

**Flooding's Impact on People:  
The Other Social Effects Account for  
Evaluating Corps of Engineers Projects**

**A Discussion Paper Prepared for the Association of  
State Floodplain Managers Foundation**

**Prepared by**

**Chad Berginnis, CFM**

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## Preface

This discussion paper was prepared as a result of a proposal submitted to the Association of State Floodplain Managers (ASFPM) Foundation to include a hazard mitigation / floodplain management practitioner participation in a project being undertaken by the Center for Hazards Assessment, Response, and Technology (CHART), University of New Orleans. This project, “Expanding the Identification and Measurement of the Human Consequences of Disastrous Flooding: Contribution to the US Army Corps of Engineers (USACE) LACPR Process” proposed to identify, study and recommend parameters and processes for expanding and ultimately better integrating the Other Social Effects account for evaluating project alternatives under the USACE’s project formulation/evaluation processes. The study team was composed primarily of nationally reputed social science and health experts in the sub disciplinary areas of social impact assessment, disaster social science, and disaster public health.

The final deliverable of the CHART project is a report to the USACE. That report, entitled “*Expanding the Identification and Measurement of the Human Consequences of Disastrous Flooding: Toward the Refinement of the Other Social Effects Account*” was submitted to the USACE in early September 2008. As of the writing of this paper, the final report has not yet been made public.

A deliverable under the ASFPM Foundation’s participation agreement is the development of this paper to the ASFPM on the overall CHART project, its recommendations, and its implications to the work of the floodplain management / hazard mitigation practitioner. It is envisioned that this paper would be an adjunct to the CHART project report exploring what this research and recommendations might mean to the larger practitioner community.

The author would like to acknowledge and thank the ASFPM Foundation for support of this important endeavor. Finally, this paper represents the views of the author and not necessarily the view of either the ASFPM or ASFPM Foundation.

## **Flooding's Impact on People: The Other Social Effects Account for Evaluating Corps of Engineers Projects**

**ABSTRACT** – Since the 1936 Flood Control Act, Congress and the Executive Branch of the Federal government have specifically recommended that social factors be included in the development of water resource development projects. This is in addition to an analysis of whether the benefits exceed the costs of the project (benefit-cost analysis or BCA). However, it wasn't until the much later release of USACE's Engineering Circular #1105-2-409 "Planning in a Collaborative Environment" in May 2005, that Other Social Effects (OSE) enjoyed anything near equal footing as the other three "accounts" used by the USACE: National Economic Development (NED), Regional Economic Development (RED), and Environmental Benefits (ENV) to develop water resource projects and evaluate alternatives.

Following Katrina, but not entirely resulting from it, additional efforts were underway by the USACE to further enhance the importance of OSEs. The Interagency Performance valuation Task Force included a survey of OSEs in its report (Appendix 4). Also, as of this fall, the USACE is completing a final edit of its newest guidance on incorporating OSEs. The project proposed by CHART used the opportunity presented by Hurricane Katrina to further analyze relevant OSEs, identify potential OSEs that have a broader application to flood control projects, and identify methods for quantifying and evaluating OSEs in a way that better meshes with the USACE's project planning process.

Preliminary OSEs were reviewed and the team suggested revisions based upon OSEs in the process called Social Impact Analysis (SIA) – which was deemed by the team to be a practical and relevant tool in OSE evaluation. This plus OSEs from a review of contemporary literature, resulted in a list of OSEs that the team felt was representative and captured core impacts that would both for the construction of a USACE civil project and a "post-mortem" assessment of harmful impacts of an overtopping or breaching of a protective structure. Integrating the consideration of OSE's into the broader USACE planning framework, the team recommended the following applications:

- Incorporate the SIA approach of eliciting OSEs into the —defining and bounding the problem approach the USACE already uses regularly.
- Utilize the results of the SIA process to collaborate with other resource stakeholders to conceive and implement the best package of risk reduction actions, the Corps structural and non structural being just two.
- Review the proposed OSEs and to embrace a more comprehensive array of them within the Multi-Criteria Decision Analysis (MCDA) currently being utilized by the USACE in the LACPR project selection process.

- Use the OSEs and the SIA approach to refine the post-mortem assessment of flood disasters and to require legislatively such an analysis after every declared disaster.

Implications for the floodplain management / hazard mitigation practitioner community are significant. First, the USACE is taking the requisite steps to move away from a NED only project planning/evaluation approach. Second, applications have relevance to the future of evaluating FEMA mitigation projects since the process and standards, from a broad standpoint for evaluating and selecting projects is similar to that of the USACEs.

Expanding the Identification and Measurement  
of the Human Consequences of Disastrous Flooding:  
Toward the Refinement of the “Other Social Effects” Account

Submitted to the

U.S. Army Corps of Engineers

by

Shirley Laska, Ph.D.

Center for Hazards Assessment, Response & Technology (CHART)

University of New Orleans

and

Robert Gramling, Ph.D.

Director, Socio-Economic Research Center

University of Louisiana at Lafayette

with

Chad M. Berginnis, C.F.M.; Monica Farris, Ph.D.; William Freudenburg, Ph.D.;  
Michelle Gremillion, M.A.; Pam Jenkins, Ph.D.; Richard Krajewski, M. Div., ABD;  
Harriet McCombs Ph.D.; Nancy Mock, Ph.D.; Betty Morrow, Ph.D.; Brad Ott;  
Kristina Peterson, ST. M., M.Div.; and Henry Taylor, M.D., MPH.

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## Executive Summary

The **social** effects of water resources projects are equally as important as are their economic and environmental counterparts. When viewed from the community level, the supportive role which projects can play in social dynamics and quality of life make the social effects key to the reasoning for the creation of the projects. EC 1105-2-400, May 2005, "Planning in a Collaborative Environment" reiterates the importance of Other Social Effects and that any alternative plan can be selected and recommended if it has net beneficial effects considering NED, EQ, RED, and OSE accounts.

In order for water resources projects to be assessed on the basis of the contribution which they may make to community/regional function, it is necessary to revisit the OSEs with renewed vigor. Measuring OSEs has always been challenging; recent expanded conversation about what comprises a successful community, and how to determine whether the qualities exist, has made doing so even more difficult. Resiliency, social well being, community capital, social capital are all recently introduced to the more traditional and still used project effect analysis dominated (outside of the Corps) for the last few decades by Social Impact Assessment (SIA).

The "Handbook on Applying 'Other Social Effects' Factors in Corps of Engineers Water Resources Planning" states the importance of defining the social life in the local and regional area. "Social statistics" can be used to describe the quality of life in the area. For the LACPR this report will propose a framing of OSEs, describe the way they can be applied both in a qualitative and quantitative way including per capita measures to understand what social impact Hurricane Katrina and the consequent levee breaches and overtopping had. The case of this hurricane can demonstrate on a quantified basis how the viability of a community can be measured through changes in social statistics. For example, the comparison of alcoholism per capita before and after hurricane Katrina or suicide per capita before and after the storm. Increases and decreases in social statistics can be used as indicators of social well being and resiliency.

Whether the proposed concepts can stand the test of a summary, easy to appreciate, efficiently measured "capture" of OSE needed for Corps work will require more discussion than the recent IWR "white paper," the new "Handbook on Applying 'Other Social Effects' " and the ideas contained within this report. These, it is proposed, however, are a good start.

The contribution which this specific post-Katrina report hopes to achieve is to argue not only for the importance of augmenting the current limited OSE account elements — residual population and historic districts — with enhanced measures but also for revising the means of engagement of the community in the application of the expanded OSEs. Simply, we propose that to be most effective the expanded OSEs must be used to engage the

community in a robust collaborative process that begins way in advance of the usual Corps engagement schedule – from the earliest consideration of the prospect of a water resources project benefiting a community and continuing throughout all of the phases. Expanded OSEs without the community engagement will produce very little improvement over the slim OSE effort undertaken before Katrina.

Additionally this report argues for the consideration of the contribution that a water resources project can make to the success of a community within a context of the Corps being only one, albeit potentially the best for leading the effort, of several **resource stakeholders** able to make a contribution to the community's viability and sustainability. While existing legislation and their promulgated rules reinforce "silo" insularity in bringing resources to a community, it is incumbent upon the Corps to encourage the weighing of the respective contributions of each of the possible resource stakeholder and in taking the lead in garnering them in a collaborative manner. The Planning in a Collaborative Environment EC also recognizes that the Corps can help facilitate bringing together various agencies and programs to solve water resources problems. We present an example from the New Orleans office to demonstrate that the Corps already has acted in this leadership manner for a related goal – Louisiana coastal restoration.

Finally, the report recommends the required use of the OSEs in a community collaborative process of assessing the impacts of structure breaches or overtopping after every federally declared flood disaster involving a Corps project.

## Overview of the Report

### What was the logic of work? How it was done? And what is the focus?

“Planning in a Collaborative Environment” (EC 1105-2-409) initiated a new awareness for the need for the assessment of Other Social Effects (OSEs) within the efforts of the Interagency Performance Evaluation Taskforce (IPET). The impacts of the levee overtopping and breaching during Hurricanes Katrina and Rita reinforced the need to re-introduce social effects to the core considerations (national and regional economic, environmental and social) when reviewing potential projects or when reviewing the performance of existing ones. This University of New Orleans-led team of social scientists proposed to support the renewed interest by refining the OSEs from observations of the two storms. The team’s work is an extension of that presented in recently prepared preliminary white papers that were produced by the Institute of Water Resources in anticipation of an OSE handbook, now released (Dunning, 2008).

Once the preliminary OSEs had been reviewed, the team suggested revisions based primarily upon the OSEs proposed in the process called Social Impact Assessment. This revised list was then reviewed for additions from more recent work on social resiliency, social well-being and social/community capital to produce a list of impacts the team felt was representative and captured the core impacts that would occur both for the construction of a Corps civil project and for the “post-mortem” assessment of harmful impacts of an overtopping or breaching of a protective structure, especially one that is as catastrophic as Hurricane Katrina.

In order to demonstrate how such OSEs could be examined for a catastrophic event, the next step was to describe, in narrative form, what the OSEs were in Hurricane Katrina, then to quantify these impacts as much as possible to achieve the Corps’ goal of numeric assessment and impact comparison. Appendices were developed to provide additional narrative detail about Katrina to reinforce the social impact perspective and to add quantitative detail to the OSEs.

Because the intent of this report is to support the use of the OSEs within the new planning process that the Corps is developing, other elements were added to the report.



For example, the use of the OSEs in systematic conversations with the community residents is discussed. It is believed that such a list of OSEs is most important in its suggestive role, rather than in any definitive representation of what absolutely has to be addressed as of concern in any project. Because of this belief, community-based assessment procedures that would support this assumption are offered.

First, the Social Impact Assessment Process was described in detail. The team feels very strongly that this method can bring to the planners a useful representation of the impacts – both positive and negative – of the projects as they are viewed by the affected community and its active stakeholders. While led by a professional SIA specialist, the process engages the community to express a common vision and to thereby identify what flood safety means. The linkage between the method and the planning process was described.

In addition, a strong case is made to engage the entire community in the process rather than just a project sponsor. This engagement should occur much earlier than is done now. The purpose of the early timing is to be sure that

- there is consensus about what the community considers the most important elements/functions to protect
- determination that a structural solution is the best option,
- how the structural can be combined with non-structural to effect the greatest safety, and
- to engage all of the possible “resource stakeholders” into the conversation for the best flood protection achievable at an early enough time that the definition of the protection system has not “hardened” to only the structural measure.

Such a fuller community engagement also reduces the likelihood that resistance by community subgroups to the project will afflict the entire project, as occurs today.

Finally, four additional application issues relevant to the more productive use of the OSEs were considered:

- The first is to incorporate the SIA approach of eliciting OSEs into the “defining and bounding the problem” approach the Corps already uses regularly.
- The second is for the Corps to utilize the results of the SIA process to collaborate with other resource stakeholders to conceive and implement the best package of risk reduction actions, the Corps structural and non structural being just two.
- The third is to review the proposed OSEs and to embrace a more comprehensive array of them within the Multi-Criteria Decision Analysis (MCDA) currently being utilized by the Corps in the LACPR project selection process. .
- The fourth is to use the OSEs and the SIA approach to refine the post-mortem assessment of flood disasters and to require legislatively such an analysis after every declared disaster.

In addition a description of the use of historical community analysis as part of the SIA is offered in an appendix.

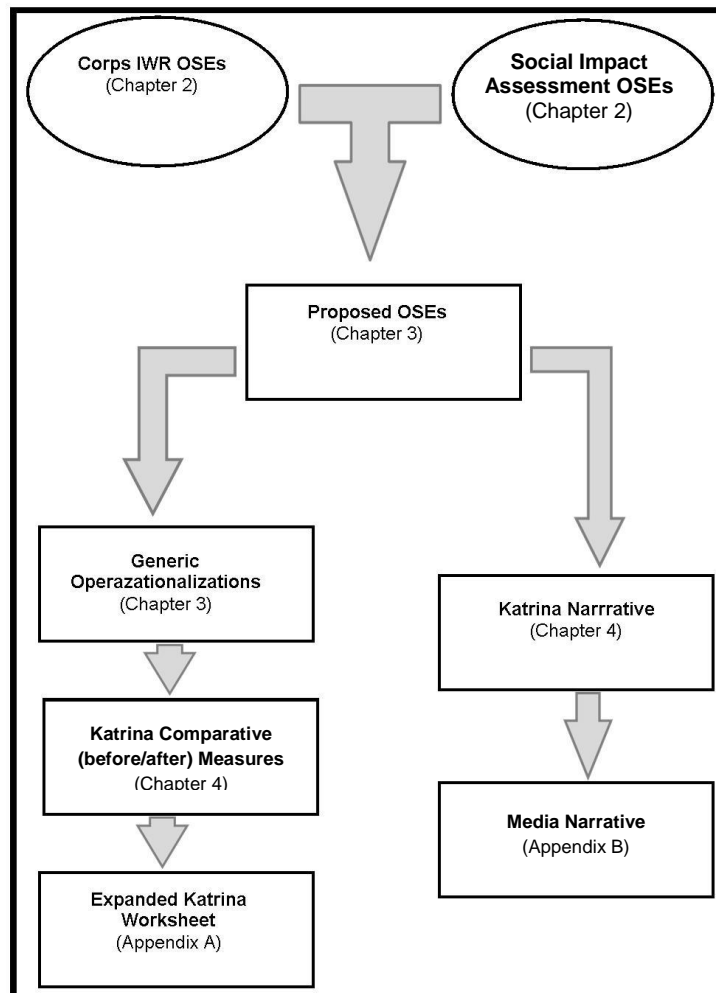
What has not been considered in this report is the range of impacts from modest residual (overtopping) to major deep flooding caused by a breach and rapidly flowing water. This will be undertaken in Phase II of this project because it requires a project case, preferably case comparisons, to analyze the differences in degree of impact. Generally, the lower the level of flooding, the less impact; however, it is evident from Katrina that the higher, less flooded areas suffer from co-dependency on the more-deeply flooded and also on being the recipient of those driven out of the deeply flooded areas.

The impacts of modest residual flooding could be compared within the Katrina experience by comparing the areas in Jefferson Parish, both east and west bank that experienced flooding from pump failure, or within Orleans Parish

itself for the first 24 hours before the canal breach waters began to rise significantly. The latter would be difficult to measure quantitatively; anecdotal narratives would necessarily be the core of the analysis.

The group would like to thank Joyce Broden-Douglas, UNO-CHART office coordinator, for logistical assistance for team meetings and Carrie Beth Lasley, UNO-CHART Research Associate, for managing the details of the report and for using Microsoft Word 2007 to its ultimate capacity in preparing the final document. Special thanks also goes to team member, Michelle Gremillion, a recent Sociology masters graduate, who located all of the quantitative measures and Brad Ott, a current Sociology graduate student, who located the media vignettes.

### Report Flowchart



## Contributors

### University of New Orleans

Shirley Laska, Ph.D.  
Professor of Sociology  
Director, CHART

Pamela Jenkins, Ph.D.  
Professor of Sociology

Monica Farris, Ph.D.  
Assistant Professor/Research  
Assistant Director, CHART

Michelle Gremillion, M.A.  
Instructor of Sociology

Kristina Peterson, ST. M., M.Div.  
Graduate Research Assistant  
Doctoral Student (Urban and Regional Studies)

Brad Ott  
Graduate Research Assistant  
Masters Student (Sociology)

### Other Institutions and Academic Consultants

Chad M. Berginnis, C.F.M.  
Hazard Mitigation Officer  
Emergency Management Branch  
State of Ohio

William Freudenburg, Ph.D.  
Dehlsen Professor of Environment and Society  
Environmental Studies Program  
University of California-Santa Barbara

Robert Gramling, Ph.D.  
Professor of Sociology  
Director, Socio-Economic Research Center  
University of Louisiana at Lafayette

Richard Krajeski, M. Div., ABD  
Community Responsive Management (CRM)  
Houma, La.

Harriet G. McCombs, Ph.D.  
Public Health Consultant

Nancy Mock, Ph.D.  
Director, Center for International  
Resource Development  
School of Public Health & Tropical Medicine  
Tulane University

Betty Morrow, Ph.D.  
Professor of Sociology Emeritus  
Florida International University

Henry Taylor, M.D., M.P.H.  
Senior Associate, Interdepartmental Program in  
Applied Health and Department of Health Policy  
Management  
Johns Hopkins Bloomberg School of Public Health

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