

## Human Dimension Impacts of Oil Spills and Social Responsibility: Evolving Needs

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**ABSTRACT 300170:**

Beyond the traditional ecological impacts of oil spills, oil spills can also affect people; these are the human dimensions of oil spills. Under current institutional procedures in the US, little attention is given during preparedness and response to social issues and implementing actions to mitigate the human dimension impacts of oil spills. Social responsibility is increasingly being used as a measure of the overall performance of businesses and organizations. Previous work recognized that public and stakeholder reactions to, and perceptions about, an oil spill response can influence the overall success of response. However, improvements in recent years to achieve the “best response” focus increasingly on operational aspects of oil spills. Human dimensions, representing the non-operational aspects of oil spills, generally remain unaddressed in the US regulatory framework.

With the widespread use of social media, stakeholders and the global public are able to express their concerns and objections about oil spills; demand transparency and aggressive action during an incident to protect people and the environment, mitigate all impacts; and call to punish those responsible. Spills which are perceived as technological disasters are viewed as preventable by those in affected areas. Spill management teams (SMTs) in the US typically are comprised of the organization of responsible party (RP) and government responders, which is integrated in function but necessarily aligned in their respective priorities. The influence of politics and legal teams on SMTs represents both opportunities for and barriers to addressing human dimension concerns and impacts during response.

This paper discusses the evolving needs for the USCG and EPA, as agency leaders in the US National Response System (NRS), to adapt existing preparedness and response practices. This paper also explores potential opportunities to incorporate social responsibility into oil spill preparedness and response strategies as ways to mitigate human dimensions impacts going forward. Research has shown that community adaptation and resilience is: at least in part related to a community having access to knowledge and resources which are possessed by oil spill experts; that transfer of knowledge takes time; and that building connections between local communities and oil spill experts helps promote community adaptation and resilience. The author suggests that within the existing regulatory framework there is conceptual space to leverage trusted networks of existing relationships and enhance our ability to carry out preparedness and response activities consistent with social responsibility.

**INTRODUCTION:**

The media reports public expressions of concern about ecological impacts when oil spills occur. The public includes potentially millions of external stakeholders, i.e., those not involved in responding to spills, and they care about consequences of oil spills. These external stakeholders encompass citizens who live in the vicinity of a spill, elected officials, and the global public at large. The public learns about oil spills through the traditional media (such as

newspapers and television) but also through the internet and other emerging social media (Twitter, Instagram, etc.). Photographs of oiled wildlife and oiled shorelines convey at a glance the effects of marine pollution on the environment. As one experienced responder remarked, “Oil spills are very photogenic.”

Beyond environmental impacts, people are affected too. Human dimensions impacts are those that are not ecological (Webler et al., 2010). The human dimensions of spills include health, social, economic, use, and cultural impacts to a wide range of entities at multiple scales, including individuals, families, businesses, communities, institutions, and government. An oil spill may disrupt local fishing and tourism, thereby directly affect the livelihood and way of life individual fisherman, boat operators, hoteliers and restaurateurs. If enough businesses are impacted, oil spills can lead to community-wide impacts (Gill et al., 2011). Evidence of human dimensions impacts has been documented in peer-reviewed literature. The NOAA DWH bibliography (Belter, 2013), available at the Interagency Committee on Oil Pollution Research (ICOPR) website, contains 192 social science articles and 19 medical science articles, and a similar proportion of technical reports, in addition to 299 natural science journal articles.

The DWH oil spill was the dominant story in the mainstream news media in the 100-day period after the explosion. It finished among the top three weekly stories 14 times over 14 weeks. One clear theme seemed to permeate the social media commentary during the summer of 2010. It was the lack of confidence and trust in the capacity and intentions of both public and private institutions—including the federal government, BP and the mainstream media (Pew, 2010). In addition to oil recovery, control, and cleanup, responders were, and will continue to be, challenged to demonstrate that the best that can be done is in fact being done to protect environmental resources at risk. Public perceptions have a loud voice through social media.

The National Incident Commander for the DWH oil spill (Allen, 2010) observed: “Adapt, manage, or suffer... we all have to understand that there will never again be a major event ... that won’t involve public participation”. It follows that public participation in future oil spills ideally should have a purpose that benefits both the response and the public. Is social responsibility a driver for the preparedness and response decisions of those in leadership positions? Some might remark, “Satisfying the public is not the responsibility of oil spill responders”; their job is to manage the oil spill and mitigate its effects. Does it really matter if the public thinks a response has been carried out well, or if the response addresses their perceptions about risks and what’s important, or if we address socio-economic impacts sooner than later? And what about psychosocial impacts (which refers to the interrelationship of social context and psychological health and well-being)? Are these “real” and can we, should we, attempt to do anything to mitigate these consequences since they are beyond environmental protection? Resolving these questions could be accomplished by changes to public policy, such as modifying the scope of laws, regulations, and compensation regimes to include human dimensions. But changes in public policy are unlikely, considering that oil spills would have to compete as a priority with other current policy issues for the attention of federal and state law makers. This paper considers these questions as an evolving need for oil spill preparedness and response, which can be addressed through our existing regulatory framework.

**METHODS:**

This paper draws on the author's direct experience with human dimensions gained from response to several oil spills, including the *Exxon Valdez* (1989), the Transredes pipeline spill in Bolivia (2000), and the DWH oil spill (2010), and research on oil spill risk communication. Also, this paper has been informed by a literature review of compensation guidance, and research on sociological aspects of oil spills and disasters, risk communication, stakeholder engagement, oil spill regulations.

**DISCUSSION:**

This discussion of evolving needs to update and adapt the NRS is framed by: (1) considering how the current institutional framework is constrained in addressing human dimensions, (2) learning about the global trend toward social responsibility and from social science research about how human dimensions impacts occur and can be mitigated, and (3) considering the potential benefits of incorporating social responsibility into the NRS and improving our ability to achieve a "best response."

***Oil Spill Institutional Constraints on Human Dimensions***

The overarching rationale of the oil spill institutional framework in the US and elsewhere is protecting US waters from pollution, that is, environmental protection. The US national policy to prevent and mitigate environmental pollution in navigable waters, both coastal and inland, is executed through laws, regulations, and procedures. The Clean Water Act of 1972, and its revisions, which substantially amended the Federal Water Pollution Control Act of 1948, and the Oil Pollution Act of 1990 (OPA 90), comprise the keystone of US oil spill preparedness and response. The National Oil and Hazardous Substances Pollution Contingency Plan, generally referred to as the National Contingency Plan (NCP), contains the regulations that define authorities, responsibilities, organization and procedures to govern oil spill preparedness and response operations in the US. In 1994, following the passage of OPA 90, the NCP was revised (EPA, 1994) and new multi-agency guidance was issued on the Preparedness for Response Exercise Program (PREP) and oil spill response training. Oil spill preparedness activities that comply with the NCP and PREP often are collateral duties for federal and state government personnel with spill responsibilities. Oil spill activities are seldom a primary job function for agency personnel, but rather a responsibility that is activated on an as-needed basis. In this regard, oil spill preparedness activities compete for both attention and funding within each agency. This is also true for most personnel who represent the potential polluters, or Responsible Parties (RPs), as they are known under OPA 90. Some specialists have full-time assignments for oil spill preparedness and response, such as oil spill removal organizations (OSROs) and Special Teams under the NCP (section 300.145), e.g., Scientific Support Coordinators (SSCs), but their full time oil spill roles are the exception, not the rule.

OPA 90 created the Oil Spill Liability Trust Fund (OSLTF). It designated the US Coast Guard (USCG) National Pollution Fund Center (NPFC) to manage the OSLTF. Further, OPA 90 established limits of liability and compensation from oil pollution in two categories: removal costs and damages (Foley, 2010). There are three avenues for the OSLTF to pay for oil spill costs and damages: (1) Removal costs, which are the costs to prevent, minimize, or mitigate oil

pollution; (2) Natural Resource Damages (NDR); and (3) Claims for uncompensated damages or removal costs. Economic damages include: injury to natural resources, injury to real or personal property, loss of revenues on the use of natural resources or property, loss of profits or impairment of earning capacity, and the costs of providing additional public services during or after removal activities (33USC § 2702). The OSLTF can be used to pay for claims for: uncompensated removal costs; loss of profits or earning capacity; loss of Federal, State, or Local government revenues; costs to state or local governments for increased public services; loss of subsistence use of natural resources; damages to real or personal property; and natural resource damages.

Under OPA 90, the RP is liable for removal costs incurred by government entities and a private parties such as OSROs, or cleanup contractors. Removal costs and cleanup activities must be consistent with the NCP. The FOOSC, in consultation with federal and state agencies, determines the level of cleanup required and when federal response operations will terminate. Beyond compensation for removal costs, compensation for loss and damages are handled through both the claims process and third-party litigation against the RP, and potentially others.

The claims process is separate from the payment of removal costs which are authorized in the response decision making process. Claims are presented for uncompensated removal costs and damages; this implies a process which could be prolonged. The main criteria for approval of uncompensated removal claims is whether the Federal On-scene Coordinator (FOOSC) was notified of, and/or whether the FOOSC would have or did authorize, removal actions.

Of the array of human dimension impacts, compensation for economic and subsistence loss and damages can be considered through the claims process. The requirements of the claims process are problematic for the claimants if they can't produce documented proof of the damage and the basis for their compensation. Requiring documentation for claims is a rational, sound business practice which helps assure that public and private funds are expended for legitimate and appropriate costs, but the process has unfortunate side-effects. Documentation to show pre- and post-spill differences can be difficult to produce, the claims process is unclear, it can be modified for a spill as it was for DWH, and time delays to settle claims can lead to higher socio-economic, and additional human dimensions, impacts (Force et al., 2011),.

Legal considerations are barriers to addressing the full range of human dimension impacts during response. Claims for uncompensated damages cannot be submitted for personal injury, including loss of income solely from personal injury, punitive damages, pain and suffering, and legal costs (Buie, 2013). Therefore, some human dimension impacts, such as psychosocial impacts, are not eligible for compensation under the OSLTF, which means the recourse for compensation for those injuries is to file suit directly against the RP, pursued through litigation. Anyone can file a lawsuit and the RP is most likely to be the focus of plaintiff lawsuits. Understandably, the legal teams for both RPs and government decision makers advise their clients to avoid actions and statements that could compromise current or potential cases, give an advantage to plaintiff attorneys, or set a disadvantageous precedent in future litigations. Further, corporate law and shareholder primacy, a concept that means shareholder interests take priority over and above other corporate constituencies, is a key business driver for response decision making by private sector RPs (Cherry and Sneirson, 2010). These aspects of the US

legal system constitute a significant barrier to implementing actions during spill response which could mitigate human dimension impacts, especially psychosocial impacts.

Laws and compensation regimes represent boundaries that define and currently limit the scope of (1) activities that can be carried out during preparedness and response, (2) funds to pay for activities during preparedness and response, and (3) compensation for non-OSLTF covered costs and damages. The US institutional framework as currently practiced inhibits addressing many human dimensions impacts. Unless this framework is adapted, human dimension impacts will likely remain a gap and an unresolved problem.

### ***Social Responsibility and Disaster Research Insights***

Social responsibility is a form of self-regulation which is being integrated into businesses, government and other organizations to operate in a socially responsible way (ISO 26000). It is an ethical or ideological theory that an entity (government, corporation, organization or individual) has a responsibility to society. This means acting, or making decisions, in an ethical and transparent way that contributes to the health and welfare of society. Social responsibility calls for transparency. Citizens, media, academia, non-governmental organizations (NGOs), and some in government now talk about transparency. With regard to oil spills, social responsibility exceeds regulatory compliance; it is absent from explicit mention in preparedness and response doctrine perhaps because OPA 90 pre-dates the rise of social responsibility. Social media enables individuals to broadcast their dissatisfaction and to call for transparent decision making during oil spills. It might be prudent to adapt and incorporate concepts of social responsibility into preparedness and response going forward. If not, it seems likely that response organizations will receive criticism and low marks in public discourse.

People view significant oil spills as disasters. Disasters are complex, social, crisis situations which result in interrelated economic, social and psychological impacts on communities, organizations, families, and individuals. Researchers distinguish between natural (acts of God) and technological (human-caused) disasters. Floods, terrorism, and oil spills are considered disaster agents. Technological disasters result from human causes, such as terrorism or human errors; and they are considered preventable, unlike natural disasters. Disaster researchers argue that the effects of technological disasters differ from other types of hazardous events due to the uncertainty or ambiguity of harm which surrounds the event (Edelstein, 1988). Toxic contamination of the biophysical environment by significant oil spills has direct social consequences in that both ecological and sociocultural systems are challenged (Picou, 2009).

Obviously the *Exxon Valdez* and DWH oil spills were exceptionally large spills. They have been routinely characterized as technological disasters in the media and a wide variety of peer-reviewed journals. But smaller spills also may be considered disasters, especially by nearby communities. For example, a review of social science publications and media reports shows that the Selendang Ayu (Alaska, 2004; 340,000 gallons of bunker fuel), Cosco Busan (San Francisco, 2007; 58,020 gallons of heavy fuel oil), and Hebei-Spirit (Korea, 2007; 3,337,582 gallons of light crude oil) were considered as disasters with human dimension impacts (Gill and Ritchie, 2006; Cheong, 2012; Colten et al., 2010) on the communities in the vicinity of the spill.

Sociologists have found that communities dependent upon renewable resources, e.g., fishing villages, are especially vulnerable to the socio-economic, cultural, and psychosocial impacts caused by an oil spill. Natural disasters create what can be called a therapeutic community where activities are focused, intense and include governmental mandates for fostering a return of the community to pre-disaster state. As people pull together to place sand bags on dikes against floods, help neighbors with homes destroyed in hurricanes, individuals, families and communities bond for the good of the whole. Technological disasters, conversely, disrupt communities on multiple levels (PWS RCAC, 2004). They lead to a corrosive community characterized by unusually high levels of tension, conflict, ongoing litigation and chronic psychological stress. The most obvious and tangible disruptions occur when the flow of goods, routine services, and jobs are adversely impacted. Other often ignored, poorly defined and understood, intangible adverse impacts stem from stress around a technological disaster. Mental health impacts and chronic long-term psychological and physical impacts from oil spills have been documented in the literature (Belter, 2013). Building community resilience can help alleviate psychosocial impacts following natural and technological disasters (Picou, 2009).

The concept of resilience, both ecological and community has important implications for oil spill response. Oil spill scientists have evidence of environmental recovery and resilience (in habitat and organisms) following oil spills. Ecological recovery is dependent upon many variables ranging from type and volume of oil, to time of year, location, life stage and feeding behavior of organisms. Some parts of the environment can take a long time to recover, while other parts recover more quickly. For example, oil on exposed rocky shorelines is removed by high wave energy, and these areas recover faster than sheltered shorelines.

Community resilience refers to the capacity of people to cope with a serious event that impacts them but they did not cause, and is managed by outside entities like government, insurance, and experts. The social science literature provides insights into ways to promote and leverage community resilience which can mitigate human dimensions impacts. One aspect of resilience is self-sufficiency. Participating in solving problems rather than being helpless victims, e.g., waiting for government assistance or for claims to be paid or litigated, builds resilience.

Wilbanks (2008) defines resilient communities as those locales and regions that maintain four key elements: (1) the ability to anticipate disruptive events, (2) the capability to respond to them effectively, (3) the mechanisms to recover from them equitably and efficiently, and (4) the commitment to take steps to reduce vulnerabilities to future events. Local knowledge along with family and social networks has provided the inherent resilience necessary to contend with ecological damages in the past. Inherent resilience operates at a local level that is not readily revealed by economic measures used to gauge the impacts of and recovery from hazard events (Colten et al., 2012).

A key component of building community resilience is to raise community adaptive capacity, which requires the transfer of resources and knowledge from the response organization to the community (Cheong, 2012). This shifts the emphasis from strictly self-reliance and encourages collaboration with oil spill experts as a necessary component of adaptive resilience. The more oil spill responders work to build relationships with local communities and the more open both they and local communities are to learning about each other's knowledge and culture,

the easier it will be to effectively transfer resources and knowledge. Belief in the validity and trustworthiness of expert knowledge and government-disseminated information hinges upon appropriate knowledge transfer, which occurs over time. It is important to develop sustain and external linkages to familiarize the community with the external entities, like oil spill responders. Federal contingency planning since OPA 90 has expanded the contingency planning and compensation programs, but it has not succeeded in directly engaging with communities, or fostering the core components of inherent resilience. The intent of OPA 90 Area Planning was to engage at the local level. However the problems associated with sustaining effective engagement with all or even some of the communities has been enormously challenging for the assigned planning personnel at US Coast Guard Sectors and EPA Regions.

Other disaster researchers have studied resilience and emergency organizations following natural and technological disasters. Tierney (2009) lists potential resilience indicators for organizations and groups charged with responding to disasters. Resilience indicators of entities with responsibility for disaster management in a pre-disaster context include: shared understanding of hazards faced by communities, collaboration on hazard and vulnerability assessments, collective identification of gaps in capabilities, formation of horizontal and vertical coordinating bodies and MOUs to enable coordination, and addressing both interoperability among communications/information technologies and issues of “cultural interoperability” among diverse responding organizations. Resilience indicators of disaster management entities during disasters reflect shared situation assessments, information and collective sense-making (the process by which people give meaning to experience), ongoing interaction, network management strategies, having procedures to address new problems and incorporate emergent groups, and coordinating across diverse community networks, including the volunteer sector.

Disaster research literature also tells us that following major public emergencies, disasters and catastrophes, organizations evolve and new organizational structures emerge, especially in reaction to the impacts on the community and social consequences. Therefore, the response organization should be flexible enough to manage by feedback and allow the emergence of problem-solving ad hoc organizational elements. In the same article, Tierney observes that the response to natural disasters under the Stafford Act promotes horizontal collaboration but that the Incident Command System (ICS) and Unified command, the management system used for oil spill response under the NCP, has limitations. Since ICS is a hierarchical (vertical) command and control system, derived from years of use to manage wildfires, critics say that it has limited ability to mesh well with the ways in which many crisis-relevant organizations operate during disasters—that is, it has weakness in the area of “cultural interoperability” (Waugh and Tierney, 2007). ICS is inherently flexible and therefore its doctrine can be adapted to promote greater horizontal collaboration, providing that collaborative objectives are given priority along with the tactical/operational objectives to promote engaging with local stakeholders, e.g., affected communities, trusted sources and academia.

### ***Informing and Adapting Oil Spill Preparedness and Response***

Because social responsibility is increasingly used as a measure of the overall performance of businesses and organizations, adapting oil spill preparedness and response procedures to be more inclusive of human dimensions is worthy of consideration. Other measures of performance for oil spills have been previously identified: critical success factors (Harrald, 1994; Walker et

al., 1995) and “best response” (Kuchin and Hereth, 1999). Critical success factors (CSFs) are the set of things that must go right if an operation is to succeed; they are key areas of activity in which favorable results are absolutely necessary. After the *Exxon Valdez* oil spill, the following CSFs were identified based on the collective knowledge of over 100 experienced responders:

1. Minimize spillage and do not interfere with response operations while controlling the source.
2. The immediate response by industry and government must mobilize enough appropriate response resources (people and equipment) to contain most of the oil at /near the source to protect resources at risk.
3. The response organization must be capable of sustaining effective operations until the emergency and the threat(s) to human health and the environment have been resolved.
4. The response organization must be able to communicate and manage information internally and externally (the media and public).
5. Coordination between government and industry must be pre-planned, account for stakeholder interests and ensure a response organization that will be cohesive and effective.
6. The response organization must meet the public’s realistic and achievable expectations for response to the hazard.

Subsequently, two Coast Guard senior personnel developed measurements of success (Kuchin and Hereth, 1999) based on the CSFs to provide metrics which could guide responders toward conducting a “best response” for all oil spills. They also identified Key Business Drivers (KBDs) to underlie the best response model, as shown in **Table 1**. The best response model has become a part of the USCG doctrine for oil spill response. Human health and safety for the general public, including illness, is listed as a KBD and is sufficiently broad to encompass psychosocial impacts. Noteworthy also is the importance given to perception of the public, media and all stakeholders that the response is successful. In a sense, human dimensions have been somewhat “on the radar” as important for oil spill response to be successful. But procedures to move human dimensions from being on the radar to planned action are lacking.

Personnel from the NPFC, which administers the OSLTF, routinely provide instruction on oil spill funding to FOSCs and other senior federal and state and industry incident commanders who could one day be members of Unified Command. Included in one of the recent presentations was a slide relating KBDs to CSFs, evidence that these concepts continue to be relevant (Buie, 2013). With regard to human health and safety, one slide showed that “no spill related public injuries, illness, or death” remains a critical success factor.

During the DWH oil spill, the response organization defined “actionable oil” as oil that could be removed to prevent, minimize, or mitigate damage to the public health or welfare (OSAT, 2011). This definition emphasizes the removal of actionable oil but also identifies public welfare, not just human health, in the scope of response actions. It is a rationale for considering a broader class of impacts, such as human dimensions.

In the past, there has been no designated function or responsibility for public health, welfare, or human dimensions within the ICS-based incident management organization, perhaps due to the operational emphasis on oil removal and environmental protection. Addressing public



perceptions about risk has been the default responsibility of the Public Information Officer (PIO), who is responsible for external communications, e.g., the media. Crisis communications, i.e., how an organization handles critical situations that put an organization in peril, is one PIO responsibility. Alexander (2013) notes that crisis communications functions as a kind of screen leading our attention in a specific direction for the purpose of persuading people to believe one-way messages delivered through the media or communications campaigns. This persuasive function can compromise the credibility of Unified Command spokespersons. Those who have a stake in managing the response may not be viewed as objective, trustworthy sources of information about potential risks. Credibility can be enhanced through collaboration with those who are trusted sources to distribute through their networks, e.g., public health officials or physicians. Proposed changes to the USCG Incident Management Handbook define new ICS functions for 2-way stakeholder and risk communications for the Liaison Officer.

**TABLE 1: Key Business Drivers (KBDs) based on the best response model.**

<b>Operational Outcomes</b>	<ul style="list-style-type: none"> <li>• Human Health and Safety: Injury, illness and death to responders and the general public are minimized.</li> <li>• Natural Environment: Damage to the natural environment is minimized.</li> <li>• Economic Impact: Damage to property and the economy is minimized.</li> </ul>
<b>Customer Service Outcomes</b>	<ul style="list-style-type: none"> <li>• Public Communication: The public and the media perceive the response as successful.</li> <li>• Stakeholder Service and Support: All stakeholders perceive the response as successful.</li> </ul>
<b>Organizational Outcome</b>	<ul style="list-style-type: none"> <li>• The Response Organization: The response organization effectively and efficiently responds to the incident.</li> </ul>

Public health deserves special mention. Generally oil spills are not viewed as a public health issue since operational practice keeps the public away from the hazards. However, public perceptions regarding health risks from oil spills and dispersants have been reported in the media, reports, and journals (Belter 2013). The Agency for Toxic Substances and Diseases Registry (ATSDR) Regional Response Team (RRT) representative is a federal health resource seldom tapped by USCG FOSCs yet routinely supports EPA in Superfund in assessing health risk and assisting with community meetings. Public health risk perceptions could be actively managed during all oil spills, by asking the State OSC to request a health consultation from state and federal resources, like ATSDR. These health consultations have established funding sources, outside of the OSLTF.

The intersection of public health and environmental risk in oil spills is seafood safety; an issue which this author contends is an important loose end. Greiner et al. (2013) describes some

shortfalls in managing seafood safety and risk perceptions. Seafood safety is beyond the familiarity of FOSCs to manage proactively. Tighter organizational procedures should be explored going forward, such as developing an emergency fishery management annex for ACPs which could define a collaborative process for designing seafood sampling plans and data interpretation. This would increase credibility in the process, promote resilience in renewable resource communities, and also could help mitigate related economic and psychosocial impacts.

## CONCLUSIONS:

Stakeholder collaboration, learning about risk perceptions, community networks, and discovering ways to use volunteers are potential socially-responsible strategies to promote community resilience and recovery (Walker et al, 2013). A significant challenge is how to adapt the existing regulatory framework to at least consider human dimensions and demonstrate social responsibility, given that oil spill preparedness and response is driven by environmental compliance, is a collateral duty, and has limited funding to do what is required, let alone do more. FOSCs, responsible for leading Area Committees (ACs) and developing Area Contingency Plans (ACPs), and who also participate in RRTs, possess the discretionary authority to put human dimensions on the agenda for discussion.

Current contingency planning does little to reveal potential local (community and individual) impacts and fails to recognize or operate through the local networks that could more effectively enhance inherent resilience (Colten et al., 2012). Engaging new local stakeholders also could reveal innovative scenarios, and revitalize the PREP exercises which have become rather predictable over the last 20 years. Scenarios that have hurricanes as the cause of oil spills could foster learning about local communities and ways to integrate emergency response under the NRS and Stafford Act, and improve preparedness under both systems. FOSCs and their staff should explore possible ways to incorporate new local stakeholders into response, funded as removal costs by OSLTF, and include such plans in the ACPs. It should be possible to adapt preparedness and response systems and define a space to address human dimensions through stakeholder engagement, developing new trusted relationships, and leveraging existing community networks.

The CSFs and best response recognized the importance of human dimension aspects of oil spills, even if not explicitly using those words. Media and public perceptions of the response have been recognized as important to the success of a response for nearly 20 years. Human dimensions can adversely impact oil spill response going forward through public risk perceptions and social media communications (Pew, 2010). The response community is at a crossroads to: recognize the inevitability of public judgment, evolve to adapt the NRS and ICS, act proactively during response to limit the escalation of public concerns, and identify ways to mitigate human dimension impacts. Our ability to manage a successful response could further mature if we adapt to be more collaborative, per the indicators for organizational resilience (Tierney 2009). Such adaptations add value by setting more realistic expectations about oil spill response, could help close the anxiety gap consistent with meta-leadership principles (NPLI, 2010), and lead to improved public stakeholder satisfaction with response. If we avoid adapting, we likely will become passive recipients of the consequences of public dissatisfaction, which would spread

through traditional and social media, and undermine our ability to successfully respond. I'd like to believe that we can adapt and manage, and dodge the suffering alluded to by Thad Allen.

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