



Hurricane Harvey Response 2017

AFTER ACTION REVIEW REPORT

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Texas Commission on Environmental Quality

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After Action Review

TCEQ Hurricane Harvey Response

1.0 Introduction

Organizational learning requires that agencies continuously assess their performance to identify and learn from successes and failures. The After Action Review (AAR) is an effective approach for capturing the knowledge gained from disaster response events. Conducting an AAR at the end of a large disaster response like Hurricane Harvey (Harvey) provides a valuable opportunity for capturing those lessons learned for what went well, so those actions can be applied forward. The AAR also allows us to identify those actions that did not go well, so they can be improved and not repeated in the future. Furthermore, sharing the results from an AAR can help staff responding to future disasters learn from our past successful strategies and avoid pitfalls we have already worked to overcome.

As improvement actions are identified and addressed, it is important that any relevant plans, policies and procedures are updated accordingly.

2.0 Hurricane Harvey Impact

Harvey made landfall on August 25, 2017 at 10:00 p.m. CT, as a Category 4 storm near Rockport, Texas and stalled over southeastern Texas. Due to its slow motion and a week-long period of onshore flow, more than 19 trillion gallons of rainwater fell on parts of Texas, causing catastrophic flooding. Some of the most devastating impacts from Harvey included:

- The highest storm surge was recorded at 12.5 feet located northeast of Corpus Christi, at the Aransas Wildlife Refuge;
- The highest total rainfall in U.S. history of 60.58 inches fell near Nederland, Texas due to Harvey in just a few days;
- Local, state and federal first responders rescued 122,331 people and 5,234 pets;
- Over 270,000 homes were impacted by Harvey with nearly 80,000 homes having at least 18 inches of floodwater, and 23,000 of those with more than 5 feet;
- 61 public-water systems and 40 wastewater-treatment facilities were rendered inoperable or even destroyed at the height of the storm. And more than 200 public-water systems had to issue boil-water notices because of problems caused by the storm; and,
- Large quantities of debris also accumulated due to the damage from extreme winds and widespread flooding that occurred during Harvey, which generated an estimated 15.9 million cubic yards of storm debris.

3.0 Hurricane Harvey Timeline

- Aug 25 (Friday) – Harvey makes landfall in the Rockport/Port Aransas area near Corpus Christi with 130 mph winds. The Category 4 hurricane left 250,000 people without power.
- Aug 26 (Saturday) – Harvey moves slowly inland towards Houston where it remained for four days (Houston area begins to receive heavy rain).
- Aug 27 (Sunday) – Harvey continues to meander inland (Houston area continues to receive heavy rainfall).
- Aug 28 (Monday) – Harvey moves back over the Gulf coastline (Houston experiencing catastrophic flooding).
- Aug 29 (Tuesday) – Harvey moves east over the Gulf coastline (Houston continues experiencing catastrophic flooding) Beaumont/Port Arthur area receives heavy rainfall. Harvey drops 26 inches of rain in 24 hours in Port Arthur.
- Aug 30 (Wednesday) – Harvey makes second landfall at Cameron, Louisiana (Beaumont/Port Arthur experience heavy rain and catastrophic flooding).
- Aug 31 (Thursday) – The National Hurricane Center stops tracking Harvey.

4.0 TCEQ Responsibilities under Texas Emergency Management Plan (EMP)

TCEQ is responsible not only for continuing its own business operations in emergency situations, but also providing strategic state assets to support state and local operations as well as assisting its regulated facilities in their efforts to continue to provide essential services to the public.

The State of Texas EMP lays out the responsibilities of TCEQ and each state agency in preparing for, responding to, and recovering from natural and/or manmade disasters and emergencies.

- Under the plan TCEQ is the primary agency responsible for Annex Q, Hazardous Materials and Oil Spill Response; and,
- Under the plan TCEQ is also a support agency for Annex K, Public Works and Engineering.

In the State Hurricane Annex, which is a supplement to the State EMP, the TCEQ is also assigned responsibilities that include:

- conducting rapid needs assessments in conjunction with Natural Disaster Operational Workgroup (NDOW) partners;
- coordinating and processing fuel waivers;
- assessing and providing technical infrastructure assistance to public water supply systems and wastewater systems;
- assessing dams;

- authorizing temporary debris management sites;
- supporting interoperable communications;
- providing a mobile command post to support Emergency Support Functions (ESF) #3 and #10 operations; and,
- coordinating hazmat and oil spill recovery operations.

5.0 TCEQ Hurricane Harvey Response Summary

The TCEQ conducted response activities related to the devastating impacts from Harvey. The TCEQ participated in a Unified Command Structure with both state and federal response partners. Due to the large area impacted by Harvey, three operational branches were created. The Unified Command and the Alpha Branch were located in Corpus Christi, Bravo Branch was established in Houston, and Charlie Branch was setup in Beaumont. At the height of TCEQ's hurricane response efforts, approximately 500 TCEQ staff were involved in post hurricane landfall response activities. The TCEQ hurricane response activities included:

5.1 State Operations Center (SOC) Staffing

As a member of the State Emergency Management Council the TCEQ was activated to serve at the SOC in Austin, where staff served 24/7 through duration of the hurricane and post hurricane response period.

TCEQ also worked closely with and coordinated with Texas Division of Emergency Management (TDEM) as well as participating in operations at the Federal Emergency Management Agency (FEMA) Joint Field Office.

5.2 Unified Command Established

In responding to the devastation created by Harvey the TCEQ looked to its relationship with other state and federal partners through the Region 6 NDOW. The NDOW partner agencies, the TCEQ, Environmental Protection Agency (EPA), Texas General Land Office and the US Coast Guard, entered immediately into a Unified Command to begin response and recovery operations including:

- Through NDOW's Unified Command structure over 50 field teams were deployed daily throughout three (3) operational branches: Alpha Branch in Corpus Christi, Bravo Branch in Houston, and Charlie Branch in Port Arthur;
- These three (3) operational branches were responsible for covering 58 impacted counties in Texas; and,
- The NDOW field teams conducted Hazard Evaluations, Oil Discharge Assessment and Recovery, Orphan Hazardous Materials Container Evaluation and Recovery, Drinking Water Infrastructure Assessments and Wastewater Infrastructure Assessments.

Because of the pre-planning and coordination among NDOW partner agencies the TCEQ had an ESF-10 Mission Assignment issued quickly by FEMA on August 28, 2017.

Through the early Mission Assignment, FEMA authorized TCEQ to receive over \$15 million in assistance from EPA. Because the Mission Assignment was issued so quickly, most of the FEMA assistance was covered under the 100% reimbursement period.

5.3 Public Water Supply (PWS) Assessments and Assistance

PWS Community Water Systems Tracking (58 Counties within the Governor's Disaster Declaration):

- 2,238 PWS community water systems that serve a population of approximately 11 million people were tracked;
- At the Peak, (between 8/31/17 and 9/4/17), 61 PWS community water systems were either offline or damaged, serving a population of 222,821 people.

TCEQ Assistance Teams staffed with Texas Optimization Program (TOP) staff and engineers, along with EPA staff, were sent to the impacted area to work directly with water system staff at their facilities to expedite the reestablishment of service to their customers. Staff worked 24 hour shifts to provide advanced technical assistance to get plants back online as quickly as possible.

5.4 Wastewater Treatment Plants (WWTP) Assessments and Assistance

WWTP Tracking (58 Counties within the Governor's Disaster Declaration):

- 1,743 Domestic and Industrial WWTPs that serve a population of approximately 10 million people were tracked;
- At the Peak, 40 WWTPs were either offline or damaged on 9/7/17, serving a population of 168,816 people;

Releases of wastewater from sanitary sewers occurred because of the historic flooding, and the agency actively worked to monitor facilities that reported spills.

Additionally, the agency conducted outreach and provided technical guidance to all other wastewater facilities in flood-impacted areas. Assistance teams worked directly with system operators to expedite getting systems back to operational status.

5.5 Debris Management

TCEQ has been approving (providing a temporary authorization) Temporary Debris Management Sites (TDMSs) to help expedite the removal of debris from communities affected by Harvey. Most of the TDMSs were approved within 24 hours or less, with TCEQ staff working seven days a week. These TDMSs are necessary for the debris staging, separation and volume reduction prior to final disposition. TCEQ staff are regularly inspecting these sites to ensure the sites are being managed properly, that appropriate fire protection measures are being addressed, and that the debris is being sent for proper disposal and/or recycling.

As of late March 2018, TCEQ Activities included:

- TCEQ regional offices continue to actively oversee and approve the siting of TDMSs in the affected areas;
 - As of late March, the TCEQ has expedited the approval of 225 TDMSs.
 - 25 of those approved TDMSs remain active.
- The TCEQ continues to visit TDMSs and landfills to ensure compliance with guidelines;
 - As of late March, the TCEQ has conducted 2,186 TDMS inspections.
- Working with the landfills to issue Temporary Authorizations (TAs) to help them handle the tremendous volume of storm debris that needs to be disposed. Those TAs included:
 - TCEQ granting TAs to 25 landfills and four (4) Transfer Stations in the impacted counties that requested to operate 24/7 to help expedite the processing and disposal of storm debris (TAs are granted for up to 180 days and TCEQ can extend them for an additional 180 days); and,
 - TCEQ granting TAs to three (3) landfills requesting to stage waste above their currently permitted height for up to 360 days in order to accommodate the excess storm debris. At some point prior to the expiration of the TAs, the waste must be permanently disposed of within the existing permitted space, or they will need to modify their permit to leave the waste in place above their current permitted vertical height.
- Teaming up with Texas Department of Transportation (TxDOT) to identify communities that were struggling with debris removal. TCEQ worked to identify those areas that needed assistance, and provided the necessary approvals for TDMSs and coordinated through the Disaster District Chairs, TDEM and the SOC. TxDOT provided the equipment and additional manpower for the debris work;
- The TCEQ and the EPA also released fact sheets in English, Spanish, and Vietnamese on best practices when dealing with debris in damaged or destroyed homes;
- Approving temporary Burn Authorizations for the burning of vegetative debris in Air-Curtain Incinerators; and,
- Providing “burn guidance” letters to local jurisdictions giving authorizations for burning vegetative materials to help reduce the amount of debris going into landfills.

5.6 Hazardous Materials

The TCEQ and EPA, working through NDOW and the Unified Command, conducted hazardous material response and assessment activities as well as Orphan Container Evaluation and Recovery.

The TCEQ and EPA Activities included:

- Conducting response to threatened or actual releases or discharges of hazardous materials:
 - 266 spills or discharges reported or observed and have been responded to appropriately; and,
 - Completing hazardous material spill response recovery and disposal operations.
- Conducting assessments to locate hazardous material orphan drums and containers displaced by the storm;
- Deploying emergency response contractors to characterize, remove and stage for disposal orphan drums and containers, and their contents;
- 1,155 hazmat orphan drums and containers have been recovered; and,
- Completing hazardous material orphan drum and container recovery and disposal operations.

5.7 Air Quality Monitoring

The TCEQ used every appropriate means of air monitoring available to support our mission to protect human health and the environment.

One of the many preparations for Harvey included the TCEQ, the EPA, and other monitoring entities temporarily shutting down several air monitoring stations from the greater Houston, Corpus Christi, and Beaumont areas to protect valuable equipment from storm damage.¹

After the storm passed, TCEQ staff and contractors began conducting damage assessments of monitoring stations and bringing monitors back online as soon as possible. Monitoring stations not damaged from Harvey were back to operational status in Corpus Christi, Houston, and Beaumont by September 2, 6, and 8, respectively.

By September 29, the stations damaged by Harvey were repaired or replaced and the TCEQ's air monitoring network was restored to 100% operational status.

In a coordinated effort to monitor storm-impacted areas, both TCEQ and EPA investigators spent numerous hours, both day and night, monitoring neighborhoods and

¹ In Section 4.5.1.2 of the TCEQ Continuity of Operations Plan (COOP), as required by Texas Labor Code § 412, there is a list of hurricane pre-landfall actions for securing capital physical assets including air monitoring equipment.

industrial fence lines with hand-held instruments, such as optical gas imaging cameras (OGIC), toxic vapor analyzers, summa canisters, and portable multi-gas monitors. The use of these tools allows for the most effective source identification for drifting volatile organic compound (VOC) plumes so that swift action can be taken to address the cause of these emissions.

Additional Harvey related air monitoring activities included:

- TCEQ conducting aerial surveys in the Houston and Beaumont areas using a helicopter equipped with an OGIC that can image VOCs and other hydrocarbons invisible to the eye;
- EPA's Airborne Spectral Photometric Environmental Collection Technology (ASPECT) aircraft conducted real-time sampling of potential emission targets over facilities impacted by Harvey;
- EPA's Trace Atmospheric Gas Analyzer (TAGA) mobile monitoring system conducted air quality analyses in neighborhoods surrounding facilities impacted by Harvey; and,
- Results from the available air monitoring data collected from August 24 through September 24, (i.e. continuous air monitors, hand-held instruments, ASPECT and TAGA) all measuring air toxics concentrations below levels of health concern.

5.8 Refinery Facility Status

TCEQ verified and reported on the operational status of refinery and petrochemical facilities:

- Of the 17 facilities being tracked along the Texas coast, all have returned to full operation status.

5.9 Superfund Site Assessments

The TCEQ partnered with the EPA to assess Superfund sites in Texas.

- State Superfund sites in the affected areas in Texas: 17
 - TCEQ completed assessments at all state Superfund sites in the affected areas;
 - Based on the assessment and sampling, all sites were cleared; and,
 - After the assessments a sheen was observed downgradient of the International Creosoting site in Brakes Bayou, which has been contained. TCEQ will continue to oversee these activities.
- Federal Superfund sites in the affected areas in Texas: 34
 - EPA completed site assessments at all 34 Superfund sites in the affected areas;
 - Based on the assessment and sampling, 33 were cleared; and,
 - The San Jacinto Waste Pits site (Site) required additional follow up.

- The Record of Decision for San Jacinto Waste Pits was signed on October 11, 2017, and the EPA’s selected remedy of removal of the contaminated material is described in that document.

5.10 Dam Safety Assessments

The TCEQ contacted 340 high and significant hazard dams in the impacted areas:

- Of those, 20 dams reported sustaining varying degrees of damage from Hurricane Harvey:
 - Nine (9) of those dams were high or significant hazard non-exempt dams;
 - 11 of those dams were significant hazard exempt dams (All of them are exempt from TCEQ regulations); and,
- There were no reports of downstream damage or loss of life.

5.11 Outreach to Local Officials

TCEQ staff reached out to County Emergency Management Coordinators, County Judges, and Mayors to offer assistance and guidance with hurricane and flood related activities including:

- Authorizations for TDMSs;
- Burn guidance; and,
- Animal carcass issues.

TCEQ conducted outreach directly to public drinking water facilities and wastewater facilities to offer technical assistance and guidance to operators.

5.12 Information Dissemination

A vast amount of regulatory guidance, support material, and useful information is on the TCEQ’s Hurricane Harvey Response link² available on our main web page.³

TCEQ also distributed a Flyer titled “Resources for Texas Residents in the Aftermath of Hurricane Harvey” to assist impacted residents.

6.0 After Action Review

On November 17, 2017, an AAR was conducted to discuss TCEQ’s response to Harvey. Prior to the meeting staff were asked to provide comments about the response that would be discussed during the AAR. The topics discussed during the AAR are listed on the next page:

² <https://www.tceq.texas.gov/home-page/response/hurricanes>

³ <https://www.tceq.texas.gov>

What went well?	Why?
<p>The Disaster Response Strike Team (DRST) members integrated well, it did not matter what region or discipline they were from.</p>	<ul style="list-style-type: none"> • Continued training helped DRST staff fill required Incident Command System (ICS) rolls as needed. • Continued training on Response Manager ensured that most DRST staff were familiar with the program.
<p>Staff from numerous regions, offices and agencies worked together to accomplish the final goal.</p>	<ul style="list-style-type: none"> • Continued participation in the NDOW ensures that TCEQ works well with both state and federal response partners. • Pre-disaster internal communications were good and ensured everyone was up to date on the current situation. • The EPA provided a staff member designated to assisting the TCEQ in obtaining federal assets and support. • Assistance from the Military Civil Support Teams and the Texas State Guard Engineering Unit was very helpful. • Having a water/wastewater and waste/debris liaison increased efficiency. • Having the TCEQ Assistance Teams staffed with Texas Optimization Program (TOP) staff and engineers, who worked directly with the water system staff at their facilities to expedite the reestablishment of service to their customers was extremely helpful. Staff worked 24 hour shifts to provide advanced technical assistance to get plants back online as quickly as possible. • The ability of IRD to provide staff and support for the duration of the response ensured all computer systems

	<p>were maintained and operational at all times.</p> <ul style="list-style-type: none"> • Executive Management participation in all conference calls and meetings was very helpful.
Posting Harvey information resources online was very helpful.	<ul style="list-style-type: none"> • Providing disaster related information on the public website allowed staff to refer the public, regulated entities, local government officials and media, to a specific location for information. • The ShareNet Office webpages contained useful information for staff responding to Harvey.
The support provided to the impacted Regional Offices was very helpful.	<ul style="list-style-type: none"> • Immediate authorization to implement Regional Hurricane Plans expedited the response process. • OCE support with media inquiries helped to relieve some of the duties from the regions. • Support from other regions, i.e. transferring affected region's phone lines, responding to affected region's complaints and other routine business, helped insure continuity of operations.

What can be improved?	How?
<p>Disaster Documentation:</p> <ul style="list-style-type: none"> • Emails for timekeeping were confusing. • The timekeeping process is confusing and time consuming. • The daily 0900 cost tracking deadline is hard to comply with. • Staff need more training on properly completing the ICS 214b. 	<ul style="list-style-type: none"> • Develop or assign a workgroup to revise/update the TCEQ cost tracking documentation procedures. • Training on the completion of 214s is included in the NDOW Response Manager trainings. The training has been revised by the United States Coast Guard.

<p>Response Manager:</p> <ul style="list-style-type: none"> • Several procedural and software issues have been identified, mostly related to the water and wastewater module. 	<ul style="list-style-type: none"> • A workgroup to address Response Manager issues has been created. The workgroup will work to revise/update the system's Operating Procedures and fix issues within the software. The first workgroup meeting was held 2/6/18. • Continue with Response Manager trainings. Include all TCEQ offices in the trainings.
<p>Debris Management Procedures:</p> <ul style="list-style-type: none"> • The debris management procedures for review/approval of TDMS locations needs to be updated. 	<ul style="list-style-type: none"> • Develop a workgroup to revise/update the TCEQ Debris Management Plan, including guidance for conducting approval reviews for TDMS locations and periodic inspections. • Work with local government officials to pre-identify TDMS locations prior to actual disasters.
<p>Handling of Public Information Requests (PIRs):</p> <ul style="list-style-type: none"> • Staff were overwhelmed by PIRs. • Lack of TCEQ Public Information Officer (PIO) in the branches hampered consistency in responses. • Requests for the same information from multiple people caused a drain on resources. 	<ul style="list-style-type: none"> • A TCEQ PIO at each branch would help streamline responses to PIRs. • Participation of TCEQ PIOs in the Unified Command would ensure accurate responses to PIRs and ensure consistency in responses by the various response partners operating in the Unified Command. • A clearing house for PIRs would help streamline the PIR response process. • PIOs in the field could help document response operations which could then be used to inform the public of TCEQ positive actions.
<p>Discretion and Waiver Guidance:</p> <ul style="list-style-type: none"> • Additional guidance to regional staff on discretion and waiver issues would be helpful. 	<ul style="list-style-type: none"> • Conduct daily calls for staff fielding questions regarding waivers, to help work through issues and provide consistency application of the guidance.

<ul style="list-style-type: none"> An email box dedicated to questions from the regulated community would have been helpful. 	<ul style="list-style-type: none"> Setup a dedicated email box for disaster related questions from the regulated community.
<p>Staffing:</p> <ul style="list-style-type: none"> Develop additional trained staff to backfill TCEQ Command Staff positions. Develop additional trained staff to backfill TCEQ Safety Officers. 	<ul style="list-style-type: none"> Develop a Central Office DRST that can back fill Command Staff positions, as needed. Provide more training for Safety Officers through the NDOW or TDEM.

7.0 Improvement Actions

The following AAR improvement actions were identified:

7.1 Disaster Documentation

- Develop or assign a workgroup to revise/update the TCEQ cost tracking documentation procedures.

[Assigned to OCE/CID/EMST]

- Provide additional training on completion of ICS forms, including the 214b.

[Assigned to OCE/CID/EMST]

7.2 Response Manager

- Develop or assign a workgroup to address Response Manager issues and revise/update the system's Operating Procedures.

[Assigned to OCE and OW - A Response Manager Workgroup has been formed. The first workgroup meeting was held 2/6/18]

- Continue with Response Manager training. Include all TCEQ Offices in the trainings.

[Assigned to OCE/CID/EMST]

7.3 Debris Management

- Develop a workgroup to revise/update the TCEQ Debris Management Plan, including guidance for conducting approval reviews for Temporary Debris Management Site (TDMS) locations and periodic inspections.

[Assigned to OCE and OOW]

- Work with local government officials to pre-identify TDMS locations prior to actual disasters.

[Assigned to OCE/Regions, OOW and ED/EAD]

7.4 Public Information Requests (PIRs)

- a. Participation of TCEQ PIOs in the Unified Command would ensure accurate responses to PIRs and ensure consistency in responses by the various response partners operating in the Unified Command.

[Assigned to ED/ACD]

7.5 Discretion and Waiver Guidance

- a. Conduct daily calls for staff fielding questions regarding waivers, to help work through issues and provide consistency application of the guidance.

[Assigned to OCE, OA, OW and OOW]

- b. Set up a dedicated email box for disaster related questions from the regulated community.

[Assigned to OCE]

7.6 Staffing

- a. Develop a Central Office DRST that can back fill Command Staff positions, as needed.

[Assigned to OCE/CID/EMST]

- b. Provide more training for Safety Officers through the NDOW or TDEM.

[Assigned to OCE/CID/EMST]

8.0 Past Lessons Learned Applied Forward

During the May 2015 floods in Texas many local governments did not obtain TCEQ authorizations for their TDMS locations, which resulted in the initial denial of cost recovery claims from FEMA. One of the extenuating circumstances that may have contributed to this issue was that the Presidential Disaster Declaration was issued very late. Many local governments had already conducted debris removal operations thinking federal reimbursement was not possible, and therefore did not seek site authorizations from TCEQ. Ultimately, the TCEQ worked with FEMA to provide authorizations for many of the sites after the event, helping the local governments receive their FEMA Reimbursements.

To address this issue, TCEQ, TDEM and FEMA conducted outreach throughout the state over the past two years through various trainings, workshops, and conferences.

Other lessons learned applied forward include those from Hurricane Ike in 2008:

- The NDOW is a product of lessons learned from Hurricane Ike. NDOW was created in 2009 to improve coordination between state and federal agencies operating under ESFs #3 (Public Works and Engineering) and #10 (Oil and Hazardous Materials Response).
- To add depth to the agency's sustained response capabilities the TCEQ developed 16 DRSTs, one in each of the agency's 16 regions, which form the basis of the agency's

disaster response and provide support for local jurisdictions to address emergency and disaster situations. These DRSTs included:

- Over 130 DRST staff members;
 - Staff trained in the National Incident Management System (NIMS) and the Incident Command System (ICS) (ICS-100, 200, 300, 400, 700, 800 certificates) and other disaster-response protocols; and,
 - Teams comprised of regional staff from various disciplines (air, waste, water).
- Development of a TCEQ Hurricane Plan and Debris Management Plan.

Legend of Acronyms

AAR	After Action Review
ACD	Agency Communications Division
ASPECT	Airborne Spectral Photometric Environmental Collection Technology
CID	Critical Infrastructure Division
COOP	Continuity of Operations Plan
DRST	Disaster Response Strike Team
EAD	Environmental Assistance Division
ED	Executive Director
EPA	Environmental Protection Agency
EMP	Emergency Management Plan
EMST	Emergency Management Support Team
ESF	Emergency Support Function
FEMA	Federal Emergency Management Administration
ICS	Incident Command System
IRD	Information Resources Division
NDOW	Natural Disaster Operational Workgroup
NIMS	National Incident Command System
OA	Office of Air
OCE	Office of Compliance and Enforcement
OGIC	Optical Gas Imaging Camera
OOW	Office of Waste
OW	Office of Water
PIO	Public Information Officer
PIR	Public Information Request
PWS	Public Water System
SOC	State Operations Center
TA	Temporary Authorization
TAGA	Trace Atmospheric Gas Analyzer
TCEQ	Texas Commission on Environmental Quality
TDEM	Texas Division of Emergency Management
TDMS	Temporary Debris Management Site
TGLO	Texas General Land Office
TOP	Texas Optimization Program
TxDOT	Texas Department of Transportation
USCG	United States Coast Guard
VOC	Volatile Organic Compound
WWTP	Wastewater Treatment Plant