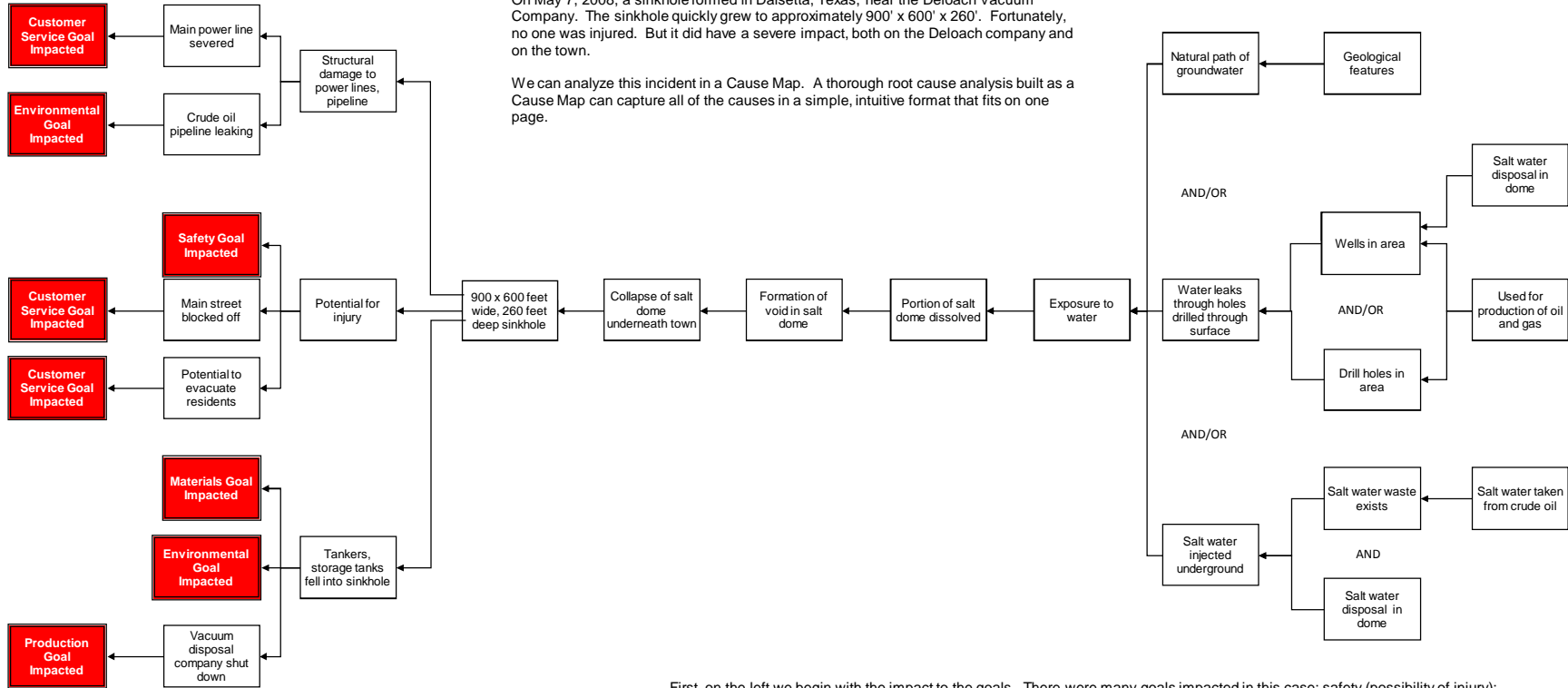


**Daisetta Sinkhole**  
**May 7, 2008**  
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On May 7, 2008, a sinkhole formed in Daisetta, Texas, near the Deloach Vacuum Company. The sinkhole quickly grew to approximately 900' x 600' x 260'. Fortunately, no one was injured. But it did have a severe impact, both on the Deloach company and on the town.

We can analyze this incident in a Cause Map. A thorough root cause analysis built as a Cause Map can capture all of the causes in a simple, intuitive format that fits on one page.

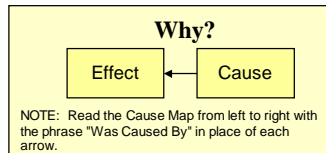


First, on the left we begin with the impact to the goals. There were many goals impacted in this case: safety (possibility of injury); environment (a crude oil pipeline leaked and tankers and storage tanks fell into the sinkhole., which is also an impact to the material goal, because goods were lost); customer service (in this case, residents, who were affected by the main power line severed, the main street blocked off, and the potential of an evacuation; and production (Deloach Vacuum company shut down).

It is believed that the sinkhole occurred because of the collapse of a salt dome underneath the town. The salt dome collapsed because a portion of the salt dome dissolved due to exposure to water. It is believed that the exposure to water was from one or more of three possible sources. The first is that it was the natural path of groundwater, due to geological features. The second is that the water leaked through holes drilled through the surface, either wells or drill holes for salt water disposal or oil & gas production. The third possibility is that salt water is injected underground dissolved part of the salt dome. Salt water is injected underground because salt water is disposed in the dome (see above) and salt water waste exists because it is taken from crude oil.

Even more detail can be added to this Cause Map as the analysis continues. As with any investigation the level of detail in the analysis is based on the impact of the incident on the organization's overall goals.

The investigation is continuing, as Texas officials try to figure out how to prevent further damage to the sinkhole. For now, the expansion appears to be slowing down, and hopefully soon life can get back to normal in this Texas town.



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