



Lesson Learned?

A look at the Gulf Coast's petroleum infrastructure after Hurricane Harvey.

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"When Hurricane Harvey cleared and the floodwaters receded, oil refiners found themselves floating on a sea of cash."¹

Hurricane Harvey presented a serious test of whether the Gulf Coast's petroleum infrastructure² had truly learned from past experience. Having been devastated by the 2005 hurricane duo of Katrina and Rita and a decade ago by the 2008 hurricane duo of Gustav and Ike, the industry invested heavily in improving its facilities' resilience to these types of formidable storms. Hurricane Harvey tested the adequacy of those efforts in a major way. The outcome of that test shows that significant strides were made and that those investments paid off. But more can be done, and strong legal and economic incentives exist to make additional improvements.

The 2008 hurricanes, following so closely on the heels of the 2005 hurricanes, provided a serious warning to the Gulf Coast's petroleum infrastructure that it likely needed to adapt to more frequent and more severe storms. Indeed, in 2009, the U.S. Department of Energy issued a report comparing the impact of the 2005 and 2008 hurricanes. The report showed that while those storms' effects varied widely due to storm track and severity, both sets of storms resulted in substantial disruption to refining and processing capacity that lasted several weeks after the hurricanes.³

Consequently, the industry recognized the need to improve its facilities' ability to weather these types of storms. For instance, the DOE in 2010 issued a report specifically addressing the industry's need to "harden" (i.e., physically improve a facility's infrastructure) and make its facilities more "resilient" (i.e., improve processes to allow a facility to recover more quickly). The report noted that many owners of petroleum infrastructure "had already invested significantly in hardening and resiliency measures."⁴

But when Hurricane Harvey pummeled the Gulf Coast in August 2017, those efforts and measures were seriously tested. Overall, the industry seems to have performed exceedingly well. As the lead quote of this article boasts, Gulf Coast refining came roaring back to life after Hurricane Harvey. As reported by Bloomberg, thanks to careful planning and preparation, "most plants escaped long-term damage and were back in action quickly enough to capture swelling margins created by fuel shortages."⁵

But Harvey also exposed flaws. For example, the Arkema plant in Crosby, Texas, burned for several days while floodwaters prevented access. Arkema acknowledged the fire's cause was related to loss of primary power after its backup generators were flooded. And with the total loss of power, the plant was unable to cool highly combustible compounds that led to a series of fires.⁶ While the Arkema plant was by far the most visible due to the graphic images of its fires, it was not the only casualty. Multiple plants reported environmental releases of chemicals resulting from tanks with floating roofs being inundated by rain.⁷ One plant reported leaking nearly 11,000 barrels of gasoline, a "small amount" of which went into the Houston Ship Channel and most into nearby waterways as a result of flood damage to its storage tanks.⁸

Nevertheless, while the total volume of spilled contaminants continues to be reported to authorities, it is evident that it will be orders of magnitude less than the roughly 190,000 barrels reported in the aftermath of Hurricane Katrina.⁹

So with those perspectives in mind, the benefit to industry to continue to find ways to “harden” plants against these types of storms is obvious. In our experience, companies have “hardened” their plants by constructing and/or improving retaining walls, dikes, and levees to prevent flooding and also to better contain any spills that may occur. Companies have also hardened facilities by elevating substations and control rooms so that they are less vulnerable to high water. In addition, enhanced information-technology infrastructure has been developed to allow remote access to information and control to critical functions. Further, some facilities have increased on-site storage capacity of both feedstock materials and product storage to aid in more rapidly restoring the facilities’ operating capacity after an event that disrupts the ordinary supply chain.

The benefits of reduced plant downtime and ability to capitalize on market fluctuations during this time cannot be overstated. Of course, another benefit to “hardening” is as a mitigation strategy to avoid potential environmental liabilities.

In this regard, environmental statutes are generally unforgiving, typically imposing strict liability for unauthorized releases or discharges. This strict liability can extend to both fines and penalties, as well as necessary response action. For example, the Texas Water Code requires owners and operators of any onshore facility to “immediately” take all reasonable actions to remove a spill from federal and state waters.¹⁰ Similarly, both the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, or CERCLA, commonly known as the Superfund, and the Texas Health and Safety Code impose broad cleanup liability for releases on the traditional four groups of responsible parties, including facility owners and operators,¹¹ albeit with the potential for apportionment.¹²

Defenses to liability are limited, but at first blush, would appear to offer some comfort. For example, both the Texas Water Code and CERCLA/Texas Health and Safety Code offer “act of God” defenses.¹³ But in reality, do these defenses really avail the regulated community much benefit?

Establishing the defense against a governmental enforcement action is always easier said than done. The transactional costs (legal and consulting fees, internal time, etc.) alone can make establishing an act of God defense a Sisyphean task, let alone establishing that the act of God was the sole cause. It is well documented that after hurricanes, like Katrina, the Environmental Protection Agency sought evidence from owners/operators seeking the defense that all reasonable steps were taken to secure facilities against storm impacts. Regardless of the defense’s applicability, there is no scenario where off-site impacts to a community could remain unaddressed. The effects of brand impairment, let alone the likelihood of multi-plaintiff common law claims would necessitate prompt action. In all events, other legal avenues and considerations require impacts to be promptly addressed. By way of

example, necessary facility response to ensure employee health and safety (e.g., decontamination and remediation) should be undertaken regardless of any act of God defense.¹⁴ Stated simply, there is scant act of God caselaw in the storm context for a reason—generally environmental impacts must ultimately be addressed.

Recognizing that environmental statutory defenses are of limited value, the question remains in what manner can the industry best protect itself from environmental liability associated with catastrophic storm events. Environmental liability related to storm impacts can arise in several contexts and includes: Fines and penalties from an authorized release; cleanup liability; statutory citizens suits; civil and criminal statutory environmental claims; tort claims by individuals in surrounding communities; and brand tarnishment, not to mention business interruption. The lessons of Harvey indicate that environmental liability can be mitigated when Gulf Coast facilities place increased focus on the impacts of inundation from heavy rain and storm surge. And to better mitigate liability, focus should extend not only to plant preparedness, but also community protection and effective warning systems. In all events, facilities should focus on maximizing facility access and minimizing power disruption. To address environmental impacts from these effects, prioritizing the following types of projects may warrant consideration as a means to mitigate environmental liability:

- Evaluation of surge conditions being placed on stormwater systems to mitigate backup and to address bottlenecks.
- Heightened engineered treatment at outfalls to mitigate material offsite contaminant releases.
- Improved and more expansive facility catwalks to allow for greater access and working above surge/inundation conditions.
- Improvements to retaining walls.
- Establishment of redundancy in control centers and additional focus on control center location above inundation zone.
- Updating facility disaster plans to adequately address plant and community risks, as well as personnel and community communication systems.

A review and implementation of facility specific infrastructure upgrades addressing storm-related issues, such as these, can mitigate environmental liability and also yield significant compliance benefits and claims’ defense. For example:

- Certain improvements could be structured to qualify as Supplemental Environmental Projects in an enforcement context.¹⁵
- Infrastructure improvements can help address EPA inquiries regarding whether all reasonable steps were taken to mitigate a release in the context of an act of God defense.
- Handling facility infrastructure in these ways could provide some evidence against potential negligence

claims at common law, where individuals or communities have been impacted by plant releases, emissions, or discharges.

In conclusion, the severe flooding and inundation caused by recent storms should lead the regulated community to heightened focus in plant preparedness and infrastructure hardening. **TBJ**

NOTES

1. Meenal Vamburkar, *Oil Refiners Shrug Off Harvey to Rake in Fat Post-Storm Profits*, Bloomberg (October 25, 2017), <https://www.bloomberg.com/news/articles/2017-10-25/oil-refiners-shrug-off-harvey-to-rake-in-fat-post-storm-profits>.
2. References to “petroleum infrastructure” or “industry” in this article are intended to encompass refineries, petrochemical plants, pipelines, and terminals.
3. *Comparing the Impacts of the 2005 and 2008 Hurricanes on U.S. Energy Infrastructure*, U.S. Department of Energy (February 2009).
4. *Hardening and Resiliency—U.S. Energy Industry Response to Recent Hurricane Seasons*, U.S. Department of Energy (August 2010).
5. See Vamburkar, *supra* note 1.
6. Frank Bajak, Reese Dunklin, and Emily Schmall, *Harvey Ignites a Second Fire and Explosion at Houston Chemical Plant*, Associated Press, September 2, 2017, available at <http://www.businessinsider.com/hurricane-harvey-2017-fires-at-houston-chemical-plant-2017-9>.
7. Erin Brodwin, *A new analysis suggests Hurricane Harvey caused 4.6 million pounds of chemicals to be released—but the risk is still unclear*, Business Insider (September 12, 2017), <http://www.businessinsider.com/oil-refineries-hit-harvey-releasing-chemicals-pollutants-2017-8>.
8. Jordan Blum, *Magellan gasoline leak is biggest known spill of Harvey aftermath*, Houston Chronicle (September 11, 2017), <https://www.chron.com/business/energy/article/Magellan-leak-spills-into-Houston-SHIP-Channel-12189833.php>.
9. Donald W. Davis, *The Aftermath of Hurricanes Katrina and Rita on South Louisiana*, (U.S. EPA Archive Document) <https://archive.epa.gov/emergencies/content/fss/web/pdf/davis.pdf>.

10. See Tex. Water Code § 26.266(a).
11. E.g., Comprehensive Environmental Response, Compensation, and Liability Act (“CERCLA”), 42 U.S.C. § 9607(a); Tex. Health & Safety Code § 361.271. The traditional CERCLA potential responsible parties include generally (i) current owners/operators; (ii) prior owners/operators at the time of disposal; (iii) arrangers; and (iv) transporters. E.g., CERCLA, 42 U.S.C. § 9607(a)(1)-(4).
12. E.g., Tex. Health & Safety Code § 361.276.
13. See, e.g., Tex. Water Code § 26.267(a); Tex. Health & Safety Code § 361.275(a)(1). CERCLA offers a similar defense. See CERCLA, 42 U.S.C. § 9607(b)(1). It is important to also recognize that “act of God” is not well defined and there is not a bulk of caselaw on which to rely for interpretation. CERCLA defines “act of God” generally as being a “grave natural disaster” of an “exceptional, and irresistible character.” The definition also makes clear that it is inapplicable if its effects could have been prevented by “due care.” See CERCLA, 42 U.S.C. § 9601(1). Texas, on the other hand, does not define “act of God.” Thus, the regulated community is left with a defense that is applicable to only a small subset of naturally caused damage and which is coupled with a pre-existing responsibility to address foreseeable conditions, further limiting its utility.
14. Further, reporting obligations are not subject to the act of God defense. Thus, while an act of God defense may appear to have some utility in a natural disaster scenario, it is clear that foreseeable events must be planned for and ultimately responsibility borne for damage caused by facility releases and discharges.
15. Both the Texas Commission on Environmental Quality, or TCEQ, and the Environmental Protection Agency, or EPA, and other state and local jurisdictions have programs that allow a regulated entity to offset penalties in an enforcement action by performing a supplemental environmental project, or SEP. An SEP is generally defined as an environmentally beneficial project, which the regulated entity is not legally required to perform, and which is undertaken in the context of an enforcement action. See, e.g., Cynthia Giles, *EPA Memorandum of March 10, 2015, Update to the 1998 U.S. EPA SEP Policy*, at 6 (March 10, 2015). Texas also expressly authorizes SEPs. Texas Water Code § 7.067. The TCEQ’s policy, however, affirmatively discourages “on-site” projects that benefit an alleged violator. See *TCEQ Guidance Document, Supplemental Environmental Projects*, October 2015, at 4. Of course, this is by policy, not by the rule of law. Arguably, certain “hardening” projects, such as heightening or improving retaining walls, clearly benefit the surrounding community, not just the regulated facility. The TCEQ acknowledges that exception to the policy may be made. *Id.*



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