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GOVERNOR

State of Louisiana
DEPARTMENT OF NATURAL RESOURCES
OFFICE OF CONSERVATION

STEPHEN CHUSTZ
INTERIM SECRETARY
JAMES H. WELSH
COMMISSIONER OF CONSERVATION

**THIRD AMENDMENT TO DECLARATION OF EMERGENCY
AND DIRECTIVE**

Pursuant to the authority granted to the Commissioner of Conservation and Assistant Secretary of the Louisiana Department of Natural Resources under La. R.S. 30:1, et seq., particularly La. R.S. 30:6.1, the amendment to the declaration of emergency and directive issued on October 11, 2012 is hereby revised, reissued, and replaced by this emergency declaration which corrects typographical errors, provides additional clarification and is effective October 11, 2012;

It is hereby declared that since issuance of the Second Amendment to Declarations of Emergency issued September 25, 2012 to Texas Brine Company LLC (T149) concerning subsidence that has occurred immediately adjacent to OXY GEISMAR NO. 3 well site (Serial Number 180708), the associated salt cavern, and the OXY GEISMAR NO. 3A observation well (Serial Number 974265), the following evidence has been found:

- 1) It has been determined that the cavern associated with the OXY GEISMAR NO. 3 well (SN 180708) suffered a side breach and a collapse of the side wall and not a collapse from its top. The sonar survey after the breach and reentry through the OXY GEISMAR NO. 3A well (Serial Number 974265) shows that the upper part of the cavern is intact with similar structure as the 2007 sonar survey. The bottom of Texas Brine OXY GEISMAR NO. 3 cavern is filled with approximately 3.3 million cubic yards of material. Approximately 700,000 cubic yards of brine and above the top of the fill material in the cavern.
- 2) Based on the proximity of the OXY GEISMAR NO. 3 cavern to the edge of the salt and the location of the sinkhole, the movement of 3.3 million cubic yards of material from outside the cavern into the cavern likely followed the edge of the salt from the cavern to the surface. This resulted in the observed sinkhole.
- 3) The volume of the sinkhole based Texas Brine Company LLC's survey of October 10, 2012 is 550,000 cubic yards.
- 4) The stability of the collapse zone from the cavern to the sinkhole is currently unknown, but based on additional collapse of the edges of the sinkhole during initial flaring operations of the OXY GEISMAR NO. 3A re-entry well, it has to be assumed that the collapse zone is currently unstable.
- 5) The following has been determined concerning the nature of fluid produced from the OXY GEISMAR NO. 3 cavern, the sinkhole, and some of the bubble sites in the vicinity of the cavern:
 - a. The gas has all of the characteristics of natural gas;

- b. Based on chromatograms, the hydrocarbon fluid appears to be crude oil. This is consistent with opinions expressed by Texas Brine Company LLC on information they received from oil recycling companies;
 - c. The hydrocarbon liquid sampled from the surface of the sinkhole has the same characteristics as the hydrocarbon liquid from the cavern, with the exception that the light-end hydrocarbons are not present. This is typical of crude oil that is exposed to the surface environment. The light-end hydrocarbons volatilize and are degraded by bacteria. Analysis from the hydrocarbon liquid from the sinkhole indicates that it is weathered crude oil.
- 6) The following is found concerning the source of gas being observed at bubble sites in the area:
- a. Based on isotopic signatures and other data the following have been eliminated as probable sources for the gas:
 - i. Chevron natural gas cavern;
 - ii. Acadian natural gas cavern;
 - iii. Crosstex butane caverns; and
 - iv. Residual gas from 2003 Gulf South blowout.
 - b. There is one remaining probable source of the gas:

Natural gas from the oil and gas production zones that are at the same elevation as the OXY GEISMAR NO. 3 cavern. These include the Big Hum, Marg A, Cris R, and Marg Vag production zones. These zones are known as past or current oil and gas producers.
 - c. Based on current data, it is likely that the crude oil and gas being observed in the cavern and at the surface is coming from one or more of the above described production zones. The preponderance of data collected and analyzed regarding the ongoing recent events in the area indicate that the failure of the Texas Brine Company LLC cavern provided an upward path of migration for crude oil and natural gas previously confined to a naturally occurring formation or formations, allowing accumulation of natural gas in the alluvial aquifer and causing the observed natural gas bubbling sites.
- 7) There has been approximately ten (10) feet of natural gas accumulation found in the aquifer in the vicinity of the Texas Brine Company LLC (T149) core-hole. Approximately five (5) feet of natural gas accumulation has also been detected northwest of the OXY GEISMAR NO. 3 facility and sinkhole, which is toward the locally determined top of aquifer. Natural gas accumulation has not yet been observed in other areas of the aquifer above the Napoleonville Salt Dome.
- 8) Based upon the assumed instability of the collapse zone and the likely connection between the OXY GEISMAR NO. 3 cavern breach and the movement of natural gas into the groundwater aquifer, additional crude oil or natural gas migration is possible.

Therefore, based upon the evidence described herein, it is determined that the requirements for declaring an Emergency pursuant to La. R.S. 30:6.1 have been met and **an emergency is declared to exist** due to those incidents which have occurred, are occurring, or threaten to occur imminently at the OXY GEISMAR NO. 3 well (Serial Number 180708) and its associated cavern.

It is hereby declared that in response to the emergency subsidence incident and gas migration events covered herein and by the emergency declaration and amended emergency declarations dated August 3, 2012, August 9, 2012, and September 25, 2012 respectively, Texas Brine Company LLC (T149) shall be required to undertake any and all necessary actions to assess for and abate threats to safety and the environment, including the abatement of natural gas accumulation in the aquifer.

It is further declared that Texas Brine Company LLC (T149) is specifically directed and is hereby **ordered** to perform all of the following within the deadlines stated below:

- 1) Immediately and continuously maintain stability of OXY GEISMAR NO. 3 cavern pressure to prevent additional changes in the cavern and sinkhole. Any work activities involving reentry of the OXY GEISMAR NO. 3A well or cavern shall require at least 24 hour advanced notification to DNR-Office of Conservation ("Conservation"), unless there is an imminent emergency situation requiring immediate reentry, in which case Conservation shall be notified as soon as practical.
- 2) Install and monitor additional direct push wells, such as Geoprobe wells, to monitor water quality and pressures in the Bayou Corne community. Install and monitor permanent elevation benchmarks at each direct-push well location by a professional licensed surveyor. On or before Tuesday, October 16, 2012, provide Conservation with a plan for direct-push well installation, ongoing monitoring / maintenance, evaluation, reporting and closure / plugging and abandonment.
- 3) Install a continuous pressure monitor on the OXY GEISMAR NO. 3 A well head to monitor pressure and also provide for telemetry monitoring of this pressure. This telemetry shall be reported in real time to the Assumption Parish Office of Emergency Preparedness, the Assumption Parish Sheriff's Office and Office of Conservation to notify them if any rapid pressure changes that indicate changing conditions in the cavern occur. On or before Tuesday, October 16, 2012, provide Conservation with a plan to implement this pressure monitoring and notification system.
- 4) Upgrade the current seismic array to allow for real-time data processing and interpretation of micro-seismic data. The current array should be expanded as necessary to assess current stability of the collapse zone. The seismic data shall be reported in real time to the Assumption Parish Office of Emergency Preparedness, the Assumption Parish Sheriff's Office, and Office of Conservation to notify them if sudden changes in the cavern or surrounding the sinkhole occur. On or before Thursday, October 25, 2012, provide Conservation with a plan to implement this seismic monitoring and notification system.
- 5) Install a permanent continuous water level monitoring station near the edge of the sinkhole. This station shall include a sensor and recording system for monitoring and recording the water levels and a staff gage for visual observation of water level elevation or depth. The data from this station shall be downloaded weekly and forwarded to Conservation on a weekly basis. On or before Friday, October 19, 2012 provide Conservation with a plan to implement the above described permanent continuous water level monitoring and reporting.

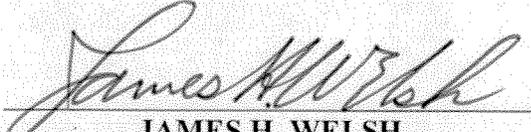
- 6) Geophysical data shall be collected and interpreted to determine the nature and extent of the collapse structure from the base of the original cavern to the ground surface. This geophysical data may include, but is not limited to vertical seismic profiling, cross-hole seismic and tomography, and 3D seismic. On or before Tuesday, November 13, 2012, provide Conservation with a plan to collect, interpret and report this geophysical data.
- 7) Cease water production from the Oxy #3 water well and begin use of this well for periodic water level determination and water quality sample and testing. On or before Friday, October 19, 2012, provide Conservation a plan to evaluate alluvial aquifer water production, groundwater flow, sinkhole chlorides, TDS and hydrocarbon migration and to mitigate adverse impacts to aquifer sustainability from use of Texas Brine Company LLC's water wells.
- 8) By no later than Thursday, October 25, 2012, begin installing the groundwater observation/vent well in the vicinity of the Texas Brine core-hole where the ten feet of gas in the aquifer was observed.

It is further declared that, consistent with La. R.S. 30:6.1.B, if Texas Brine Company LLC (T149) fails to begin the actions listed above within the deadlines set forth, orders demanding compliance and civil penalties may be issued to Texas Brine Company LLC (T149) R.S. 30:1, et seq.

It is further declared that for purposes of this Declaration of Emergency and Directive the required plans and the data described in Order and Directive #6 above shall be submitted to the Office of Conservation via e-mail at conservationorder@la.gov. Additionally, the 24-hour prior notification required by Order and Directive #1 above shall be submitted both by e-mail at conservationorder@la.gov and by phone at 225-342-5515. Please reference "Emergency Declaration – Texas Brine Company LLC – 10/11/2012" on any and all related correspondence.

Texas Brine Company LLC's (T149) failure to request a hearing or to file an appeal or the withdrawal of a request for hearing on this Emergency Declaration and Directive shall not preclude Texas Brine Company LLC (T149) from contesting the findings of facts in any subsequent administrative or judicial proceeding or action.

SO DECLARED, ORDERED, AND DONE this 16th day of October 2012 at Baton Rouge, Louisiana.



JAMES H. WELSH
COMMISSIONER OF CONSERVATION