27,564, adjusted for the 70 percent evacuation rate. The maximum value used was

> $14,484, which is the average value of a new vehicle, $48,281, adjusted for the evacuation rate. The minimum value used was $1,448, which is the average 10-year depreciation value of a vehicle, $4,828, adjusted for the evacuation rate."

There is no supporting citation for this assertion. The Eastern Slidell region is a fairly affluent portion of the parish. In order for a model to be an accurate representation of the phenomenon under study, the data must reflect the region under consideration and not a "typical" number. These values may have come from the cited report: "Depth-Damage Relationships for Structures, Contents, and Vehicles and Content-To-Structure Value Ratios (CSVRS) In Support Of the Jefferson and Orleans Flood Control Feasibility Studies, June 1996 Final Report." This report appears to be unavailable. It was conducted almost 30 years ago using cities across Lake Ponchartrain. Its applicability to St. Tammany Parish in 2023 is highly suspect.

Section 4.2 discusses the methodology used (emphasis added):

> "The model also used the number of years that stages were recorded at a given gage to determine the hydrologic uncertainty surrounding the stage-probability relationships. The **possible occurrences of each variable were derived using Monte Carlo simulation,** which used **randomly selected numbers to simulate the values of the selected variables from within the established ranges and distributions**. ... The resulting mean value and probability distributions formed a comprehensive picture of all possible outcomes."

This seems to imply that the Monte Carlo simulation assumed that the variables used were independent and thus could be selected individually. This is not the case, the variables within an environmental model are Bayesian in that there is joint-probability for many of the variables. Not properly modeling the probability relationships within the model's variables does not result in a "comprehensive picture of all possible outcomes."

Finally in terms of the economic modeling, once Eastern Slidell is excluded from the TSP there appears to be no further modeling done. Specifically as flood waters are blocked or diverted, the water will flow elsewhere. Appendix G discusses the Real Estate Plan and provides a detailed discussion of the routing used for the flood wall in Section 2.3. Using the elevation maps from the LSU AgCenter (http://maps.lsuagcenter.com/floodmaps/?FIPS=22103) the area to the east of the proposed floodwall south of Gause Blvd is Breckenridge Subdivision at an elevation of 13 ft. To the east is Military Rd and further is the Pearl River. Due north is Pearl River, LA. The entire area from Breckenridge to the Pearl River and north to Pearl River, LA is essentially all shown to be at the same elevation of 13 ft. The elevation to the south of Breckenridge increase to 16 to 18 ft. The proposed levee and floodwall system could reasonably be expected to increase either the storm surge moving up the Pearl River or add water to the Pearl River. In either case increase water will enter the Pearl River area in the eastern portion of Slidell – the lower elevation will result in increased flooding for Eastern Slidell. This NEGATIVE impact and INCREASED risk is not accounted for in the economics modeling and MUST be. Section 2.3 of Appendix G – Real Estate Plan, Section 8 Induced Flooding brushes this problem aside with a statement that ADCIRC showed an increase of 1 to 3 inches for a 1% Annual Exceedance Probability and that induced flooding would be further investigated during the planning, engineering, and design (PED) phase. This is AFTER the project is authorized. Modeling of induced flooding should be occurring now during the initial design phase of the project before seeking Congressional Authorization.

We have discussed some concerns during the most recent public meetings. In one meeting I asked about two significant flooding/rain events – the 1983 Pearl River Flood and the May 1995 Extreme Rain Event. In April 1983, the Pearl River, at Pearl River LA river gauge measured 21.05 above flood stage, (https://water.weather.gov/ahps2/probability_information.php?wfo=lix&gage=perl1&graph_id=2) and since then there have been 3 events exceeding 19 ft above flood state (i.e. (20.35 ft on 03/14/2016, 19.6 ft on 01/30/1990 and19.18 ft on 04/01/2009). The National Weather Service (NWS) shows the 19 ft flood state is a 3% probability. Additionally A 48-hour plus extreme rain event occurred in the Slidell area between 09 and 10 May 1995. Eight to 10 inches of rain was experienced during each 24-hour period. The 100-yr Average Recurrence Interval is between 10 to 15 inches per 24 hour period (https://www.wpc.ncep.noaa.gov/qpf/ari/qpf_vs_ari.php). You reached out to the modelers who informed you that these two events were not used. There were issues with the consistency of the data across selected gauges used in the modeling domain. While I understand the need to calibrate a model before using it with accurate and consistent data (as discussed above) these two events should be modeled to better understand the increased risks that Eastern Slidell will be facing should they occur again. These real-world events are in sharp contrast to the ADCIRC-predicted 1 to 3 inch induced flooding noted above.

Appendix C Annex M provided information on the Habitat Evaluation Procedures (HEP) assumptions. The section labeled "Land Loss/ Sea Level Rise Effects" discusses Relative Sea Level Rise (RSLR) for the overall modeling. Modeling was done using only one tide gauge on the far western side of the parish (Lake Ponchartrain at Mandeville, number 85575). A more appropriate one to have used is Gauge 85700 (Rigolets near Lake Ponchartrain). Examination of the time series for Gauge 85700 shows a gap at 1985. After 1985, the trend of the gauge changes to what appears to be < 1 mm/yr ground subsidence. This is in large contrast to the Mandeville gauge's (#85575) value of 4.99 mm/yr. This change could result in large changes to the Economic benefits calculated for the eastern side of St. Tammany parish.

I strongly encourage the US Army Corps of Engineers New Orleans District personnel to review and update their models to reflect current environmental and economic data for all of St. Tammany Parish.

Regards,

Neil Van de Voorde