

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS

20. EXAMPLE PROJECT KEY NUMBER

2

21. TITLE AND LOCATION (*City and State*)

**Risk Management of flood control and hydraulic structures
US Army Corps of Engineers, nationwide**

22. YEAR COMPLETED

PROF. SERVICES
2013

CONSTRUCTION (*If applicable*)
Not applicable

23. PROJECT OWNER'S INFORMATION

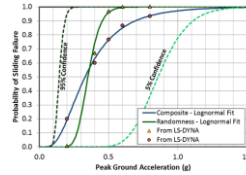
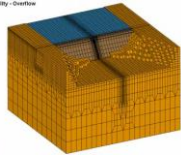
23a. PROJECT OWNER
US Army Corps of Engineers

23b. POINT OF CONTACT
Mr. Craig Waugman

23c. TELEPHONE NO.
504-862-2673

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (*Include scope, size, cost*)

COE Fragility - Overview



Management of Risk Management projects for the USACE dealing with **levees and floodwalls, and software**:

1. Pre-construction risks – development & support of risk analysis models & reliability model.
2. Evaluation of the effects of pre-grouting on cutoff wall construction risks.
3. Risk implementation. Developed an Excel-based model to resemble the current model that DAMRAE is utilizing.
4. Advanced infrastructure systems. Investigated current instrumentation infrastructure utilized by the COE for monitoring the health and behavior of dams and levees.
5. Methodology and development of seismic fragility of overflow gravity dams utilizing response surface methodology and **dynamic finite element method** using LS-DYNA to estimate the fragility curve for an example overflow gravity dam.
6. Analysis of drain effectiveness & implications for failure probability for concrete gravity dams. **Classical limit equilibrium approaches and modern nonlinear finite element analysis.**
7. Developed guidance document for Fragility Models and fragility curve concepts for levees, floodwalls, dams, etc.
8. At risk implementation with fault tree analysis for dam & levee risk analysis; developed software to generate models.
9. Spillway systems reliability project modeling. Stochastic simulation approach on example dams.
10. Development of Risk Guidelines for Mineral & Energy Extraction - Phase I Research (Mineral & Energy Extraction Near Impounding Structures & Surface Bodies of Water).
11. Information Model for Embankment Dams - Phase I (Identify Requirements for Info Modeling, Analysis & Visualization Using a Pilot Study of a Specific Dam). Instrumentation data utilized for demonstration purposes.
12. Phase II Development of Fault Tree Analysis Tool (Support of Risk Analysis Models & Reliability Model Development). Uncertainty in loading, fragility, and consequence curves.
13. Development of Barge Impact Analysis Tool (Support of Risk Analysis Models & Reliability Model Development).
14. BCRA Levee Risk Assessments (Levee Risk Assessments & Levee Evaluation Software Tools). Developed MatLab Modeling and completed Final Report for Spillway Systems Reliability Project.

Professional Service Highlights

- o Computer modeling, Reliability Modeling
- o Stochastic simulation; Software development
- o Application of dynamic finite element method
- o Application of classical limit equilibrium approaches and modern nonlinear finite element analysis
- o Probabilistic risk analysis
- o Risk Assessment of dams, levees, cutoff walls

Project Highlights

- o DAMRAE; PrecisionTree; @RISK; LS-DYNA
- o Basic Fault Tree Analysis (Basic FTA)
- o Generalized Event Tree Model Tool
- o Pilot Study of Dam; Spillway system reliability
- o Construction Cost: Not applicable

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

(1) FIRM NAME MSMM/HPA	(2) FIRM LOCATION (<i>City and State</i>) New Orleans, LA	(3) ROLE Civil, Structural and Geotechnical Engineering; Computer Programming; Finite Element; Numerical Methods.
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