TECHNICAL SUMMARY REPORT: SULPHUR MINES SALT DOME CAVERN NO. 006 & NO. 007 WESTLAKE US 2, LLC

Author: Lonquist Field Service, LLC (LA Firm License No. EF5853)

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Executive Summary

Lonquist Field Service, LLC ("LFS") was contracted by Westlake US 2, LLC ("Westlake") to develop this technical summary report. The purpose of this report is to provide a high-level overview of historical events, historical monitoring/evaluation/actions, ongoing monitoring/evaluation/actions, and to present certain conditions that could avoid more severe theoretical failure scenarios from occurring. LFS and Westlake have jointly contracted additional subject matter experts and services to support the efforts, data, and results discussed in this report.

An acute pressure loss event was observed on Cavern No. 007 at the Sulphur Mines Salt Dome on December 29, 2021. Subsequently the Cavern pressure appeared to stabilize until late 2022 when it became definitively apparent that the pressure began to decline again. In response to Cavern No. 007 pressure fluctuations, the proximal Cavern No. 006 pressure is impacted, however, observed as a lesser magnitude. A twenty-four hour per day brine injection operation into Cavern No. 007 has been under way since late 2022 to maintain cavern pressure. Currently, brine is being injected into Cavern No. 007 via the PPG No. 007B wellbore at a rate of approximately 315 gallons per minute to maintain a surface brine pressure of approximately 70 psi. Operational data indicates that if brine injection were to cease the surface pressure would continue to decline to a magnitude below 0 psi within a period of approximately 6 hours. It is currently theorized that if the cavern pressure was not artificially maintained via brine injection, that the cavern pressure would fall to an undesirably low magnitude. A low cavern pressure could implicate the structural integrity of the salt and salt cavern, leading to a collapse of the surrounding salt structure into the cavern void space, and furthermore resulting in adjacent stratified formations to the dome collapsing, possibly resulting in a surface expression or "sinkhole".

There are various monitoring processes that have been and are currently implemented at the site, namely:

1. Surface and Downhole Pressure Monitoring of Cavern No. 007
2. Surface Pressure Monitoring of Accessible Caverns
3. Surface Seismic Monitoring Arrays
4. InSAR Surface Subsidence Monitoring
5. Periodic Cavern Sonar Surveying
6. Surface Observations & Reporting
7. Gas/Fluid Sampling & Lab Analysis

There are also various evaluation efforts that have been completed and/or are underway, namely:

1. Detailed Geologic Review Including Ongoing 3D Seismic Interpretation

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2. Geospatial Analysis of Geologic Features, Salt Caverns, and Other Wellbores
3. Geomechanics Modeling to Investigate Cavern and Salt Structural Stability
4. Investigatory Logging and Research of Adjacent Oil and Gas Wells

These monitoring and evaluation efforts yield the following critical findings at this time:

1. The current understanding based upon geomechanics modeling is that cautious preservation of the cavern and salt structural stability requires maintaining cavern pressure at or near the current cavern pressure of Cavern No. 007 and No. 006.
    a. The continuous brine injection operation into Cavern No. 007 is maintaining the cavern pressure and is being controlled by Westlake via two dedicated, diesel-powered injection pumps.
    b. Westlake's brine source is their active solution mining caverns at the Sulphur Mines Salt Dome (PPG No. 018, PPG No. 021, and PPG No. 022). These wells undergo periodic maintenance/testing/inspections which requires them to be occasionally shut down.
    c. In the event of a power outage or other sustained brine supply disruption at Sulphur Mines, the residual cavern pressure that would exist on the three active caverns would be capable of providing brine to the Cavern No. 007 injection pumps for a limited duration. Westlake then could divert brine production from their operations on the Starks Salt Dome (approximately 20 miles west of Sulphur) to supply the Cavern No. 007 injection pumps.
2. No material deviation from established surface subsidence trends has been conclusively observed since 2016 based on InSAR data.
    a. Recent InSAR ground displacement measurements from the TSX/PAZ satellite constellation, which are received every 5.5 days on average, have begun to show displacement measurements that are slightly greater than the linear trends at various locations throughout the overall data capture area (8,866 acres) as well as in the immediate vicinity of Cavern No. 007 (40.2 acres). The trend deviation near Cavern No. 007 is less than 0.2 inches below the linear projections. These recent observations have been conveyed to TRE-Altamira (TREA), and as a result, they feel it is necessary to undergo a review and reprocessing of the 8-month span of available TSX/PAZ data to confirm data accuracy.
    b. There are a number of areas further out from the dome that are experiencing similar or greater below-trend deviation not related to Cavern No. 007 due to lack of proximity. There is also the possibility that dryer conditions may be playing a role in recent ground movement regionally. And as mentioned, TREA wants to confirm and potentially modify the measurement values.
3. No micro-seismic events have been detected proximal to Cavern No. 007 or Cavern No. 006 since the installation of the surface seismic monitoring system.

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4. There have been no observed geometry changes in Cavern No. 007 from all six sonars conducted subsequent to the December 2021 acute pressure loss event. No changes in cavern geometry were observed in Cavern No. 006 via sonar survey analysis when comparing pre-2021 to post-2021 data to date.
5. As included within the "Failure Analysis Report: Sulphur Mines Salt Dome Cavern No. 006 & No. 007" (dated March 23, 2023), the minimum spacing from Cavern No. 007 to the dome flank was reported as ~160 feet; the minimum spacing from Cavern No. 006 to the dome flank was reported as ~301 feet; and the minimum web thickness between Cavern No. 006 and No. 007 was reported as ~29.4 feet.
    a. Preliminary results from a recent 3D seismic reprocessing and interpretation effort indicate that there is a greater minimum spacing from Cavern No. 007 to the dome flank. Finalization of an updated geologic interpretation is expected in the coming weeks.
6. No other Westlake operated caverns on the Sulphur Mines Dome have observed anomalous, sustained pressure responses.
7. No other cavern operators on the Sulphur Mines Dome have reported anomalous pressure responses with their caverns.

In consideration of the above points and data/analysis completed to date, it is believed that the most likely theory for the failure mechanism is that an anomalous geologic feature is providing the conduit for the Cavern No. 007 brine to leave the observable cavern geometry at a point of efflux that is not precisely known. The brine is most likely entering an adjacent permeable formation and migrating down dip (away from the salt dome) throughout a regionally extensive sandstone formation (e.g. the Miocene Group). In support of this theory, it was informally reported by the offset oil and gas operator (Yellowrock) that at the time of the December 2021 acute pressure loss event on Cavern No. 007 and No. 006 that one of their wells (Fee No. 1012 [Serial No. 209459]) experienced atypical pressure and production responses. See Figure 1 and Figure 2 for a visual representation.

Additionally, Cavern No. 006 brine is leaving the known cavern geometry, albeit at a comparably slower rate than Cavern No. 007, at approximately 3.5 gallons per minute (equivalent to the effects of salt creep closure for Cavern No. 006). The point of efflux is not precisely known; however, it is likely solely flowing into Cavern No. 007 at the known area of minimum web thickness between the Caverns. Additionally, Cavern No. 006 has a distinct pressure relationship with Cavern No. 007 which is likely to be interconnected with the brine efflux rate of Cavern No. 006.

This overall brine migration theory aligns most similarly with that of the integrity failure of LOOP Cavern No. 14 which did not result in surface sediments entering the cavern.

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- The Louisiana Offshore Oil Platform (LOOP) is a field of high-rate crude oil storage caverns located within a marsh on the Clovelly Salt Dome 18 miles off-the-coast from Galliano, Louisiana. In 1992, LOOP Cavern No. 14 was found to have lost integrity because it encountered a non-salt layer within the salt dome that provided a permeability conduit to formations adjacent to the dome. It was discovered that brine from Cavern 14 was migrating through the conduit and into an adjacent formation. Sonar surveys of Cavern 14 had indicated an anomalous bulge in an area of the cavern wall, and it was later identified that it was due to an inhomogeneity (a non-salt layer) within the salt dome structure with a location oriented toward the nearest distance of the cavern to the dome flank (approximately 400 feet from the cavern wall to the salt dome flank).
- The pressure in Cavern 14 was intentionally allowed to decrease to achieve an equilibrium pressure between the cavern and the adjacent formation (requiring the brine level in the Cavern 14 wellbores to drop to approximately 300 feet below surface). Once the equilibrium pressure was achieved the brine migration through the conduit reduced to a nominal rate, and Cavern 14 pressure remained generally static.
- Attempts were made to seal the cavern breach using a remote operated vehicle and a polymer gel, however, those efforts proved to be unsuccessful. Currently, Cavern 14 and the associated wellbore entries are not in active storage service and remain in monitoring status, however, other storage caverns on the dome remain in operation.

Westlake has performed some investigatory logging on a Yellowrock operated well (Fee 969) which is in proximity (~307 feet minimum separation) to Cavern No. 007 and completed at an interval that is similar to the Cavern No. 007 depth interval. Fee 969 is an in-active production well. One of the logs completed was a pressure/temperature/density log, which indicated that the formation pressure is equivalent to a 0.4649 psi/ft pressure gradient. This would be considered a "normally pressured" formation and a typical pressure gradient of salt water that is native to oil and gas bearing formations. It was found from the LOOP 14 evaluation that the adjacent formation pressure that the cavern equalized with was equivalent to a ~0.46 psi/ft pressure gradient (i.e., also normally pressured).

The theorized "worst case" scenario would be akin to the resulting consequences from the collapse of Bayou Corne/Oxy Geismar Cavern No. 003.

- Cavern No. 003 was an abandoned, solution-mined cavern within the Napoleonville Salt Dome in Assumption Parish, Louisiana. The Napoleonville Salt Dome is utilized for the development of many salt caverns solution-mined for brine and hydrocarbon storage. The Oxy-Geismar No. 3 well was drilled in 1982 and was solution mined for brine production until a mechanical integrity test was failed in June 2011, and was subsequently plugged and abandoned.
- In July of 2012, methane bubbling was observed with increasing frequency and intensity within the marsh generally above Cavern No. 3 and earthquakes were felt in the local

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community near the cavern. On August 3, 2012, the first surface expression of what was to become a sinkhole began to develop proximal to the location of the edge of the salt dome above Cavern 3.

- It was discovered that the cavern had a failure of the relatively thin salt pillar (believed to be under 30 feet thick at the closest point) between the edge of the salt dome structure flank and the wall of Cavern No. 3. The salt pillar failure consequently caused the adjacent stratified non-salt formations to fall into the cavern void, and thereby ultimately being expressed as a sinkhole at the surface. One theory during the event investigation was that the adjacent oil and gas formations had been de-pressurized due to decades of production operations, and which created an abnormal pressure/stress differential across the salt pillar in comparison to the native/discovery pressure/stress conditions. Furthermore, it was theorized that the plugged salt cavern was also building pressure due to salt creep closure, and thereby adding additional differential pressure/stress across the salt pillar. The cavern and sinkhole are still being monitored to date.
- The adjacent brine mining cavern operators remained in operation throughout the sinkhole development, monitoring efforts, and mitigation efforts.

In comparison to the current situation of Cavern No. 006 and No. 007, several critical differentiations can be stated:

1. The minimum salt pillar thickness between Cavern No. 007 and the salt dome flank is over 5 times greater (~160 feet vs ~30 feet).
2. Cavern No. 007 and No. 006 have active pressure maintenance and monitoring.
3. Leading failure detection technologies are implemented and continuously being monitored at Sulphur Mines, such as seismic monitoring and InSAR monitoring.
4. Cavern No. 007 and No. 006 are a greater distance from populated communities/dwellings.
5. The pressures within the adjacent oil and gas bearing stratified formations to the salt dome are not depletion drive influenced (Bayou Corne finding), rather they are more akin to water drives.

If a “worst case scenario” were to occur and result in severe surface subsidence (a “sinkhole”), then a projection of the extent of the sinkhole could be estimated. Analysis was performed to estimate the size and location of a potential subsidence zone if a cavern-to-flank pillar failure of Cavern No. 007 were to occur. The sinkhole associated with the collapse of the Oxy 3 cavern at the Napoleonville Dome was analyzed for reference. A major structural failure occurred at Oxy 3 in 2012. This resulted in a transfer of underground material into the cavern and the development of a sinkhole at the surface. A three-dimensional model was created for Oxy 3 which includes salt dome contours, original cavern geometry, and the location and shape of the sinkhole.

The analysis of Oxy 3 revealed that the epicenter of the sinkhole formed almost directly above the edge of the salt dome at the point nearest to the cavern. This indicated that disturbed material

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traveled vertically along the outside edge of the salt dome, originating at the point where the flank is closest to the cavern. The sinkhole initially formed in a funnel shape. As material settled, it became flatter with a larger radius and shallower center. The cavern geometry, edge of salt, and initial and final sinkhole shapes are shown in Figure 3 and Figure 4 below.

In the same manner as Oxy 3, a 3-D model for Cavern No. 007 including cavern geometry and salt dome contours was developed. The observations of the Napoleonville event were applied to Cavern No. 007 to estimate the potential epicenter for subsidence should a similar collapse event occur. Additionally, the diameter of the impact zone was estimated for Cavern No. 007 through comparison to Oxy 3. Due to the minimal web thickness between Caverns 6 and 7, it was assumed that cavern 6 would also be compromised in the event of a collapse at cavern 7 (i.e. the salt pillar between the two caverns would fail resulting in coalescence of Cavern 6 and 7). The subsidence volume was calculated to be proportional to the volume of the associated caverns. This was done for both the initial and final subsidence shapes. The estimated location and areal extent of the impact zones can be seen below in Figure 5 and Figure 6.

Any reference to a similar/akin cavern failure incident is not intended to diagnose the failure mechanism or outcome of Cavern No. 006 and No. 007. The other cavern failure incidents referred to are examples that generally have geologic and/or operational characteristics that could be considered similar to Cavern No. 007 and Cavern No. 006 at the Sulphur Mines Salt Dome. To be clear, the failure mechanism and long-term implications of the integrity failure of Cavern No. 007 and Cavern No. 006 are not yet understood at the time this report was written and could deviate from what is discussed or visualized in this report; however, monitoring, technical evaluations, and other investigatory efforts are actively being conducted in an effort to produce additional understanding.

Certified By: Lonquist Field Service, LLC
Louisiana Registration No. EF5853

Ben H. Bergman P.E.
Senior Engineer
Louisiana Registration No. 40184
Date Signed: September 20th, 2023

Teresa H. Rougon P.G.
Principal Geologist
Louisiana Registration No. 330
Date Signed: September 20th, 2023

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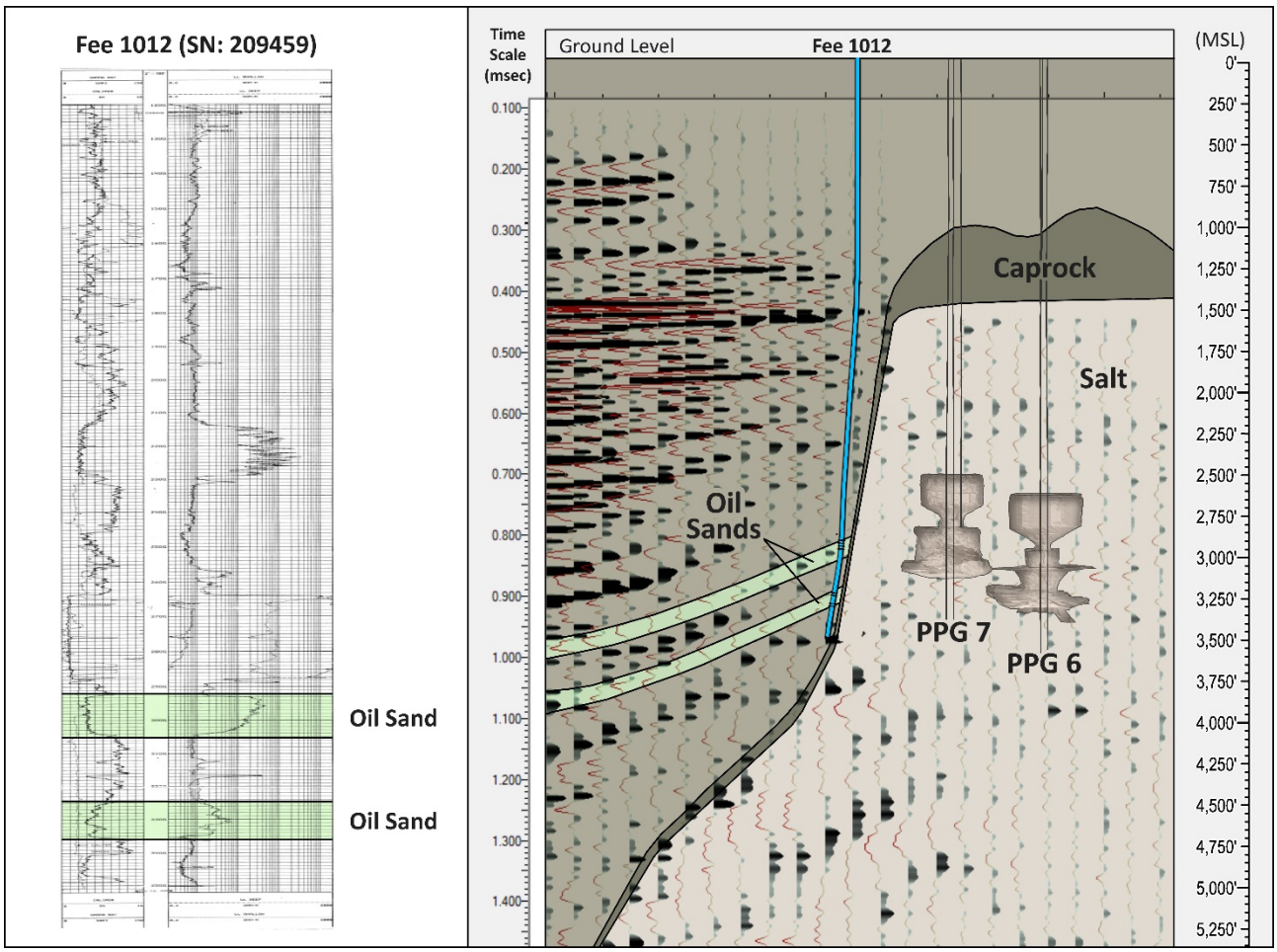

Figure 1 – Cross Section Through Fee 1012 and PPG 6 & 7 (Not Final Geologic Work Product – For Visual Representation Purposes Only)

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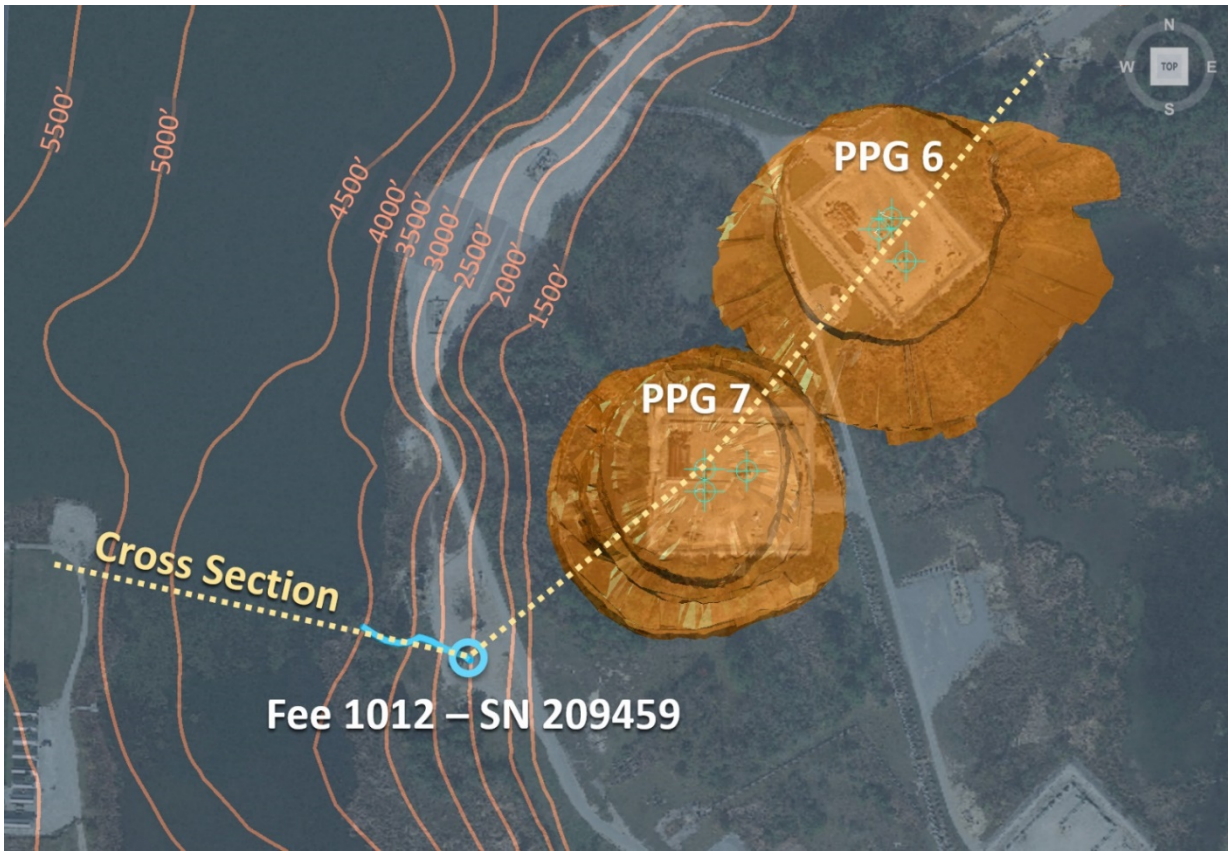

Figure 2 – Aerial View of Seismic Cross Section Through Fee 1012 and PPG 6 & 7 (Not Final Geologic Work Product – For Visual Representation Purposes Only)

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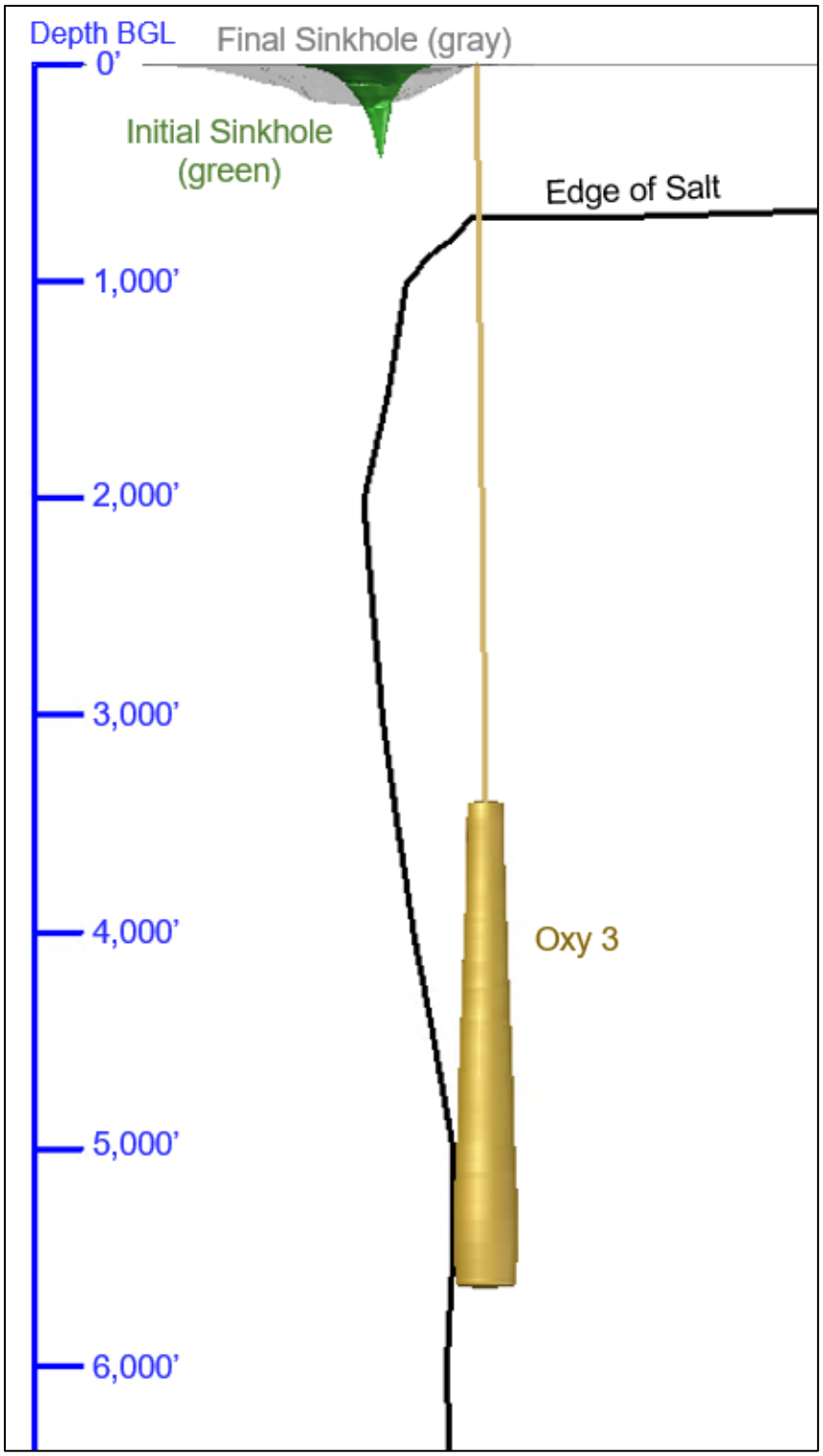

Figure 3 – Side View of Oxy Cavern No. 003 w/ Observed Sinkhole

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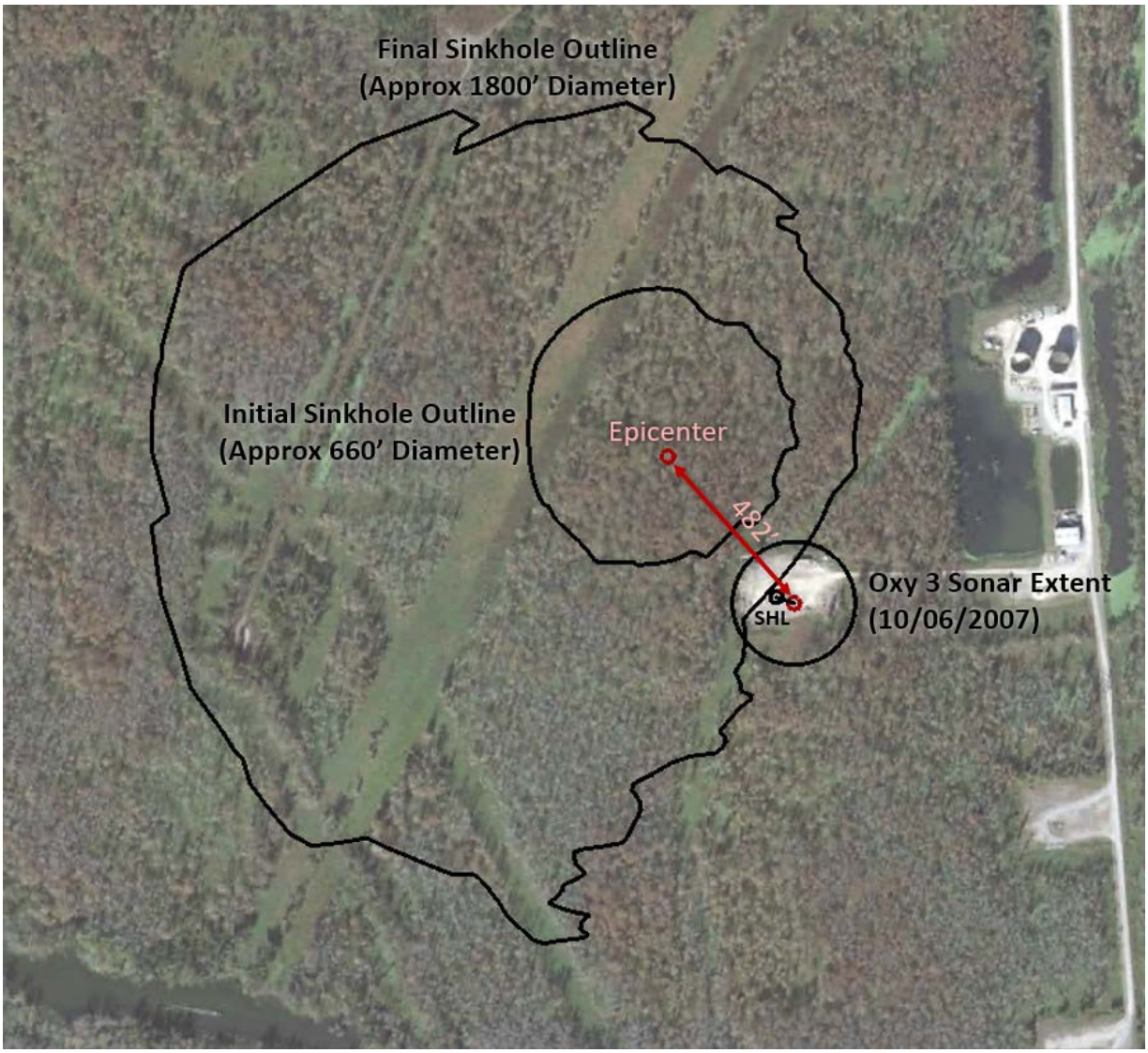

Figure 4 – Top View of Oxy Cavern No. 003 Initial and Final Sinkhole Extents

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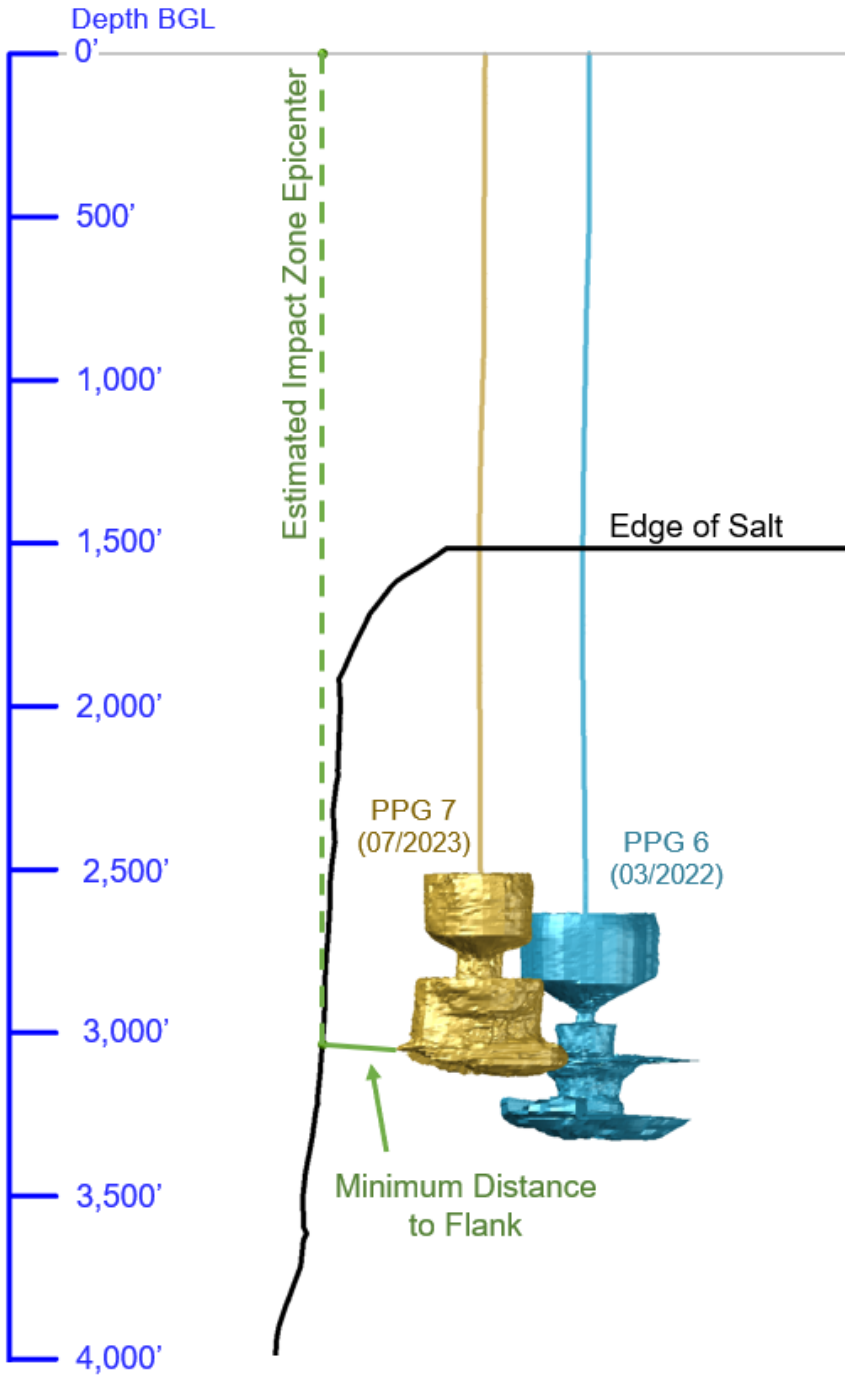

Figure 5 – X-Section View of Theoretical Sinkhole Epicenter Location Assuming Salt Dome Flank Collapse Involving Cavern 6 & 7.

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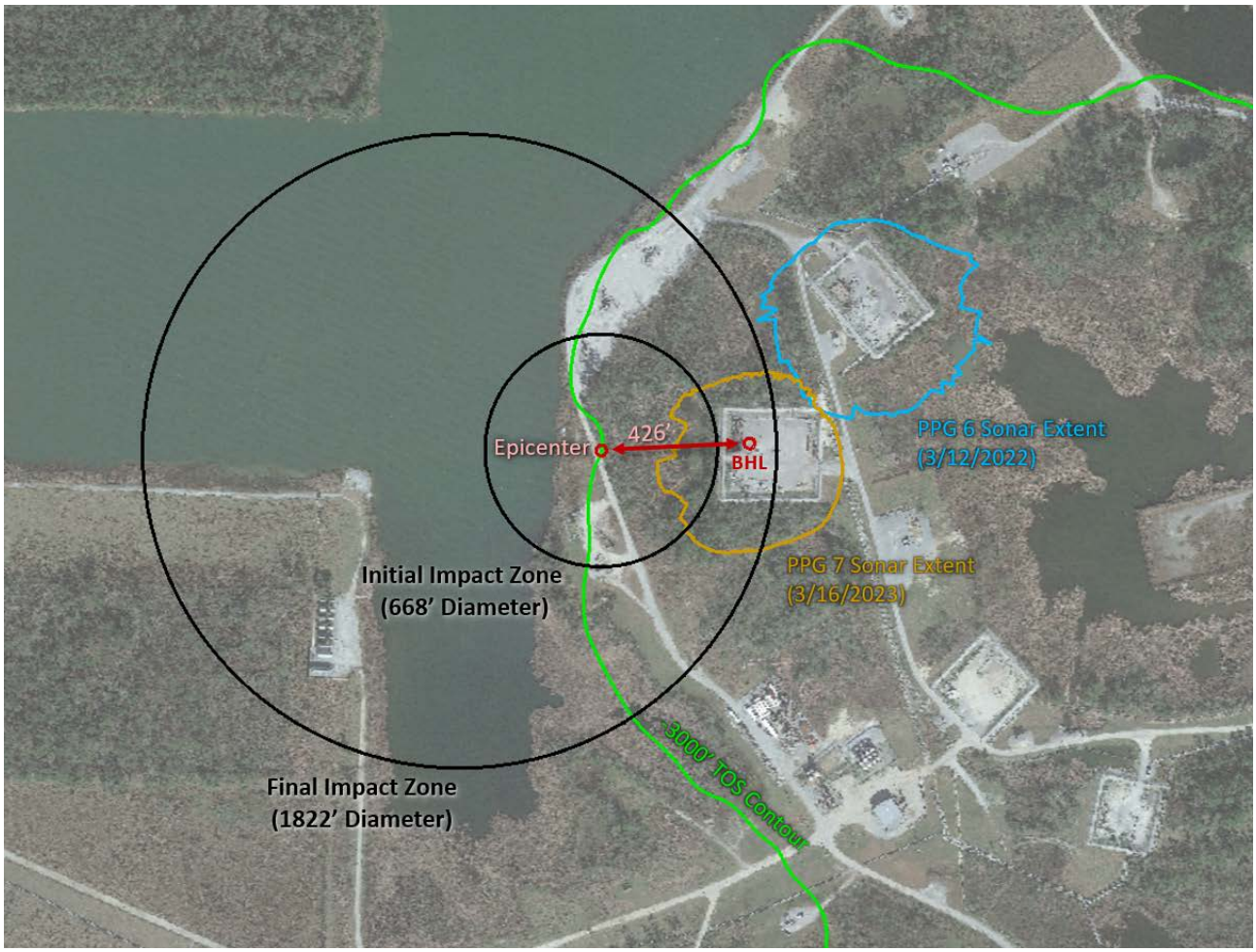

Figure 6 – Aerial View of Theoretical Sinkhole Projection Assuming Salt Dome Flank Collapse Involving Cavern 6 & 7.

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