



# Institute for Water Resources

April 2013

## Other Social Effects: A Primer

2013-R-02





This Primer is intended to help those in the U.S. Army Corps of Engineers (USACE) and those who work with USACE understand the contribution that Other Social Effects (OSE) analysis can make to developing sound water resources plans. The Primer addresses what they are and why they are important. It looks at how OSE analysis is conducted in the planning process and what tools and methods are available for accomplishing it.

This Other Social Effects (OSE) Primer is one in a series of Primers on important topics in USACE Planning. The Other Social Effects, Planning and Economics Primers can be found on the Institute for Water Resources (IWR) web site, [www.iwr.usace.army.mil](http://www.iwr.usace.army.mil). The Primers are part of the Institute's program in support of the Planning Community of Practice.

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by

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# Foreword

The U.S. Army Corps of Engineers (USACE) Planning Excellence Program is designed to build planning capability both now and for the future. Social effects are a vital component of the planning process. Documents such as this Primer are a key element of the Planning Excellence Program.

I appreciate the efforts of the multidisciplinary team – encompassing USACE, other agencies and partners – who contributed to this document. This Other Social Effects Primer presents the basics about the use of social effects in the USACE water resources planning process. I am pleased to endorse its use as a tool for the Planning Community of Practice to reach out to all who are interested in our work. We hope it will be enlightening and useful to a wide audience.

—Susan B. Hughes, Planning Community of Practice Deputy, Planning Civil Works

# Acknowledgements

This Other Social Effects (OSE) Primer is one in a series of Primers on important topics in USACE Planning. The Other Social Effects, Planning and Economics Primers can be found on the Institute for Water Resources (IWR) web site, [www.iwr.usace.army.mil](http://www.iwr.usace.army.mil). The Primers are part of the Institute’s program in support of the Planning Community of Practice. Ms. Lillian Almodovar of IWR has provided critical support to this effort. Ms. Susan Durden of IWR was the project manager. Maria Wegner-Johnson, USACE Headquarters (formerly Tulsa District) and Ed Rossman of the USACE Tulsa District provided expertise, vision and manpower.

Valuable review comments were provided by members of the National Oceanographic and Atmospheric Administration Coastal Services Center, staff of the Middlesex Flood Hazard Research Institute, and USACE personnel. Thank you to the many others, not mentioned by name, who showed interest, offered ideas and encouraged development of this Primer.

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# I – Purpose

This Primer is intended to help those in the U.S. Army Corps of Engineers (USACE) and those who work with USACE understand the contribution that Other Social Effects (OSE) analysis can make to developing sound water resources plans. The Primer addresses the following key questions:

1. What are “Other Social Effects” and why are they important? (Section II)
2. How is OSE analysis conducted in the planning process? (Section III)
3. What tools and methods are available for accomplishing OSE analyses? (Section IV)
4. Where can I find more information and assistance? (Section V)
5. Additionally, a final section of the Primer presents a number of “Frequently Asked Questions” (FAQ) about OSE analysis. (Section VI).

This Primer assumes some familiarity with the USACE six-step planning process. A glossary of key planning process terms and concepts can be found in Appendix 1. Basic social science concepts are presented in this Primer. However, resources for obtaining more information on social effects analysis concepts, tools and methods are provided.



*MINOT, North Dakota — Aerial photo of Minot, N.D., flooded from the Souris River, June 28, 2011. The U.S. Army Corps of Engineers St. Paul District is assisting the North Dakota communities in the Souris River basin fighting record flooding.*



*Minot, N.D., June 26, 2011 -- Dona Young (right) talks with Red Cross volunteer, Heather Ellis, at the Red Cross shelter in South Minot. Mrs. Young's house was inundated with water from the Souris River and she was forced to evacuate. Burleigh and Ward counties were designated a Federal disaster area. (FEMA/ Andrea Booher)*

## II – What are “Other Social Effects” and Why Are They Important?

Why does the Congress direct the U.S. Army Corps of Engineers (USACE) to build projects? How does USACE determine how to operate projects? There are many long and complicated answers to these questions but the fundamental answer is short and simple: to improve people’s lives. At a fundamental level, this applies to all Federal agencies, whether their focus is security, environment, education or another mission.

How often do agencies explicitly address this basic truth? Not very often. It is common for the idea of improving people’s lives to get lost in the data and science necessary for project analysis. There is currently attention across Federal agencies to more fully considering the “people” part of their work or, in other words, the “social effects” that can be influenced by this work. This primer provides an introduction to “social effects” and how they can be used in analysis and decision making.

*“Social effects, in a water resources context, refer to how the constituents of life that influence personal and group definitions of satisfaction, well-being, and happiness, are affected by some water resources condition or proposed intervention.”  
(Dunning and Durden 2009).*

So what does this definition mean? Let’s imagine a community that is experiencing chronic flooding. Businesses are moving out. Houses and neighborhoods are deteriorating because owners no longer have the capability to address repetitive flood losses. How might personal and group senses of satisfaction, well-being and happiness be affected by the chronic flooding? In other words, what might be the likely social effects of this situation?

A helpful way to think about social effects is shown in Table 1. This table is based on insights from “Human Needs Theory.”<sup>1</sup> It shows key Human Needs dimensions and questions that pertain to each category. The table also shows the Other Social Effects (OSE) categories as portrayed in the USACE primary planning regulation ER 1105-2-100 (USACE 2000).

<sup>1</sup> The foundational concept in human needs theory is that people must have a number of essentials to survive and thrive. For a fuller treatment, see Dunning and Durden (2007).

**Table 1. Other Social Effects As Expressed in Human Needs Theory and in USACE Planning Guidance**

Key Human Needs Dimensions	Human Needs Focusing Questions for OSE Analysis	OSE Factors Listed in ER 1105-2-100 Planning Guidance Notebook
<b>Health and Safety</b> – of themselves and families	What risks and benefits to human health and safety are posed by conditions?	<ul style="list-style-type: none"> <li>– Effects on security, life, health and safety</li> <li>– Effects on emergency preparedness</li> </ul>
<b>Social Vulnerability and Resilience</b> – ensuring that the requirements of special needs populations in the community are adequately addressed	What risks to special needs populations in the community are posed by conditions?	<ul style="list-style-type: none"> <li>– Effects on security, life, health and safety</li> <li>– Effects on emergency preparedness</li> </ul>
<b>Economic Vitality</b> – having a stable or growing economic base with access to good jobs	How are jobs, incomes, employment opportunities, and population growth of communities likely to be affected by conditions?	<ul style="list-style-type: none"> <li>– Long-term productivity effects including maintenance and enhancement of productivity of resources for use by future generations</li> <li>– Effects on the fiscal condition of the state and local sponsor</li> <li>– Effects on real incomes</li> </ul>
<b>Social Connectedness</b> – sustaining a sense of connection to the community and neighborliness	How are community interpersonal networks, leadership, vision for the future, and relationships among voluntary organizations likely to be affected by conditions?	<ul style="list-style-type: none"> <li>– Urban and community impacts</li> <li>– Effects on population distribution and composition</li> <li>– Displacement of people, businesses, and farms</li> </ul>
<b>Identity</b> – feeling pride in the community, pitching in to help the community bounce back after problems	How are communities’ sense of civic pride and willingness to help the community likely to be affected by conditions?	<ul style="list-style-type: none"> <li>– Other effects as relevant</li> </ul>
<b>Participation</b> – feeling that one’s participation is valued and recognized in community decision making	Are opportunities for all affected groups’ participation provided for in all phases of the planning process?	<ul style="list-style-type: none"> <li>– Other effects as relevant</li> </ul>
<b>Leisure and Recreation</b> – having access to healthy and safe outdoor recreation	How are leisure and recreational opportunities affected by conditions?	<ul style="list-style-type: none"> <li>– Effects on educational, cultural, and recreation opportunities</li> </ul>

Using the categories and factors in Table 1, possible social effects of chronic flooding of a community could include:

- Health and safety effects, including risks of injury and death posed by flooding and its aftermath.
- Increased risk to special need vulnerable populations –the elderly, disabled, minorities and children – who may suffer greater relative harm and be less likely to bounce back after the flood.
- Reductions in the community’s economic vitality as expressed by declines in jobs and community investment as businesses leave the area.
- Loss of community optimism about the future, declines in civic pride, and loss of voluntary organizations and community leadership.

Identifying the social effects of the **existing** and **future without-project water resources condition**<sup>2</sup> can help to more completely understand the scope of problems, which can in turn help develop more complete project **planning objectives**. Similarly, understanding the social effects of potential solutions under consideration can lead to productive discussions about ways that undesirable social effects can be addressed either within the plan or in collaboration with others. Such information improves the **completeness, acceptability, efficiency** and **effectiveness** of the plans we develop.

### The Evolving Concern for Social Effects in Water Resources Planning<sup>3</sup>

Social effects have been considered in Federal water resources guidance for many years. What has varied is their “status” (whether their identification is required) and their importance (whether they are considered in formulation and plan selection).

Over the past 25 years social effects have largely been relegated to minor consideration as most attention has been placed on National Economic Development (NED) analysis and justification in accordance with the requirements of the **1983 Principles and Guidelines** and 1986 Water Resources Development Act (WRDA) cost sharing rules. However, events surrounding Hurricane Katrina and its aftermath, as well as numerous National Academy of Sciences reports, have increased awareness of the importance of considering influences beyond NED.

The USACE emerging collaborative planning framework as presented in **Engineering Circular (EC) 1105-2-409, Planning in a Collaborative Environment (EC 409)** (USACE 2005), greatly increased the emphasis and potential application of the OSE account by stating all four accounts (**National Economic**

<sup>2</sup> In this Primer, common water resources planning terms are bolded and italicized. It is quite important that you be familiar with these terms and the basic USACE planning process. See the Glossary in Appendix 1 for brief definitions of terms and the Resources section (Section V) for more information on sources.

<sup>3</sup> See Appendix 2 for a more in-depth history of the evolution of Congressional and Executive Branch concern with social effects in water resources investment planning and evaluation principles and procedures.

**Development (NED), Environmental Quality (EQ), Regional Economic Development (RED), and Other Social Effects (OSE)** are to be considered in project analysis and decision making.<sup>4</sup>

Finally, **Section 2031** of the Water Resources Development Act of 2007 calls for the update of the Principles and Guidelines to include a number of Other Social Effects related considerations. Listed below are those considerations most relevant to OSE:

- Assessment and incorporation of public safety in the formulation of alternatives and recommended plans
- Assessment methods that reflect the value of projects for low-income communities and projects that use nonstructural approaches to water resources development and management
- Evaluation methods that ensure that water resources projects are justified by public benefits

While the way in which these considerations will be expressed in an updated **Principles and Guidelines** remains to be seen, the intent of Congress in Section 2031 moves toward a more multi-faceted evaluation process that includes a greater role for Other Social Effects analysis.

As of the date of this Primer, OSE analysis is not formally required as a component of USACE water resources planning. However, overlooking OSE considerations can result in a limited understanding of the problem and a less robust range of solutions. OSE informs problem definition and ensures that solutions address the basic tenant of improving people’s lives. The level of effort for OSE analysis will vary by project and should be scoped to provide relevant input to the planning process. This is discussed in more detail in Chapter 3.

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<sup>4</sup> This Engineering Circular is still considered guidance.



*Grand Forks, N.D., May 1, 1997 – Debris from the interior of homes lines the streets as residents wait for its removal. Many area homes were damaged as water from the Red River entered their homes. (FEMA/Michael Rieger)*

### **Box 1. Role of the OSE Practitioner**

Those conducting OSE analyses should have a self-conscious orientation about their role in the planning process as that of “action researcher” versus that of “assessor.”

The point of view of the researcher is not that of outside, disinterested observer, but one of an activist interested in change—*“It commences with an interest in the problem of a group, a community, or an organization. [Action research’s] purpose is to assist people in extending their understanding of their situation and thus resolving problems that confront them”* (Stringer 1999, p. 9).

This role stands in contrast to the traditional “scientific” model of the disinterested researcher, dispassionately observing and taking pains not to interfere with or “contaminate” the “experiment.”

But planning is a social undertaking, not a clinical experiment. Rather than advocating any particular outcome, the OSE practitioner should be an advocate for communication and disclosure and use the principles of science – careful observation and accurate description – to work for improved communication and understanding among stakeholders about the social effects of project choices on stakeholder interests.

## III – How is Other Social Effects Analysis Used in the USACE Planning Process?

OSE analysis is key throughout the USACE planning process. It is not an “add on” at the end to bolster the chosen plan. In general, it is of most importance during problem identification. If there is not a complete picture of the problem, how can it be solved properly?

OSE are applicable across all business lines. They may be most intuitively understood in flood risk management but can also be important considerations in ecosystem restoration, navigation and other projects.

OSE analysis plays a role throughout the *six-step planning process*<sup>5</sup> and contributes to key planning tasks:

- Stating problems, needs and opportunities. In these steps information about who is affected and how they view the situation is critical. It is particularly important that the interests of those who may be most vulnerable to risks be included in the process.
- Forming planning objectives: Planning objectives are the positive actions identified to address the problems, needs and opportunities of the study area.
- Forming and evaluating alternatives: Alternatives need to address social issues of concern. Where possible and feasible, stakeholders should actively participate in the design of alternatives. At the very least, alternatives need to be formed with the expectation that they will be evaluated by diverse stakeholders. Once again there should be a special responsibility to ensure that those stakeholders most vulnerable or at risk are afforded the opportunity – even provided special assistance – to participate in the exploration of alternatives.
- Clarifying choices: Communicating the socioeconomic implications of alternatives to stakeholders and helping stakeholders explore the consequences of alternatives on their situations and interests can help differentiate the choices that alternatives present.

Box 1 on the preceding page identifies the orientation that the OSE analyst should have in carrying out the various OSE analysis tasks described in this section.

### Role of OSE Analysis in USACE Planning Steps

Below is a brief discussion of the role of OSE analysis in each of the six USACE planning steps.<sup>6</sup>

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<sup>5</sup> For additional information on the USACE six-step planning process, see The Planning Primer (Orth and Yoe 1997), [www.usace.army.mil](http://www.usace.army.mil)

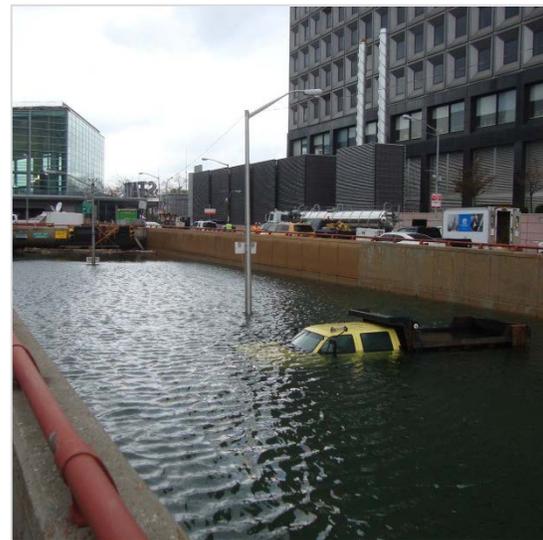
<sup>6</sup> For a more detailed presentation see Dunning and Durden 2009.

### Step 1: Identify Problems and Opportunities

During the first step of the planning process, the OSE analyst can help the study team gain a better understanding of the study area’s social landscape. For example, the OSE analyst can use Census information and local planning reports to develop detailed breakdowns and descriptions of the socioeconomic characteristics of the study area population. The analyst can use various methods to identify stakeholder groups and can employ content analysis methods with letters to the editor, transcripts of relevant public meetings, and written materials to identify key issues and viewpoints pertaining to water resources issues and those who live in the study area. The analyst can also employ

*The better the planning team understands the problems, the more likely implementable solutions will be found.*

content analysis methods to discover who has a stake in the water resources problem and why the problem or issue is important to the community. An important part of this process is to initiate a “Social Vulnerability Analysis” to identify the presence of particularly vulnerable populations (see Box 2). The desired output of the OSE analysis in this step are lists of stakeholders, issues and problems, and ideas from stakeholder groups for addressing water resources issues. Some tools the OSE analyst may use to accomplish this are various stakeholder identification methods, workshops, interviews, surveys, historical analysis, content analysis and social profiling.<sup>7</sup>



*(Left) A house near the Mantoloking breach in New Jersey. The Army Corps of Engineers is working with New Jersey to close the breach following historic Hurricane Sandy. (USACE)*

*(Right) Mike Vaccaro, Baltimore District Safety Construction Division employee, shares his photos of the Battery Park underpass as he deployed to support the Hurricane Sandy recovery missions in Ft. Hamilton, New York.*

<sup>7</sup> See Section IV for a discussion of OSE tools and methods.

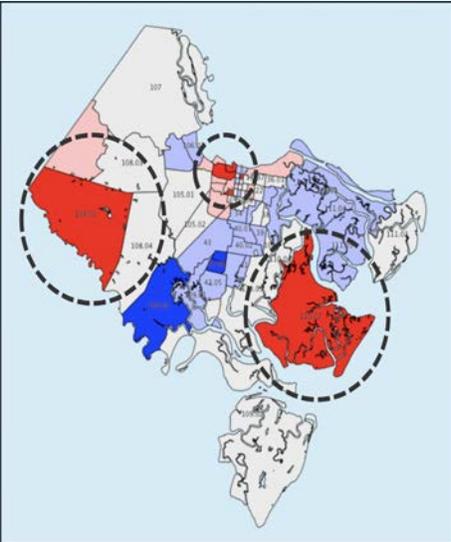
### Box 2. Social Vulnerability Analysis

The experiences of Hurricanes Katrina, Rita and Ike, as well as extensive flooding in the Upper Midwest, have emphasized the reality and significance of the social impacts of floods. One of the lessons of Katrina and Rita has been that the effects on socially vulnerable populations have been woefully overlooked and underestimated.

The social impacts of hazard exposure often fall disproportionately on the most vulnerable people in a society—the poor, minorities, children, the elderly and the disabled. These groups often have the fewest resources to prepare for a flood, live in the highest-risk locations, occupy substandard housing, and lack the knowledge or social and political connections necessary to access resources that would speed their recovery.

**Social vulnerability analysis** describes who is likely to be especially at risk from flood effects and focuses on the special needs of such groups as part of the planning process. Two practical methods for identifying such at-risk groups are the **Social Vulnerability Index (SoVI)** and **Social Vulnerability Profiling (SVP)**, both of which are described in Dunning and Durden 2011.

Overlaying the spatial distribution of vulnerable populations as identified by the SoVI or SVP with hazard zones using GIS technology can help identify hazard “hot spots” (circled in red on the map below) having the greatest hazard potential as well as vulnerable populations that would likely require special consideration in the planning process.



Chatham County, Georgia SoVI Analysis

## Step 2: Inventory and Forecast Conditions

During the second step of the planning process, the OSE analyst continues compiling and refining socioeconomic information about the study area. This aids in understanding social conditions as they evolve in the absence of a solution to the water resources problems and needs identified in step 1. This **“future without-project condition”** forms the basis for identifying effects – both positive and negative – of potential plans. Returning to our example of the community with the chronic flooding problem that has been experiencing loss of businesses and out-migration of population, the OSE analyst would be focused on trying to forecast the future population and community economic base under an assumption that no improvements in the community’s flooding situation occurred. Forecasting social conditions can be accomplished by a wide variety of means including consulting independent studies and projections such as those performed as part of a community’s comprehensive plan, forming focus groups of stakeholders to speculate on future conditions, forming a Delphi panel of experts to examine data and make estimates, and conducting community workshops to engage participants in discussions about future conditions.

*A well-defined social inventory and forecast is the basis of sound water resources planning.*

## Step 3: Formulate Alternatives

During the third step of the planning process, the focus is on identifying ways to make meaningful changes in the future to address the planning objectives. The OSE analyst plays a vital role in this process by ensuring that the study team understands the social effects of water-related problems and stakeholder preferences about the future for the study area. Different stakeholder groups will have different opinions, but understanding why they hold these opinions (and values) is important to plan formulation success and can enable the team to bridge what seem like incompatible stakeholder preferences. Additionally, the OSE analyst should take an active role in identifying potential management measures that avoid, minimize or mitigate negative social effects, or which take advantage of opportunities afforded by plans to address social issues of concern that are consistent with the planning objectives. In particular, the analyst should raise issues about potential social effects on vulnerable populations. For example, if it has been found that a large population of non-English speaking persons is living in the flood plain, such information may warrant the development of special measures (e.g., targeted warnings, special evacuation procedures) that address the particular needs and circumstances of this group.

*A full array of alternatives takes in to consideration social problems, values and issues of concern consistent with those stated in the planning objectives.*

#### Step 4: Evaluate Plans

During the fourth step of the planning process, the OSE analyst communicates the social effects of alternate plans in ways that illuminate the choices among the various plans. The analyst should focus on describing the plans' effects on the key social concerns that were expressed in the future without-project condition, as well as any other social, environmental and economic effects associated with the plan that may be important for stakeholders to consider in their evaluation of plans' effects. There are four descriptors that form a good starting point in characterizing plans' effects:

- **magnitude** (the numbers of people or groups affected)
- **location** (where the effects are likely to occur, and thus who will be impacted)
- **timing and duration** (when effects will start and how long they will last)
- **risks** associated with the plans

Additionally, each plan should be evaluated based on the four planning criteria:

- **Completeness:** Does the plan address all the social issues of concern?
- **Effectiveness:** How well does the plan address the social issues of concern?
- **Efficiency:** Does the plan address the social issues of concern in a cost-effective way?
- **Acceptability:** Is the solution consistent with the community's vision of its future?

*Clear communication of the social effects of alternative plans is a part of a complete evaluation of alternatives.*

#### Step 5: Compare Plans

During the fifth step of the planning process, the OSE analyst compares each alternative plan's positive and negative social effects to one another. As new information comes to light, plan evaluations and comparisons can be updated. Stakeholders may bring new concerns or questions to the study team in order to help the study team make informed choices. Figure 1 shows a comparison matrix of OSE factors used in a recent flood risk management study. Such a matrix offers a convenient way to compare effects

of plans on social factors, can stimulate further discussion about plans, and lead to refinement and new plans.

*Positive and negative social benefits (costs) of each alternative compared to one another assists in making a fully informed decision.*

**Figure 1. Comparison Matrix of Social Effects of Alternative Plan Features**

Social Factor and Metrics	Alternatives																			
	Flood Barriers		Diversion Channels		Non-structural Measures		Flood Storage		Tunneling		Bridge Replacement or Modification		Interstate 29 Viaduct		Dredging and Widening		Wetland and Grassland Restoration		Cut-off Channels	
	D	E	D	E	D	E	D	E	D	E	D	E	D	E	D	E	D	E	D	E
<b>Health and Safety</b>																				
Mental Health	2	2	3	3	0	0	2	2	3	3	0	1	3	3	1	1	0	1	1	1
Physical Health	2	2	3	2	0	0	2	2	3	2	0	1	3	2	1	1	0	1	1	1
Physical Safety	0	2	0	2	0	0	0	2	0	2	0	1	0	2	0	1	0	1	0	1
Regional Healthcare	0	2	0	3	0	0	0	2	0	3	0	1	0	3	0	1	0	1	0	1
<b>Economic Vitality</b>																				
Business Climate	2	2	2	3	0	0	2	2	3	3	0	1	3	3	1	1	0	1	1	1
Employment Opportunities	2	2	2	3	0	0	2	2	3	3	0	1	3	3	1	1	0	1	1	1
Financial Impacts	-1	1	-2	1	0	0	-1	1	-2	1	0	0	-2	1	-1	1	0	-1	-1	1
Municipal Services	-1	2	-2	2	0	0	-1	1	0	2	0	0	-1	2	0	1	-1	0	0	1
<b>Social Connectedness</b>																				
Community Cohesion	-1	2	0	2	0	0	0	2	0	2	0	1	0	2	0	1	0	1	0	1
Community Facilities	0	2	0	2	0	0	0	2	0	2	0	0	0	2	0	1	0	1	0	1
<b>Identity</b>																				
Cultural Identity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Community Identify	1	1	1	1	0	0	1	1	1	1	0	1	1	1	1	1	0	0	1	1
<b>Social Vulnerability and Resiliency</b>																				
Residents of Study Area	-1	2	0	2	0	0	0	1	0	2	0	1	0	2	0	1	0	1	0	1
Socially Vulnerable Groups	-1	2	0	2	0	0	0	0	0	2	0	1	0	2	0	1	0	1	0	1
<b>Participation</b>																				
Public Participation	1	2	1	2	0	0	0	1	0	2	0	1	1	2	0	1	0	1	1	1
<b>Leisure and Recreation</b>																				
Recreational Activities	-1	1	0	1	1	0	0	1	0	1	0	0	0	1	1	1	1	1	0	1

[Source: OSE in Alternatives Analysis, Jason Weiss, URS; Jagadish Prakash, URS; Susan Durden, IWR and Shanika Amarakoon, ABT, www.usace.army.mil]

**Step 6: Select a Recommended Plan**

In the sixth and final step of the planning process, the OSE analyst aids the study team in weighing the beneficial and adverse effects of the various plans. Where social effects are deemed significant the planning team should demonstrate how the recommended plan has avoided or minimized negative social effects or otherwise taken advantage of opportunities to improve social conditions in accordance with planning policy.

*When the full range of benefits and costs of each plan are communicated, decision makers are better informed.*

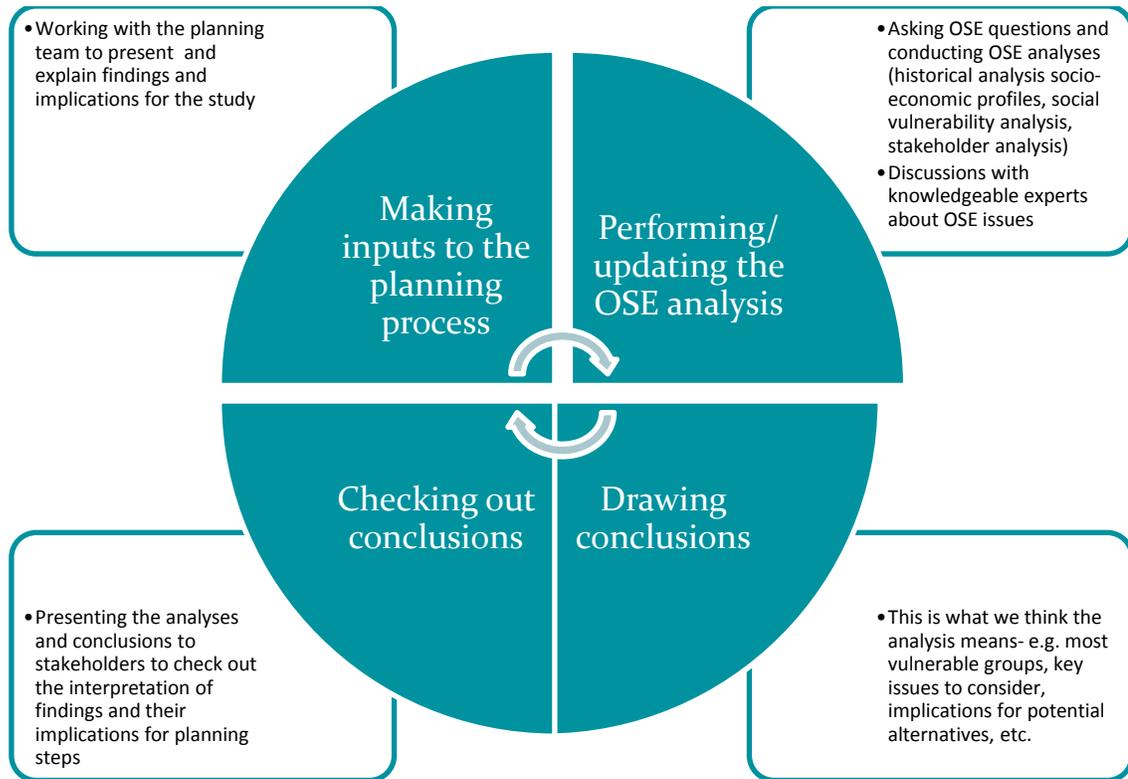
## Summary

Table 2 below summarizes some of the key questions that OSE analysis should be focused on answering in the planning process. The bottom line is to recognize that OSE information is an important part of the information that should shape a project. However, as illustrated in Figure 2, getting the most benefit from OSE analysis requires interaction with stakeholders about the meaning of effects, the choices that are crystallized by the consideration of social effects, and ultimately input from stakeholders on project alternatives taking social effects into account.

**Table 2. Summary of OSE Analysis Questions to be Addressed in Each Planning Step**

Planning Step	Key Questions to be Addressed by OSE Analysis
<b>Identify Problems and Opportunities</b>	<ul style="list-style-type: none"> <li>-Who are stakeholders, and how do they define the problems, needs, opportunities, and constraints?</li> <li>-What basic “social statistics” can describe the population and portray quality of life factors?</li> <li>-What “special needs” populations are present?</li> </ul>
<b>Inventory and Forecast Conditions</b>	<ul style="list-style-type: none"> <li>-How are social conditions currently being affected?</li> <li>-What are social conditions likely to be in the future in the absence of a water resources intervention?</li> </ul>
<b>Formulate Alternatives</b>	<ul style="list-style-type: none"> <li>-What should the future look like with regard to social conditions of concern?</li> <li>-What needs to be changed? What needs to be preserved or improved?</li> <li>-What kinds of measures are needed to achieve these social conditions?</li> <li>-What measure(s) is (are) preferred? What are key underlying interests?</li> </ul>
<b>Evaluate Effects</b>	<ul style="list-style-type: none"> <li>-What are plans’ social effects in terms of <u>magnitude</u>, <u>location</u>, <u>timing</u> and <u>duration</u>?</li> <li>-What <u>risks</u> are associated with each plan?</li> <li>-How adequate are plans with respect to <u>completeness</u>, <u>effectiveness</u>, <u>efficiency</u>, and <u>acceptability</u>?</li> </ul>
<b>Compare Alternatives</b>	<ul style="list-style-type: none"> <li>-How do plans’ effects compare on social issues of concern?</li> </ul>
<b>Select Recommended Plan</b>	<ul style="list-style-type: none"> <li>-How were the social effects of the alternative plans considered in making a determination of the recommended plan?</li> <li>-In cases where social effects were deemed significant what was done to minimize and/or mitigate negative effects, and to take advantage of opportunities afforded by the plan to improve social conditions of residents in project areas?</li> </ul>

Figure 2. Establishing the Meaning of Social Effects Information



Fargo, N.D., March 28, 2009 – Jean James and her family wait out flood at the temporary Red Cross shelter in Fargo. (FEMA/ Andrea Booher)

## IV - OSE Tools and Techniques

There are many tools and techniques available for performing OSE analysis. Table 3 shows a range of OSE tools and techniques that can address the key questions (repeated from Table 2) that the OSE analyst should be asking at each stage in the planning process. Table 4 then provides a brief explanation of each tool and technique presented. More detail on tools and techniques can be found in Part II of the *Handbook on Applying “Other Social Effects” Factors in Corps of Engineers Water Resources Planning* (Dunning and Durden 2009).



*USACE hosts workshop to help build customer service, relations. (USACE)*

**Table 3. Common Tools for Addressing Key OSE Questions**

Planning Step	OSE Questions	Historical Analysis	Social Profiling	Independent Studies and Projections	Workshops	Stakeholder ID Methods	Interviews	Surveys	Secondary Data Collection	Focus Groups	Delphi Panels	Content Analysis	Charrettes	Shared Vision Methods	Quality of Life Indices
1	What groups have economic, cultural, and other “stakes” in the situation?		X			X	X					X			
	How do stakeholders define the problems, needs, opportunities, and constraints? What are their priorities? What kinds of effects are they interested in achieving/ in avoiding?				X		X	X				X			
	What basic “social statistics” describe the population and portray quality of life factors?	X	X												
	Are “special needs” populations present?	X	X		X		X								X
2	How are social conditions currently being affected by the water resources situation?		X	X	X		X	X		X	X			X	X
	What are social conditions likely to be in the future in the absence of a water resources intervention?			X	X		X			X	X				X
3	What should the future look like with regard to social conditions of concern?				X		X			X			X		
	What needs to be changed? What needs to be preserved or improved?				X		X			X			X		X
	What kinds of measures are needed to achieve desired social conditions?				X		X			X			X		

Planning Step	OSE Questions	Historical Analysis	Social Profiling	Independent Studies and Projections	Workshops	Stakeholder ID Methods	Interviews	Surveys	Secondary Data Collection	Focus Groups	Delphi Panels	Content Analysis	Charrettes	Shared Vision Methods	Quality of Life Indices
	Why is (are) the measure(s) preferred? What are key underlying interests?				X		X			X			X		
4	What are plans' social effects in terms of magnitude, location, timing and duration?  What risks are associated with each plan?  How adequate are plans with respect to completeness, effectiveness, efficiency, and acceptability?				X		X			X	X		X	X	
5	How do plans' effects compare on social issues of concern?				X					X	X		X	X	
6	How were the social effects of alternative plans considered in making a determination of the recommended plan?  In cases where social effects were deemed significant what was done to minimize and/or mitigate negative effects, and to take advantage of opportunities afforded by the plan to improve social conditions of residents in project areas?				X								X	X	

Table 4. Summary Description of OSE Tools and Techniques

Tool/Technique	Description
<b>Historical Analysis</b>	Historical treatments of an area's development can often be found in comprehensive plans for the area or in histories prepared by local historical societies.
<b>Social Profile</b>	The purpose of a social profile is to provide a basic level of understanding about the social dynamics and structure of an area. A social profile assembles basic socio-economic and population data obtained from census and local planning documents, and may also present the results of interviews conducted with community leaders.
<b>Independent Studies and Projections</b>	Use of projections/studies prepared by official government sources or by authoritative sources to estimate variables such as population, income, and employment.
<b>Workshops</b>	A small group meeting, led by a facilitator, convened to achieve a specific purpose. The facilitator attends to the process of the meeting, helping participants stay focused on the meeting objective, and employs structured problem-solving processes to help participants work through their issues of concern. Workshops are often used in planning to bring stakeholders together to identify issues of concern, ways that a water resources problem could be addressed, and to evaluate alternatives.
<b>Stakeholder Identification Methods</b>	Stakeholders are those individuals and groups that have a stake in the outcome of a planning process. Stakeholders can be identified on the basis of their "interests" in water resources issues as revealed by factors such as proximity, economics, use, values, and by official mandate to participate.
<b>Interviews</b>	Interviews are a "guided conversation" for the purpose of collecting information. The interviewer generally asks one or two relatively unstructured questions to begin the conversation with the interviewee, and then lets the process take over to obtain more information. Such guided conversations can yield valuable information about stakeholder views, values, priorities, preferences, etc.
<b>Surveys</b>	Surveys are standardized sets of questions posed for others to answer. Survey questions are sometimes asked in face-to-face situations or via telephone. Surveys of ten or more persons must be approved by the Office of Management and Budget (OMB).
<b>Secondary Data Collection</b>	<b>Secondary data</b> are data that have been collected by someone else for another purpose. They can be an economical and efficient source of information relevant to the study.
<b>Focus Groups</b>	In focus groups a selected group of persons representing particular viewpoints or stakeholder groups is invited to participate in a controlled

Tool/Technique	Description
	discussion. While somewhat similar to workshops, focus groups differ in that specific individuals or groups are selected to participate and specific questions are discussed, usually in a controlled order.
<b>Delphi Panels</b>	Delphi panels are a technique for eliciting judgments from experts, typically by mail or email. While often used as a forecasting tool, the Delphi method can be used to elicit group judgments on almost any planning topic.
<b>Content Analysis</b>	Content analysis is a structured method to systematically record the content of written material into meaningful categories of information that can then be analyzed using basic descriptive statistics and cross tabulations.
<b>Charrettes</b>	A charrette is an extended and intense collaborative planning session – sometimes lasting for a week or longer – in which a team of planners and designers interacts with stakeholders to develop a preferred solution to a problem.
<b>Shared Vision Planning</b>	Shared vision planning is a computer-based, collaborative planning process that aims to facilitate a common understanding of a natural resource system and provide a consensus-based forum for stakeholders representing different interests to identify tradeoffs and new management options. ( <a href="http://www.sharedvisionplanning.us">http://www.sharedvisionplanning.us</a> )
<b>Quality of Life Indices</b>	<p>QOL indicators are generally grouped into <i>indices</i> – i.e., a collection of indicators that, taken together, provide information on a more general dimension of well-being. A number of standard indices have been developed that address various quality of life areas (e.g. health, job satisfaction, quality of education, etc.).</p> <p>Examples of specific indices focused on various aspects of quality of life include the <b>Social Vulnerability Index (SoVI)</b> (Cutter et al 2000) to help identify socially vulnerable groups, and the <b>Civic Index</b> (National Civic League 1999) to measure a community’s social connectedness by focusing on a community’s “civic infrastructure.”</p>



*Mantoloking Breach, Nov. 6, 2012 – North Atlantic Division Commander Col. Kent Savre and Philadelphia District Commander Lt. Col. Chris Becking visited the Mantoloking breach Nov. 6. The Army Corps of Engineers is working with New Jersey to close the breach following historic Hurricane Sandy. (USACE)*



*Mantoloking Breach, Nov. 6, 2012 – Geotechnical Engineer Rich DePasquale speaks with North Atlantic Division Commander Col. Kent Savre about the Mantoloking breach. (USACE)*

## V - Where to Find More Information

There are a variety of resources available in the field of OSE. In approaching a social effects analysis, it is important to engage experts early on to help guide the process. Each of the items below contains additional references.

***Handbook on Applying “Other Social Effects” Factors in Corps of Engineers Water Resources Planning, IWR Report 09-R-4.*** (Dunning and Durden 2009). Published in December 2009, this handbook provides the foundation for applying OSE to the Corps planning process. It can be found on the IWR’s website: <http://www.iwr.usace.army.mil/docs/iwrreports/09-R-4.pdf>.

***Social Vulnerability Analysis Methods for Corps Planning, IWR Report 2011-R-07.*** (Dunning and Durden 2011). Published in May 2011 this handbook presents two practical methods for identifying socially vulnerable groups in study areas and illustrates how the information they provide about social vulnerability, the drivers of vulnerability, and their spatial distribution in flood hazard zones can be used in the planning process. The report can be found on IWR’s website: <http://www.iwr.usace.army.mil/docs/iwrreports/2011-R-07.pdf>.

***Theoretical Underpinnings of the OSE Account. ERDC/CHL SR-07-1.*** (Dunning and Durden 2007) Published in 2007 this white paper provides the history of OSE in the Corps, as well as the theoretical and academic basis for understanding OSE. A copy of this document can be found here: [www.usace.army.mil/CECW/PlanningCOP/Documents/library/theo\\_under\\_aug07.pdf](http://www.usace.army.mil/CECW/PlanningCOP/Documents/library/theo_under_aug07.pdf).

**Social Vulnerability Index (SoVI)** (Cutter et al 2000). This index helps identify socially vulnerable groups. The University of South Carolina Hazards and Vulnerability Research Institute has done extensive work in geo-referencing social vulnerability and resiliency. Additional information can be found at <http://webra.cas.sc.edu/hvri/products/sovi.aspx>.

The **Social Development Department of the World Bank** was formed to increase social capacity and assets of recipients of World Bank Projects and has four focus areas: community development and social capital formation, social analysis, participation and civic engagement, and conflict prevention. You can find the World Bank Social Development Department on the web at <http://web.worldbank.com>. The World Bank has also developed the “Social Analysis Sourcebook,” which provides useful information on the application of social analysis and assessment.

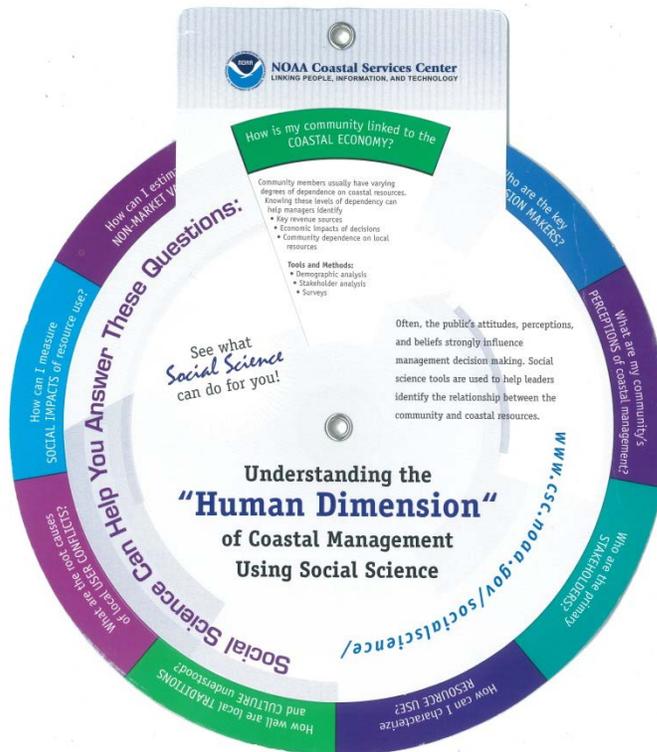
The **Forest Service** has put together a comprehensive guide for conducting social assessments called “A Human Dimensions Framework: Guidelines for Conducting Social Assessments.” It is available at [http://www.srs.fs.usda.gov/pubs/gtr/gtr\\_srs065.pdf](http://www.srs.fs.usda.gov/pubs/gtr/gtr_srs065.pdf).

**HD.gov** is an informational website dedicated to the human dimension of natural resource management. Most content is from U.S. government agencies. As stated on the website, “HD.gov guides users to credible on-line information, including methods, on-line tools, publications, and a calendar of events. HD.gov adds value to existing sites by highlighting the widely applicable aspects of

their content, while retaining links to more detailed information.” You can find the website at <http://www.hd.gov>.

**National Oceanic and Atmospheric Administration (NOAA), Coastal Services Center** website contains a plethora of information on the human dimensions (OSE) of coastal planning. A particularly interesting and innovative tool is the Human Dimensions “Wheel” (see Figure 3). Many of their resources are applicable on a broader scale. <http://www.csc.noaa.gov/>.

Figure 3. NOAA Coastal Services Center Human Dimensions “Wheel”



## VI - Frequently Asked Questions

### **How is OSE used in the formulation, evaluation, and recommendation process?**

OSE is used to help formulate alternatives that address the social issues identified during Problem Identification. Section III describes how OSE is used in the formulation, evaluation, and recommendation process. A more detailed description can be found in Chapter 4 of the [Handbook on Applying “Other Social Effects” Factors in Corps of Engineers Water Resources Planning](#).

### **What is the difference between OSE and “The Human Dimension?”**

The primary difference between OSE and The Human Dimension is nomenclature. Both are used to describe social factors. OSE is used by the Corps of Engineers to describe impacts that are not accounted for in the other three accounts (National Economic Development, Regional Economic Development, and Environmental Quality). Human Dimensions is currently the most common nomenclature in the literature for what was previously known as social effects.

### **What is the relationship between OSE and Environmental Justice?**

Environmental justice and OSE are related, most notably in social vulnerability analysis. Executive Order 12898, *“Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,”* mandates that each Federal agency “Identify and address as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.” This mandate requires that Federal agencies must identify and disclose the distribution of effects on minority and poor populations. OSE analysis aids in this identification and in assisting vulnerable populations in participating in the planning process.

### **How is OSE linked to National Environmental Policy Act (NEPA) documentation?**

Much of the same information can be used in the NEPA documentation process and OSE analysis. However, the OSE analyst is more hands-on, while during the NEPA process the practitioner is more hands off. The OSE analyst is an action researcher, generally with extensive time invested in engaging various people and groups of people while collecting data to address social issues connected with specific planning issues. During the NEPA process, the practitioner plays the role of observer documenting socioeconomic impacts. In both cases, the information gathered from data and through engagement can be used to help make more informed decisions.

### **Which human populations are addressed in OSE?**

All human populations impacted by the problem and possible alternatives should be considered with emphasis on the most vulnerable—elderly, children, low income etc. OSE provides the opportunity to engage a wide variety of stakeholders. Early in the process, it should be asked which populations should be engaged for the OSE analysis. A process should then be developed to reach those populations,

identify their problems, and include their input. Some populations will require more time and effort to engage than others.

**Are there any good examples of Corps documents that address OSE?**

There are some good examples of OSE analysis. However, it is important to keep in mind that in each situation and project the analyst will need to ask the important questions in order to develop an OSE analysis that addresses the issues important in the study area.

**What is the justification for applying study resources to OSE analysis if it isn't required under current planning rules?**

Including OSE analysis as part of the overall study budget is justified by the added value obtained by the Corps and sponsors acquiring better knowledge of the full range of impacts and benefits from proposed actions, as well as more informed decisions arising from thinking about the proposed alternatives' impacts on the community or the areas impacted by the actions.

**How should a budget for OSE analysis be developed?**

Focusing on the key questions that need to be answered (presented in this Primer, as well as in some of the resources identified in Section V) can help in laying out an overall set of tasks and time lines to be included in the Project Management Plan (PMP). Consulting with others who have done similar analyses can also be helpful.<sup>8</sup>

**What is the difference between OSE analysis and Socioeconomic Impact Assessment?**

The difference between OSE analysis and Socioeconomic Impact Assessment is the role of the analyst. In OSE analysis, the analyst is an "action researcher," whose primary focus is on using social science to facilitate, communicate and build understanding to help shape the project. However, in Socioeconomic Impact Assessment, the analyst is more likely to be a "hands off" observer to promote full disclosure of effects and compliance with regulations.

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<sup>8</sup> The USACE Institute for Water Resources Center for Conflict Resolution and Public Participation is developing an OSE support capability and can provide input on budgeting and PMP development.

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## Other Social Effects: A Primer

Water Resources Council. 1973. *“Water and related land resources: Establishment of principles and standards for planning.”* *Federal Register* September 10, 1973.

\_\_\_\_\_. 1983. *“Economic and environmental principles and guidelines for water and related land resources implementation studies.”* *Federal Register* March 10, 1983.

Weiss, Jason; Prakash, Jagadish; Durden, Susan and Amarakoon, Shanika. 2012. *OSE in Alternatives Analysis*. Washington, D.C. U.S. Army Corps of Engineers.

## Appendix 1: Planning Term Glossary

The following key planning terms have been excerpted from Orth and Yoe 1997. Some paraphrasing has been used to make the terms more readable in the present context.

**Alternative plan:** A set of one or more management measures functioning together to address one or more planning objectives.

**Characterizing effects:** Common descriptors for differentiating effects include:

-**Magnitude:** How much or how many are affected?

-**Location:** Where, at what site and over what area, is the effect?

-**Timing and Duration:** When will the effect start? How long will it last? Will it occur again?

-**Appraisal:** Is the effect beneficial or adverse? Good or bad? Desirable or not? Since such appraisals are often subjective they need to be specified and/or qualified with regard to their basis.

**Existing condition:** Describes significant natural, economic, and social conditions at the time of the study.

**Locally preferred plan:** A plan that is not the NED plan but is preferred by the local sponsor. Sometimes a non-Federal sponsor of a Civil Works project will find it in its interest to support a plan that sacrifices some NED benefits for additional benefits to other objectives. Locally preferred plans can be approved by exception.

**Management measure:** A feature or activity that can be implemented at a specific geographical site to address one or more planning objectives. Management measures are the building blocks of alternative plans.

**NED plan:** Federal Principles and Guidelines require that the alternative plan with the greatest net economic benefit consistent with protecting the Nation's environment – the National Economic Development or NED plan – be selected as the recommended plan unless an exception is granted.

**No action alternative:** The planning process is built on the default assumption that the Corps should do nothing to address problems and opportunities. The agency should only become involved in a project if it is better for society than doing nothing. The planning process must convincingly demonstrate that a project alternative provides significant benefits to society over the no action alternative.

**Plan formulation:** The process of building alternative plans that meet planning objectives without violating constraints.

**Planning objectives:** Describe the results to be achieved by solving problems, taking advantage of opportunities that have been identified, and avoiding constraints that have been identified.

**Plan qualifying criteria:** Criteria used to rate a plan’s suitability for being carried further in plan evaluation process, and ultimately for being selected as the recommended plan. Common qualifying criteria include:

-**Completeness:** Does the plan include all the necessary parts and actions to produce the desired results?

-**Effectiveness:** Does the plan meet the objectives? How does the plan address constraints?

-**Efficiency:** Does the plan minimize costs? Is it cost effective? Does it provide net benefits?

-**Acceptability:** Is the plan acceptable and compatible with laws and policies?

**Six-step planning process:** The basic, iterative planning framework used by the Corps of Engineers to conduct water resources planning studies. The steps consist of:

Step1: Identifying problems and opportunities

Step 2: Inventorying and forecasting conditions

Step 3: Formulating alternative plans

Step 4: Evaluating alternative plans

Step 5: Comparing alternative plans

Step 6: Selecting a plan

**Without-project condition:** Describes what is expected to happen to significant natural, economic, and social conditions if the Corps takes no action to address the planning objectives. The without-project condition is the same as the “no action” alternative described in the National Environmental Policy Act (NEPA) regulations.

**With-project conditions:** Describes what is expected to happen if each alternative plan is implemented.

**With- vs. without analysis:** Comparison of what is expected to happen to significant natural, economic, and social conditions under a with-project condition versus the without-project condition. Differences between the “with-“ and “without-“ condition in these significant natural, economic and social conditions are called **effects** or **impacts**.

## Appendix 2: A Brief History of Congressional and Executive Branch Concern with Social Effects of Water Resources Development

Congress and the Executive Branch have long recognized the role of social factors in water resources plan formulation, evaluation, and decision-making processes. The Other Social Effects account (OSE) has appeared, in various forms and nomenclatures, in federal guidance for many years. What has varied, however, is the emphasis given to OSE.

### 1936

The **Flood Control Act of 1936 (33 U.S.C. 701a)**, the foundation of the Nation’s flood control policy, makes it clear that people’s well-being is a fundamental concern for the Federal Government’s involvement in flood control. The Act specified that the Federal government should get involved in improvements for flood control (currently flood risk management) “...if the benefits to whomsoever they may accrue are in excess of the estimated costs, **and if the lives and social security of people are otherwise adversely affected.**” Flood Control Act of 1936 Declaration of Policy Section 1: It is hereby recognized that destructive floods upon the rivers of the United States, upsetting orderly processes and causing loss of life and property, including the erosion of lands and impairing and obstructing navigation, highways, railroads, and other channels of commerce between the States, constitute a menace to national welfare; that it is the sense of Congress that flood control on navigational waters or their tributaries is a proper activity of the Federal Government in cooperation with States, their political subdivisions and localities thereof; that investigations and improvements of rivers and other waterways, including watersheds thereof, for flood-control purposes are in the interest of the general welfare; **that the Federal Government should improve or participate in the improvement of navigable waters or their tributaries including watersheds thereof, for flood-control purposes if the benefits to whomsoever they may accrue are in excess of the estimated costs, and if the lives and social security of people are otherwise adversely affected (emphasis added).**

### 1950

In 1950 the **Proposed Practices for Economic Analysis of River Basin Projects** was first published. This report, which became known as “**The Green Book**” due to its green cover, was revised in 1958. The Green Book states that the objective of economic analysis is “...to provide a guide for effective use of the required economic resources...” and the general objective of project formulation is “...to maximize net economic returns **and human satisfactions** from the economic resources used in the project.”

### 1962

In 1962, Congress published the **Policies, Standards, and Procedures in the Formulation, Evaluation and Review of Plans for Use and Development of Water and Related Land Resources**, which later became known as **Senate Document 97**. Senate Document 97 called for the “best use, or combination of uses, of water and related land resources to meet all foreseeable short or long-term needs,” with full

consideration given to Development (economic development and growth), Preservation (stewardship of the nation's natural bounty), and the Well-being of People. Senate Document 97 also called for "reasoned choices" to be made between Development, Preservation, and the Well-being of People when they conflicted. Well-being of People included the hardships experienced by and basic needs of particular groups, but development for the benefit of the few or the disadvantage of the many was to be avoided. This also allowed for saving lives to be considered along with reductions in property damage.

## 1970

Later, in the **Flood Control Act of 1970 (PL 91-611)**, Congress declared its intent concerning the importance of multiple objectives for water resources development. Section 209 of this Act states: *It is the intent of Congress that the objectives of enhancing regional economic development; the quality of the total environment, including its protection and improvement; the well-being of the people of the United States; and the national economic development are the objectives to be included in federally financed water resources projects, and in the evaluation of benefits and costs attributable thereto, giving due consideration to the most feasible alternative means of accomplishing these objectives.* In this Act Congress directed the Secretary of the Army to "promulgate guidelines designed to assure that possible adverse economic, **social**, and environmental effects relating to any proposed project have been fully considered...and that the final decisions on the project are made in the best overall public interest..."

## 1973

The Executive Branch, acting through the Water Resources Council, promulgated the **Principles and Standards for Planning Water and Related Land Resources** in 1973 (abbreviated as **P&S**). P&S had two objectives – **national economic development** (NED) and **environmental quality** (EQ). The social well-being, and regional economic development accounts were described as "Other Beneficial and Adverse Effects" and were to be displayed where appropriate.

## 1983

In 1983, the P&S were repealed by the Water Resources Council and replaced by the **Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies** (P&G). They were removed from the "Rules" section of the Federal Register and placed in the "Notices" section, thus becoming guidelines rather than rules for Federal agency planning (NRC 1999). Shortly thereafter the Water Resources Council was defunded by the Reagan Administration, and the responsibility for the P&G moved to OMB. P&G removed environmental quality as a federal objective, leaving national economic development as the sole Federal objective for water resources development, consistent with protecting the Nation's environment, pursuant to national environmental statutes, applicable executive orders, and other Federal planning requirements (P&G 1983)." The four-account structure from P&S remained in P&G; however, P&G noted that the NED account is the only required account for display. The Other Social Effects account (changed from the Social Well-Being account under P&S) was to display urban and community impacts and effects on life, health and safety. Since the P&G were adopted, OSE has been given limited attention in Corps water resource planning. The P&G require consideration of National Economic Development in the evaluation of alternative plans, but do not require consideration of Regional Economic Development, Environmental Quality, or OSE. Because OSE

was rarely considered in alternative plan evaluation and decision-making, planners devoted few resources to it.

A variety of expert panels has concluded that such single-minded focus on NED is inappropriate for contemporary water resources development needs:

- “Calculations of NED are meant to include all environmental and social benefits and costs for which monetary values can be obtained. The monetary focus on NED, however, does not give adequate consideration to unquantifiable environment and social values. Because of their nonmarket nature, environmental quality, ecosystem health, the existence of endangered species, and other social effects are not as easily quantified in monetary values. This limits formulation and acceptance of projects capable of striking a better balance between flood damage reduction or other water resources development and the environment.” (*Interagency Task Force on Flood Plain Management 1994*).
- “P&G...do not adequately reflect contemporary water resources planning principles and practices....Examples of specific revisions to the P&G which the committee recommends include: (1) movement away from the consideration of the National Economic Development (NED) account as the most important concern. Today, ecological and social considerations are often of great importance in project planning and should not necessarily be considered secondary to the maximization of economic benefits.” (*National Research Council 1999*).

## 1986

**Water Resources Development Act (WRDA) of 1986:** This landmark legislation fundamentally changed the water resources development “rules of the game” by instituting broad requirements for sharing the cost of water resources development between the federal government and cost-sharing project sponsors and also requiring cost sharing of feasibility studies between the federal government and local project sponsors. The intent of the legislation was to discipline the project development process by instituting “user pay” principles. While most reviewers of the impact of WRDA 86 conclude that cost sharing has had this intended effect, it has also been widely concluded that WRDA 86 has led to a drive find a cost share partner as quickly as possible and formulating a NED solution to water resources problems that is acceptable to the local sponsor:

- The scope of water resources problems and opportunities being considered by the Corps being more restricted to conform to the interest of the study cost-sharing partners (*National Research Council 2004b*); and
- The promotion of single-purpose projects, developed on a project-by project, piecemeal basis and the reduction of interest in broader-scale, integrated water resources management approaches with more comprehensive solutions at regional or basin scales (*National Research Council 2004a; National Research Council 1999*).

New guidance, such as **Engineer Circular (EC) 1105-2-409 Planning in a Collaborative Environment**, placed much greater emphasis on the importance of including a broad range of considerations in planning. In addition to National Economic Development (NED) factors, other considerations, including

social factors addressed in the OSE account, are to be used to develop appropriate water resources solutions:

b. In continuing to implement the policy of the 1936 Act, all Corps planning studies will evaluate, display and compare the full range of alternative plans' effects across all four Principles and Guidelines' accounts (National Economic Development (NED), Environmental Quality (EQ), Regional Economic Development (RED) and Other Social Effects (OSE)). Planning Reports will include a full discussion and display of the beneficial and adverse effects of each plan, and a comparison of costs and effects among plans as well as cumulative effects. The discussion and display will address each of the four accounts and will not be limited to any one account....

—EC 1105-2-409, Paragraph 7.b.

## 2007

The latest development in the continued evolution of water resources guidance has been in the form of guidance from Congress in **SEC. 2031** of the **Water Resources Development Act of 2007**, which calls on the Secretary of the Army to revise Principles and Guidelines to ensure that the following considerations are addressed:

“(3) CONSIDERATIONS — In developing revisions to the principles and guidelines under paragraph (2), the Secretary shall evaluate the consistency of the principles and guidelines with, and ensure that the principles and guidelines address, the following:

- (A) The use of best available economic principles and analytical techniques, including techniques in risk and uncertainty analysis.
- (B) The assessment and incorporation of public safety in the formulation of alternatives and recommended plans.
- (C) Assessment methods that reflect the value of projects for low-income communities and projects that use nonstructural approaches to water resources development and management.
- (D) The assessment and evaluation of the interaction of a project with other water resources projects and programs within a region or watershed.
- (E) The use of contemporary water resources paradigms, including integrated water resources management and adaptive management.
- (F) Evaluation methods that ensure that water resources projects are justified by public benefits.



# Institute for Water Resources

The Institute for Water Resources (IWR) is a U.S. Army Corps of Engineers (USACE) Field Operating Activity located within the Washington DC National Capital Region (NCR), in Alexandria, Virginia and with satellite centers in New Orleans, LA; Davis, CA; Denver, CO; and Pittsburg, PA. IWR was created in 1969 to analyze and anticipate changing water resources management conditions, and to develop planning methods and analytical tools to address economic, social, institutional, and environmental needs in water resources planning and policy. Since its inception, IWR has been a leader in the development of strategies and tools for planning and executing the USACE water resources planning and water management programs.

IWR strives to improve the performance of the USACE water resources program by examining water resources problems and offering practical solutions through a wide variety of technology transfer mechanisms. In addition to hosting and leading USACE participation in national forums, these include the production of white papers, reports, workshops, training courses, guidance and manuals of practice; the development of new planning, socio-economic, and risk-based decision-support methodologies, improved hydrologic engineering methods and software tools; and the management of national waterborne commerce statistics and other Civil Works information systems. IWR serves as the USACE expertise center for integrated water resources planning and management; hydrologic engineering; collaborative planning and environmental conflict resolution; and waterborne commerce data and marine transportation systems.

The Institute's Hydrologic Engineering Center (HEC), located in Davis, CA specializes in the development, documentation, training, and application of hydrologic engineering and hydrologic models. IWR's Navigation and Civil Works Decision Support Center (NDC) and its Waterborne Commerce Statistical Center (WCSC) in New Orleans, LA, is the Corps data collection organization for waterborne commerce, vessel characteristics, port facilities, dredging information, and information on navigation locks. IWR's Risk Management center is a center of expertise whose mission is to manage and assess risks for dams and levee systems across USACE, to support dam and levee safety activities throughout USACE, and to develop policies, methods, tools, and systems to enhance those activities.

Other enterprise centers at the Institute's NCR office include the International Center for Integrated Water Resources Management (ICIWaRM), under the auspices of UNESCO, which is a distributed, intergovernmental center established in partnership with various Universities and non-Government organizations; and the Conflict Resolution and Public Participation Center of Expertise, which includes a focus on both the processes associated with conflict resolution and the integration of public participation techniques with decision support and technical modeling. The Institute plays a prominent role within a number of the USACE technical Communities of Practice (CoP), including the Economics CoP.

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