

I&W Brine Well Chronology *(as of 3/23/10)*

August 1, 1978:

- Initial brine production well (Eugenie #1) goes into service at the location in Carlsbad under the operation of Permian Brine Sales.

November 22, 1979:

- Second well (Eugenie #2) goes into service at the location in Carlsbad to be used for fresh water injection after hydraulic fracturing to establish fluid communication between the two wells through the underground salt.

December 18, 1982:

- Oil Conservation Division (OCD) issues first permit to Permian Brine Sales for the Carlsbad facility under provisions of the federal Underground Injection Control (UIC) program.

July, 1995:

- I&W assumes ownership of Carlsbad facility.

January 14, 2000:

- Eugenie #2 plugged after failing integrity test. Facility resumes operation using a single well to produce brine.

July 16, 2008:

- Cavern associated with a brine well owned and operated by Jim's Water Service collapses on state trust land approximately 17.3 miles southeast of Artesia, 400 feet north of Hagerman Road (CR 217) and 2.4 miles southwest of State Highway 360.
- The OCD dispatches staff members to the site.
- Eddy County shuts down CR 217.

July 17, 2008:

- OCD staff establishes a mobile incident command center at the Jim's Water Service site. (The OCD, the Eddy County Office of Emergency Management, the State Land Office and the Bureau of Land Management maintain the mobile incident command center at the site until July 24, 2008, when a fence is installed around the sinkhole and CR 217 is re-opened.) As of July 17, 2008, the sinkhole is approximately 200 feet across and an unknown depth; it more than doubled its size in the first 24-hours after the initial collapse. (The sinkhole continues to grow. As of April 30, 2009 it was approximately 400 feet across and approximately 120 feet deep.)

July 18, 2008:

- OCD staff goes to I&W brine well site (BW-006) to review the sonar logs and evaluate the brine well system. The I&W site is located within the city

limits of Carlsbad, between US 285 and US 180/62 where those highways meet at a “Y”-shaped intersection. Two wells are located on the I&W brine well site: the Eugenie #1 and the Eugenie #2. The Eugenie #1 is operational; the Eugenie #2 was plugged in January 2000 after failing an integrity test. The OCD staff’s initial review of the available sonar logs indicates a large roof to the cavern.

- OCD staff speaks by phone with a karst expert from the Bureau of Land Management, who recommends that the OCD require I&W to close its brine well because if it collapsed the impact on the Carlsbad Irrigation District canal would be catastrophic.
- OCD staff recommends to I&W that it shut in its remaining brine well based on the risk to the public and the environment.

July 22, 2008:

- OCD staff telephones I&W in the morning to require I&W to shut in the Eugenie #001 brine well.
- In a second telephone conversation with I&W, OCD staff indicate that the OCD will pursue its available remedies if I&W does not voluntarily shut in its brine well.
- During a third telephone call, I&W informs OCD staff that it shut in production at noon. OCD staff instruct I&W to submit plugging procedures for the Eugenie #001.

July 23, 2008:

- Energy, Minerals and Natural Resources Department (EMNRD) Cabinet Secretary Joanna Prukop directs the OCD to take the following actions regarding brine wells in New Mexico:
 1. Evaluate rules concerning brine wells;
 2. Conduct an internal audit of OCD records on all existing brine wells;
 3. Conduct inspections of all existing brine wells;
 4. Continue monitoring the collapse of the Jim’s Water Service brine well, and ensure that a protective fence is installed with “keep out” signs; and
 5. Work with the Bureau of Land Management, the State Land Office, the New Mexico Bureau of Geology and Mineral Resources, and the National Cave and Karst Research Institute to assess horizontal and vertical movements to project any future subsidence at the Jim’s Water Service site.

August 1, 2008:

- OCD staff sends a “Brine Well Information Request” form to all brine well operators in New Mexico requiring the operators to provide detailed information about their operations, including information on siting, well construction, operations history, monitoring and an estimate of the total volume of brine produced and the volume of the cavern.

October 1, 2008:

- I&W plugs Eugenie #1.

November 3, 2008:

- At approximately 11:30 a.m. employees at the Loco Hills Water Disposal Company observe cracks in the earth at the site -- an early indication of a pending collapse -- and call the OCD to report the cracks. The Loco Hills Water Disposal Company brine well site (BW-021) is located on state trust land 150 feet from County Road 217 near Loco Hills. The well was plugged on June 19, 2008, after it failed a mechanical integrity test on June 18, 2008.
- At approximately 1:30 p.m. the Loco Hills Water Disposal Company brine well collapses. The operator reports a sinkhole approximately 50 feet across and approximately 30 feet deep. Local, county, and state officials are notified and County Road 217 is closed.
- The OCD dispatches staff to the site to set up a mobile incident command center. (OCD staff remain on site until November 8, 2008, when Southwest Safety Specialists, a consultant for Loco Hills Water Disposal Company, assumes incident command of the site.)

November 11, 2008:

- The operator completes the installation of a barbed-wire fence at the Loco Hills Water Disposal sinkhole. As of this date, the sinkhole measures 195 feet across.

November 14, 2008:

- Secretary Joanna Prukop issues a six month moratorium on new brine wells in geologically sensitive areas, and directs the OCD to work with the Environmental Protection Agency, other states, technical experts, and oil and gas industry representatives to examine the causes of the collapses, and provide the Secretary with a report and recommendations by May 1, 2009.

January 29, 2009:

- The OCD establishes an internal policy regarding applications for permits to drill wells located within a one-half mile radius of the I&W brine well facility. District II, which would receive such applications, is to contact the OCD's Environmental Bureau in Santa Fe upon receipt of the application and the District Supervisor and the Environmental Bureau are to evaluate the application and make a joint decision on whether to approve it.

March 9, 2009:

- OCD staff estimate the cavern diameter at the I&W brine well site to be greater than 400 feet. The calculation is based on the amount of brine produced at the facility according to available production records.

March 11, 2009:

- OCD staff visits the I&W facility to request that it cease its trucking operations on the site, be careful of any fluid discharges on the site, and submit the contingency plan required by its permit.

March 26 - 27, 2009:

- The OCD hosts a Brine Well Work Group attended by OCD technical staff, the Bureau of Land Management, the State Land Office, the New Mexico Bureau of Geology and Mineral Resources, and the National Cave & Karst Research Institute to discuss effective tools for evaluating the potential for collapse of historic closed as well as presently operational brine wells and LPG storage caverns in New Mexico. The group also discusses siting, construction and operational criteria for future operations. Some participants express significant concern that the I&W brine well “could” or “will” collapse because it is similar in geology and production life to the two wells that already collapsed. Participants discuss the dangers posed by the collapse of a well located in a developed area of the city of Carlsbad.

April 1, 2009:

- OCD staff brief Director Fesmire and Secretary Prukop on the I&W brine well situation.
- OCD staff contact the I&W plant manager by phone to request that I&W cease operations at the site immediately, and request that I&W’s owners call the OCD.

April 2, 2009:

- EMNRD/OCD briefs Department of Homeland Security and Emergency Management on the I&W brine well situation.
- OCD staff continue to speak by phone with available I&W employees, requesting that I&W cease all operations on the site, including the operation of its trucking business, for safety reasons. OCD staff continue to request to speak with the owners of I&W.
- The OCD submits a purchase order request to retain RESPEC, Inc. (RESPEC) to provide technical advice on the I&W brine well situation.

April 3, 2009:

- EMNRD/OCD staff conduct a briefing in Santa Fe on the I&W brine well situation. Santa Fe staff members of the Department of Homeland Security and Emergency Management, the Department of Public Safety, the New Mexico Department of Transportation, and the New Mexico Environment Department attend; representatives of the Eddy County Office of Emergency Management participate by telephone.
- OCD staff call I&W and learn that I&W has retained Hinkle, Hensley, Shanor and Martin, LLP of Roswell as legal counsel.

- OCD legal staff calls counsel for I&W and request that I&W cease operations on the site for safety reasons, and inform counsel that the OCD will take legal action if it cannot obtain voluntary cooperation from I&W.
- Counsel for I&W responds that I&W will not voluntarily comply with OCD's request that it cease operations on the site, and that OCD will have to obtain an injunction.
- Counsel for I&W faxes letter to the OCD describing the OCD's actions as a "taking" of property, and requesting notice of any planned legal action against I&W.
- OCD legal staff calls counsel for I&W to arrange face-to-face meeting with I&W and its counsel to discuss the situation at counsel's offices in Roswell for the next business day, Monday, April 6, 2009.

April 6, 2009:

- OCD Director Mark Fesmire and staff meet with I&W and its legal counsel in Roswell to brief them on the situation and again request that I&W cease all operations at the site. The OCD informs I&W that it has set aside \$130,000 for technical consultants and equipment; I&W suggests that the OCD buy its property for \$130,000.

April 9, 2009:

- OCD legal staff faxes a letter to counsel for I&W reiterating concerns raised at the April 6, 2009, meeting, and asking that I&W "voluntarily take the following precautions to reduce risk to life and property at I&W's facility and at neighboring locations": cease truck traffic at the facility; remove the contents of tanks at the facility, especially tanks containing hazardous substances such as propane; restrict public access to the facility; and cooperate with monitoring.
- The OCD and RESPEC meet in Carlsbad with the Department of Homeland Security and Emergency Management, the Department of Transportation, the National Cave and Karst Research Institute, the Department of Energy, the Bureau of Land Management, the Eddy County Office of Emergency Management, fire and police officials from Carlsbad, representatives from the Carlsbad Irrigation District and local elected officials to brief them on the situation at the I&W facility and prepare an action plan in the event the I&W brine well collapses. A representative of I&W and its counsel attend the meeting.

April 14, 2009:

- Counsel for an adjacent property owner contacts OCD by e-mail for information on the I&W situation.

April 15, 2009:

- OCD staff contacts counsel for the adjacent property owner by telephone to discuss the I&W situation. Counsel informs OCD that trucking operations at the I&W site continue unabated.

April 17, 2009:

- An OCD inspector verifies that activity continues at the I&W site.
- RESPEC submits two documents: “Preliminary Survey of Potential Geophysical Methods for the I & W, Inc. Brine Cavern Project” and “Monitoring and Early-Warning System for Carlsbad I&W, Inc. Brine Operation” to address OCD’s request for recommendations on how to conduct a survey of the brine well cavern and how to provide an early warning system and subsidence monitoring system for the brine well cavern.
- Counsel for I&W informs the OCD in a telephone conversation that I&W will move its operations off the site, but cannot provide timeline for the move.

April 21, 2009:

- In a telephone conversation between counsel for the OCD and I&W, the OCD requires that I&W take the following actions by April 22, 2009: confirm that it has terminated operations on site; provide a schedule for removing any equipment or supplies it intends to remove; provide a schedule for emptying or removing the propane and diesel tanks; and provide a schedule for installing a fence. The OCD stresses that the scheduled actions need to be completed before the OCD and its consultants can install a monitoring system at the site.

April 22, 2009:

- I&W’s counsel e-mails a status report to the OCD stating: I&W’s trucks will be off site by the close of business that day; I&W plans to continue using its maintenance shop and offices until they can be relocated to a suitable facility; the brine tanks have been drained but a full water tank remains on site, and the propane and diesel tanks contain fuel; I&W will continue the weekly monitoring previously required by the OCD and will provide copies of those reports. The e-mail does not provide a schedule for accomplishing these actions.

April 23, 2009:

- The OCD legal staff faxes a demand letter to I&W requiring that it take the following actions: execute and deliver an access agreement to allow the OCD and its consultants access to the site to conduct investigations and monitoring; empty and/or then remove the propane and diesel tanks from the site; recover any equipment I&W intends to remove from the facility; cease operations including truck repair and office activities; install a fence around the facility sufficient to prevent public access; and provide monitoring data previously promised to the OCD. The letter requires a response from I&W by Monday, April 27, 2009, or the OCD will file an injunction in district court seeking an order requiring I&W to take the described actions.

April 24, 2009:

- OCD legal staff is in contact with Eddy County, the City of Carlsbad, the Carlsbad Irrigation District, and the New Mexico Department of Transportation, and the New Mexico Department of Homeland Security and Emergency

Management regarding whether they will join in a lawsuit for injunctive relief seeking an order requiring I&W to cease all uses of the site immediately, in the event that I&W does not voluntarily comply with the OCD's requests.

- OCD legal staff communicates by telephone with counsel for I&W who indicates that I&W will comply with most but not all of OCD's requests. The remaining issue is the continued use of the I&W site by I&W for truck maintenance and repair and for office services.

April 27, 2009:

- Counsel for I&W informs OCD legal staff that I&W has agreed to cease all of its operations on its site, and comply with the balance of the requests in the April 23, 2009 demand letter, including fencing off the site to protect the public from accessing the site and allowing OCD technicians access to the site to begin installing monitoring equipment. At this point the injunctive relief issues become moot.

April 28, 2009:

- OCD, the Eddy County Office of Emergency Management and the New Mexico Department of Homeland Security and Emergency Management host an informational public meeting at the P.R. Leyva Middle School located at 800 West Church Street in Carlsbad.
- Counsel for I&W provides the OCD with a re-drafted, signed, access agreement.

April 29, 2009:

- RESPEC begins installing monitoring points at the I&W site as part of a surface subsidence monitoring system. A theodolite will be used to survey the monitoring points to detect movement.
- OCD staff meet with owners of the properties on either side of the I&W site.
- I&W informs the OCD that it plans to remove the above-ground tanks at its facility using a heavy crane.

April 30, 2009:

- RESPEC continues to install monitoring points for the surface subsidence monitoring system.
- OCD staff informs I&W that it does not recommend the use of heavy equipment to remove the above-grade tanks; I&W decides against removing the above-grade tanks.

May 1, 2009:

- The OCD Environmental Bureau provides Secretary Prukop with a draft of its "Brine Well Collapse Evaluation Report" regarding the two collapses that have occurred, and recommending changes to its brine well program.
- RESPEC completes the installation of monitoring points for the surface subsidence monitoring system.

May 4, 2009:

- The theodolite for the surface subsidence monitoring system is on the I&W site. The manufacturer begins training RESPEC personnel in its use.

May 5, 2009:

- The manufacturer completes training RESPEC personnel on the use of the theodolite.
- RESPEC conducts an initial survey of the monitoring points for the surface subsidence monitoring system.

May 6, 2009:

- RESPEC begins surveys of the monitoring points for the surface subsidence monitoring system. Surveys will be done each business day.

May 8, 2009:

- RESPEC begins submitting daily progress reports to the OCD.
- The OCD establishes its web page for brine well issues.

May 11, 2009:

- RESPEC submits a health and safety plan to the OCD for use by personnel acting under RESPEC's scope of work at the I&W site.
- I&W calls the OCD to report that it has fenced the property.

May 12, 2009:

- OCD personnel from the OCD's District II office in Artesia visit the I&W facility and confirm that the fence has been installed.
- RESPEC establishes additional surface monitor points adjacent to Eugenie #1 and Eugenie #2 for the surface subsidence monitoring system.

May 20, 2009:

- RESPEC completes its preliminary review of the subsidence monitoring survey data and determines that the systemic elevation measurement accuracy is approximately 0.002 ft/day.

May 21, 2009:

- RESPEC installs the initial group of surface tiltmeter plates. Surface tiltmeters measure movement along the horizontal axis. The surface tiltmeter locations include offsite monitor locations adjacent to the I&W site at the feed store and the church, and a control point in the median of US 285. RESPEC contacted the landowners and gained access approval prior to entering the properties.

May 22, 2009:

- RESPEC gauges the two existing ground water monitor wells located adjacent to the Eugenie #2 well to determine a base-line depth to groundwater.

May 27, 2009:

- RESPEC re-surveys all existing surface monitor points including the benchmark to re-establish coordinates for surface subsidence monitoring.

May 28, 2009:

- RESPEC installs the final group of surface tiltmeter plates.

May 29, 2009:

- RESPEC begins monitoring the 13 surface tiltmeters located on and off site.

June 6, 2009:

- RESPEC drills three boreholes for borehole tiltmeters, which are used to measure movement along the vertical axis.

June 10, 2009:

- RESPEC installs temporary field office on site for storage of equipment.

June 18, 2009:

- The borehole tiltmeters arrive in Carlsbad. RESPEC begins to install the borehole tiltmeters into cased holes and the pressure transducers into existing groundwater monitoring wells.

June 19, 2009:

- RESPEC meets with Eddy County Office of Emergency Management (ECOEM). Items discussed include the early warning system, ECOEM's "Incident Action Plan," and sharing engineering data.

June 23, 2009:

- The early warning system begins collecting real-time data from borehole tiltmeters and pressure transducers. Data from the early warning system is stored in the onsite computer.

June 26, 2009:

- OCD begins storing the early warning system data off-site via a wireless internet connection.

June 29, 2009:

- RESPEC provides draft characterization and structural analysis report based on file review which also includes preliminary analysis of available monitoring data. Ground surface is shown to be moving.

July 15, 2009:

- Two sumps along the east side of the wash bay area are filling with rainwater. RESPEC pumps both sumps dry with a vacuum truck.

July 16, 2009:

- OCD hosts 2nd public meeting in Carlsbad to discuss the status of the brine well.

July 21, 2009:

- RESPEC resumes surface subsidence survey and surface tiltmeter measurements on a twice-weekly basis.

July 27, 2009:

- A borehole tiltmeter installed in the west casing loses orientation. RESPEC removes the tiltmeter and returns it to the manufacturer for repairs.
- A sinkhole associated with a brine well appears east of Denver City, Texas.

July 31, 2009:

- RESPEC programs the preliminary automated alarm levels into the early warning system. RESPEC and OCD determined the alarm levels based on their analysis of five weeks of borehole tiltmeter and piezometer data.

August 5, 2009:

- RESPEC re-installs the repaired borehole tiltmeter in the west casing.

August 15, 2009:

- RESPEC stops twice-weekly surface subsidence survey and surface tiltmeter measurements, and begins measuring on a weekly basis.

August 17, 2009:

- RESPEC begins fieldwork associated with the seismic reflection survey.

August 19, 2009:

- RESPEC completes the fieldwork associated with the seismic reflection survey.

September 1, 2009:

- RESPEC replaces the repaired borehole tiltmeter in the west casing with a new borehole tiltmeter.

September 9, 2009:

- OCD receives preliminary interpretations of seismic reflection survey from RESPEC.

September 22, 2009:

- EPA officials meet with OCD in Santa Fe as part of annual review of federal underground injection control program which includes brine wells and expresses its support for OCD's efforts regarding situation in Carlsbad.

September 29, 2009:

- OCD participates in an emergency response exercise simulating a brine well collapse at the I&W site. Participants include Eddy County Emergency Management, City of Carlsbad, New Mexico State Police, Carlsbad Fire Department, Otis Fire Department, Waste Isolation Pilot Plant, and New Mexico Department of Homeland Security.
- Magnitude 8.0 earthquake occurs beneath seafloor near American Samoa in South Pacific. Event is detected by tiltmeters incorporated into I&W early warning system but no false alarm generated.

October 19, 2009:

- OCD receives status report from RESPEC which incorporates interpretation of seismic reflection survey from Bay Geophysical.

October 27, 2009:

- OCD appears before Radioactive and Hazardous Materials Interim Legislative Committee in Carlsbad to discuss brine wells in general and the particular situation in Carlsbad.

October 28, 2009:

- OCD hosts 3rd public meeting in Carlsbad to discuss data obtained to date from early warning system, preliminary interpretations of seismic reflection survey, and lack of OCD funding to proceed further.

November 5, 2009:

- City of Carlsbad and Eddy County declare state of emergency due to potential danger of collapse and call for establishment of Brine Well Working Group.

November 12, 2009:

- OCD participates in organizational meeting in Carlsbad of the Brine Well Working Group gathered by the City of Carlsbad and Eddy County.

November 17, 2009:

- Magnitude 3.0 earthquake occurs approximately 24 miles west of Carlsbad. Event is detected by tiltmeters incorporated into early warning system but no false alarm generated.

November 20, 2009:

- OCD participates via teleconference with first meeting of Technical Subcommittee of the Brine Well Working Group convened in Carlsbad.
- OCD receives draft final report from RESPEC concerning interpretation of seismic reflection survey.
- OCD submits correspondence to I&W requesting reimbursement of state funds spend to date for outside services and equipment, filing of past due reports, and submittal of closure plan for facility.

November 25, 2009:

- OCD participates via teleconference with second meeting of Technical Subcommittee of the Brine Well Working Group convened in Carlsbad.

December 2, 2009:

- Technical subcommittee meeting. RESPEC (now under contract to City of Carlsbad) presents preliminary workplan for renewed surface surveys, continued monitoring of system data, maintenance of early warning system, additional cavern characterization, and development of remedial options.

December 12, 2009:

- Carlsbad city council approves some funding for monitoring and legal fees, asks County for assistance.

December 15, 2009:

- Eddy County Commission agrees to help fund continued monitoring and legal fees.

December 16, 2009:

- Technical subcommittee meeting.

December 17, 2009:

- Circle S Feedstore files civil suit against I&W.

December 29, 2009:

- Eddy County Commission votes to rescind funding of legal fees.

January 7, 2010:

- Technical subcommittee meeting.

January 12, 2010:

- Magnitude 7.0 earthquake in Haiti detected by early warning system in Carlsbad.

January 21, 2010:

- OCD issues compliance order to I&W.
- City of Carlsbad files suit against I&W.

January 25, 2010:

- Technical subcommittee meeting.

February 11, 2010:

- Technical subcommittee meeting.

February 19, 2010:

- OCD receives I&W request for hearing in front of Water Quality Control Commission (WQCC) regarding compliance order. This request should have been filed directly with the WQCC as specified in order.

February 23, 2010:

- Judicial hearing in Carlsbad regarding City suit.

February 24, 2010:

- Technical subcommittee meeting.
- OCD delivers documents in feed store lawsuit.

February 27, 2010:

- Magnitude 8.8 earthquake in Chile detected by early warning system in Carlsbad.

March 3, 2010:

- Technical subcommittee meeting.
- OCD forwards I&W's request for order hearing to the Administrator for the WQCC.

March 4, 2010:

- District judge issues preliminary injunction against I&W in suit filed by city.

March 9, 2010:

- Governor Richardson signs House Bill 208 conditionally allowing additional severance to flow into OCD's Reclamation Fund.

March 12, 2010:

- Technical subcommittee meeting.

March 23, 2010:

- WQCC issues Notice of Docketing on I&W's request for order hearing.