

**BW - \_\_\_\_\_ 21 \_\_\_\_\_**

**GENERAL  
CORRESPONDENCE**

**YEAR(S):**

**2008 - Present**

## **BW-21**

### **Loco Hills Brine Well Collapse of 11/3/08**

Loco Hills Water Disposal Company  
PO Box 68  
Loco Hills, NM 88255  
Ray Westall, Owner  
James Maloney, VP and Randy Harris, Geologist 575-365-7747 cell

Section 16 of T17S R30E in Eddy County  
~0.7 miles North of US 82 on County Road 217 (east side of road)

State lease land (both surface and subsurface estates)  
Commercial and Minerals leases held by Loco Hills Water Disposal Co. (Units L and M)  
Oil & Gas lease held by COG Oil & Gas, LP  
Agricultural lease GR0817 held by Charles R Martin Inc. in outlying area

2 wells associated w/ permit

#### ***Brine Water #1***

API 30-015-32068-00-00, Unit M, 600 FSL and 230FWL  
Via Google Earth: Latitude 32.828987 deg, Longitude -103.984835 deg.

- *APD filed on 6/12/85*

Propose 10" drilling to 420 feet and setting 7" fiberglass casing, then circulate. Thereafter, 5.5" drilling to 1000 feet in salt and run 2-7/8" fiberglass tubing then circulate for brine.

- *Sundry Notice (Form C-103) filed on 1/30/01 to undertake remedial work on well*

1/5/01 – Run in 404 feet of 5.5" J-55 casing and set retainer packer shoe. Cement with 100 sacks of neat Class C. Bump plug @ 2:14 PM and circulate 30 sacks to pit.

1/8/01 – Pressure test casing @ 300 psi for 4 hrs w/o bleed off so they drill out the plug.

1/9/01 – Tag fill @ 523 ft. Work thru and retag several times over next 2 days.

1/14/01 – Spot 75 sacks on plug @ 523 ft. Tag cement @ 520 ft

1/16/01 – Spot 200 sacks on plug @ 520 ft. Tag cement @ 518 ft.

1/19/01 – Spot 375 sacks on plug @ 518 ft. Tag cement @ 425

1/22/01 – Drill out to 674 ft.

- *Passed open to formation nitrogen test on 8/18/04*

@ 300 psi between 9:15 AM and 1:30 PM. Treatment report from BJ Service says casing from surface to 550 ft with tubing set a 650 ft.

- *Integrity test of 10/27/05*

30 minute test @ 325 psi, casing only.

- *Integrity test of 9/19/06*

30 minutes @ just over 300 psi using nitrogen.

- *Sundry Notice (Form C-103) filed on 7/21/08 to plug and abandon well*

6/18/08 – Casing does not pass MIT. Set CIBP at 402 feet

6/19/08 – Circulate 80 sacks of Class C cement from CIBP to surface.

#### ***Brine Well #2 (did not collapse)***

API 30-015-36119-00-00, Unit L, 1453 FSL and 221FWL

Via Google Earth: Latitude 32.831313 deg, Longitude -103.984877 deg

- APD (Form C-101) filed 9/20/07

Surface elevation 3667 ft. Nearest fresh water well 2 miles, nearest surface water 5 miles.

Propose 12.25" drilling with fresh water to 100 ft below top of salt (salt @ ~520 ft), set casing and circulate cement. Then 7-7/8" drill to base of salt, estimated at 1,020 ft.

Production well (COG ETZ Unit #109) shown on plat @ 1650 FSL and 660 FWL at a distance of 481 ft.

Wellbore schematic indicates top-of-salt @ 520, bottom of 8-5/8" casing @ 620, dual string packer set @ 600, fresh water injection thru 2-7/8" tubing @ 1000, TD @ 1020, brine withdrawal thru 2-7/8" casing @ 640.

Approved 2/15/08 w/ expiration date of 8/15/08. OCD conditions of approval are that casing and tubing be made of steel, the casing shoe must be set a minimum 100 ft below top-of-salt, cement circulated back to surface, the packer must be set no more than 20 ft above shoe, and approved fluid maintained above packer to surface.

- Letter to Carl Chavez of OCD from Ray Westall Operating, Inc. received 9/28/07

Says sonar mapping of Brine Well #1 performed after 16 years of use and maximum indicated radius was 178.4 feet.

- Brochure

Schlumberger Hydro -12 hydraulic set dual string packer to be used for well #2.

#### **Abstract of Permit File**

- 7/25/08 email from Wayne Price to Randy Harris reminding him to run open hole gamma ray/neutron log and after setting casing to run a CBL.

- 7/23/08 email from Wayne Price to Randy Harris indicating the tubing shall be large enough to run a sonar log. Harris responds that such a small bore sonar does not exist to his knowledge and they will instead remove the packer and tubing to run sonar.

- Approval of BW-21 renewal dated 4/15/08 authorizing operation of Well #2. Permit will expire on 12/18/2010. Reverse flow will be allowed only once a month for up to 24 hours for clean out. Surface injection pressure at the wellhead shall not exceed 185 psig. Annual open-to-formation testing @ 300 psig for 4 hours. Once every 5 years, and during workovers, the casing/tubing will be isolated from formation and the casing pressure tested @ 300 psig for 30 minutes. As part of annual report, operator will provide info on the size and extent of the solution cavern along with data demonstrating continued brine extraction will not cause surface subsidence or collapse. Any subsidence must be reported within 24 hrs. Monthly volumes of injected and produce water will be recorded. Injected and produced water will be analyzed annually for Gen Chem (Method 40 CFR 136.3). Operator will report in 24 hours any new wells that may penetrate the injection zone within ¼-mile.

- Admin complete letter of 3/4/08 states intent to extract 10 pound brine from Salado Formation at a rate of 2500 bbl/day

- Application for Authorization to Inject (C-108) received 8/17/07 to expand existing project.

- Discharge Plan Renewal Application for Brine Extraction Facility dated 8/1/06. Fresh water comes from a pipeline off the Caprock (Caprock Water Company of Artesia). Loco Hills Water Disposal Company operates off permit R-3221. Well #1 is cased with 5.5" steel to 419 ft, and 2-7/8" steel to 900 ft. Avg. injection pressure is 125 psi. Base of alluvium (top-of-rock) 420 ft. 13 monitoring wells around site for leak detection

- 12/22/00 email from Mike Stubblefield to Roger Anderson and Wayne Price. Tension packer run into Well #1 today at set @ 405 ft. Hole loaded w/ 12 bbls fresh water. Casing would not thereafter pressure

up past 40 psi pumping 0.25 bpm. Packer reset at 374 ft and same thing happened. Westall thinks packer not sealing.

- Brine well #1 logged on 12/27/00. Density log perhaps indicates hole in casing @ 63 feet, fluid level @ 86 feet, and bottom of casing @ 419 ft.
- 12/18/00 email from Wayne Price to Tim Gum and Mike Stubblefield indicating need for operator to investigate, repair well, and retest.
- One of the approval conditions of the 3/23/01 permit renewal (Condition 6) states the OCD is in possession of sonar survey results dated 2/7/01 and that a plan for subsidence detection be submitted no later than 7/31/01.

#### **Abstract of General Correspondence 2007-1885**

- 8/15/07 email from Harris to Carl Chavez stating desire to plug well #1 once well #2 is approved.

Appears there was some miscommunication regarding permit number. As of 10/29/07, Carl was referencing BW-33 ostensibly for new well.

- 2/28/02 letter from PR Patton & Associates establishing 3 subsidence monitoring points: brine well itself (0.00 ft), deadman anchor SE of brine well (0.27 ft), and valve nipple (7.96 ft) on casinghead of nearby production well Mack Energy's McIntyre DK Federal Well #12 @ 990FSL and 330FEL in Section 17.
- 5/14/91 letter from operator to OCD encloses water analysis report and report of volumes injected and produced. States permit BW-21 was formerly DP-394. for 1<sup>st</sup> quarter of 1995, they injected 182,448 bbl and produced 178,829 bbl plus a cavity enlargement of 3,619 bbl.

Brine production of 430,177 bbls from Aug 87 thru Jul 88.

Brine production of 217,872 bbls from Aug 86 thru July 87.

- NMEID public notice of 8/1/85 states that at this locale, a prior waterflood operation for secondary recovery resulted in the saturation of the otherwise dry salt beds within the Salado Formation. It was the operator's intent to drill into the existing brine and inject fresh water to displace it to surface.
- EID rep does searching in July 85 to see if cement will bond to fiberglass casing. Outside consultant says "yes" if exterior of casing is etched such as by light sandblasting.

Original Order #R-6811 Case # 7720 allowed operator to dispose of 2500 barrels per acre per month of salt water by direct infiltration (after skimming) into the subsurface. A protestant alleges that if water cannot penetrate the Santa Rosa and down into the Rustler because of a clay at the base of the Santa Rosa, then it may move laterally southeast and/or southwest and then endanger fresh water. The resolution was to install additional monitoring wells in the vadose zone down to the Rustler.

#### **Abstract of MITs**

- Tested 8/20/90 for 4 hrs @ 500 psi. Passed.
- Tested open hole w/ nitrogen on 11/1/99 @ 240 psi. Passed.
- Site inspection sheet dated 12/13/00 inspected by Wayne Price and Mike Stubblefield. MIT fails. Would not hold pressure. Bubbles all around casing coming out of ground.
- Tested casing on 1/8/01 @ 42 psi before drilling out shoe. Passed.

- Tested 1/29/01 w/ nitrogen for 4.5 hours @ 275 psi. Passed.
- Tested open hole on 8/18/04 w/ nitrogen for 3.5 hours @ 300 psig. Passed.
- Tested casing only on 10/27/05 for 30 minutes @ 325 psi. Passed.

**Abstract of General Correspondence 2008-present**

- 4/15/08 email from Carl Chavez to Randall Harris as follow-up to phone conversation of that day. Well #1 in operation, well #2 not yet drilled.

**Abstract of Brine Well Questionnaire Response dated 10/17/08**

Nearest O&G producing well API 30-015-04163 situated ~500 ft SE.

Top-of-salt 510 ft bgs

Bottom-of-salt 1020 ft. bgs

Anhydrite section 258 feet thick from 230 to 488 ft. bgs

Depth of casing shoe 419 ft bgs

Start of brine well operation August 1985

Total volume of fresh water injected 9,148,000 bbls.

Total volume of brine produced 7,978,000 bbls

Last sonar log run 2/7/01. Estimate of cavern volume 4.2M ft<sup>3</sup> (754,000 bbls) from 506 ft to 667 ft bgs

Failed MIT on 6/17/08



New Mexico Energy, Minerals and Natural Resources Department

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**Bill Richardson**

Governor  
Joanna Prukop  
Cabinet Secretary  
Reese Fullerton  
Deputy Cabinet Secretary

Mark Fesmire  
Director  
Oil Conservation Division



August 4, 2009

Mr. Dick Maloney  
Loco Hills Water Disposal Company  
PO Box 68  
Loco Hills, New Mexico 88255

TRANSMITTED VIA FACSIMILE: (575) 677-2128  
ORIGINAL BY US MAIL

**Re: Backfilling Collapsed Brine Well**

**Loco Hills #1 (API 30-015-32068-00-00; Permit BW-21)  
Unit Letter M, Section 16, Township 17 South, Range 30 East, NMPM  
Eddy County, New Mexico**

Mr. Maloney,

The Oil Conservation Division (OCD) specified within its conditional approval letter dated May 12, 2009 for filling of the Loco Hills sinkhole was that any backfill materials be "free of debris and contamination." However, based on your representations, a substantial volume of soil derived from landfarm operations at the disposal facility has been purposely placed into the sinkhole. Pursuant to 19.15.36 NMAC (Surface Waste Management Facilities), an operator must obtain OCD's approval prior to disposal or reuse of treated soils from a landfarm and must be demonstrate those materials meet certain performance standards. Furthermore, operators are required to submit a closure plan including a sampling and analysis plan (see 19.15.36.8A NMAC).

In order to characterize the soils that have already been placed into the sinkhole without prior consent from the OCD, as well as to determine if similar material remaining on surface can be used as future backfill, Loco Hills Water Disposal Company (LHWDC) must collect and analyze representative samples from the landfarm pursuant to 19.15.36G NMAC. The attached list provides the constituents LHWDC must analyze for, the test methods to be used by an independent laboratory, the practical quantitation limits (PQLs) for each constituent and method, along with the maximum allowable concentration of each contaminant. The maximum allowable concentration for the contaminants is the greater of the background levels in native materials or the PQL. LHWDC must also determine the background concentration of the soils in accordance with 19.15.36F NMAC

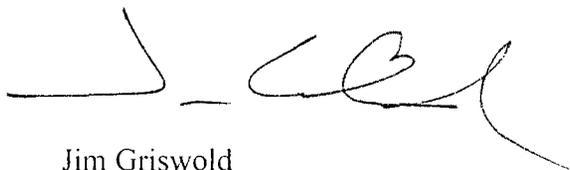


If the measured concentration of one or more of the constituents exceeds the PQL or background concentration and LHWDC wishes to use the material as backfill, it can propose to reuse the material or, after performing a site-specific risk assessment, propose closure standards based on site conditions. Any proposal is subject to OCD pre-approval. If LHWDC proposes to reuse the materials or an alternative closure standard, it must provide adequate public notice. The OCD may administratively grant a request if no one files an objection, otherwise the matter will be set for hearing.

If a single composite sample of the landfarmed soils is to be analyzed, then it must consist of a minimum of four (4) discrete samples with at least one sample from each cell of the landfarm. A composite sample of background soils can be gathered in a similar manner (19.15.36.15B NMAC). OCD recommends LHWDC gather a statistically significant number of discrete background samples. If LHWDC already has soil concentration data previously acquired during the landfarming process, this may be acceptable. LHWDC shall provide photocopies of the laboratory reports to the OCD along with an estimate as to the total volume of landfarmed soils.

After LHWDC submits a closure plan which includes such information, the OCD can determine a path forward using all available information. Until that time, LHWDC can continue to use only materials known to be free of contamination for backfilling of the sinkhole and may not use any material taken from any part of a landfarm or pond.

Respectfully,

A handwritten signature in black ink, appearing to read "J. Griswold", written over a horizontal line.

Jim Griswold  
Hydrologist, Environmental Bureau

cc: Mike Bratcher, OCD District 2  
Jim Carr, State Land Office

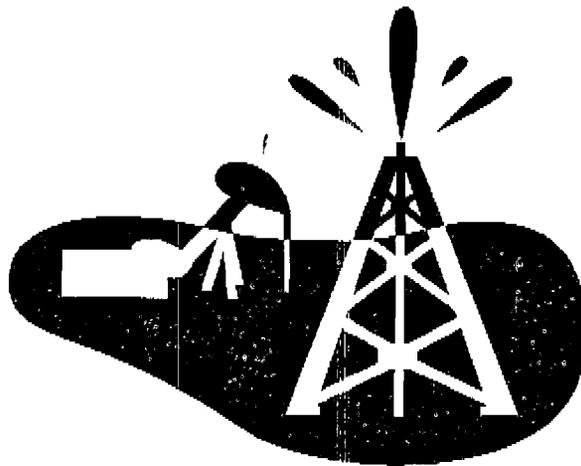
Water Contaminant Constituents Specified in the Water Quality Control Commission Regulations (20.6.2.3103A&B NMAC)

Constituent	EPA Approved Method	Practical Quantitation Limit (PQL) (mg/kg)	Maximum Allowable Concentration (mg/kg)
Benzene	8260B or 8021B	0.05	0.2
BTEX (sum of benzene, toluene, ethylbenzene, and total xylenes)	8260B or 8021B	0.2	50
GRO/DRO (gasoline and diesel range organics)	8015B	5.0/5.0	500
TPH (total petroleum hydrocarbons)	418.1	20	2,500
Chloride	300.1	0.3	1,000
Arsenic	6010C or 6020A	1.0	PQL or background
Barium	6010C or 6020A	0.1	PQL or background
Cadmium	6010C or 6020A	0.1	PQL or background
Chromium	6010C or 6020A	0.3	PQL or background
Cyanide	9010 or 9012B	0.5	PQL or background
Fluoride	300.0	0.3	PQL or background
Lead	6010C or 6020A	0.25	PQL or background
Mercury	7470/7471	0.03	PQL or background
Nitrate (NO3 as N)	300.0	0.3	PQL or background
Selenium	6010C or 6020A	1.0	PQL or background
Silver	6010C or 6020A	0.25	PQL or background
Uranium	6010C or 6020A	0.5	PQL or background
Radioactivity (combined Radium-226 and -228)	9320	1.2 pCi/g	PQL or background
Polychlorinated biphenyls (PCB)	8082	0.01	PQL or background
Carbon Tetrachloride	8260B	0.05	PQL or background
1,2-dichloroethane (EDC)	8260B	0.05	PQL or background
1,1-dichloroethylene (1,1-DCE)	8260B	0.05	PQL or background
1,1,2,2-tetrachloroethylene (PCE)	8260B	0.05	PQL or background
1,1,2-trichloroethylene (TCE)	8260B	0.05	PQL or background
Methylene chloride (dichloromethane)	8260B	0.05	PQL or background
Chloroform	8260B	0.05	PQL or background
1,1-dichloroethane	8260B	0.05	PQL or background
Ethylene dibromide (EDB)	8260B	0.05	PQL or background
1,1,1-trichloroethane	8260B	0.05	PQL or background
1,1,2-trichloroethane	8260B	0.05	PQL or background
1,1,2,2-tetrachloroethane	8260B	0.05	PQL or background
Vinyl chloride	8260B	0.1	PQL or background
Polyaromatic hydrocarbons (total naphthalenes and monomethylnaphthalenes)	8310	0.4	PQL or background
Benzo-a-pyrene	8310	0.2	PQL or background
Copper	6010C or 6020A	0.2	PQL or background
Iron	6010C or 6020A	1.0	PQL or background
Manganese	6010C or 6020A	0.1	PQL or background
Phenols (phenolics)	9065, 9066, or 9067	0.2	PQL or background
Sulfate (SO4)	300.0	1.5	PQL or background
Zinc	6010C or 6020A	0.25	PQL or background

TRANSMISSION VERIFICATION REPORT

TIME : 07/13/2009 09:25  
NAME : OIL CONSERVATION DIS  
FAX : 505-476-3462  
TEL : 505-476-3440  
SER. # : BROH8J847603

DATE, TIME	07/13 09:24
FAX NO. /NAME	915756772128
DURATION	00:00:39
PAGE(S)	02
RESULT	OK
MODE	STANDARD



TRANSMITTAL COVER SHEET

OIL CONSERVATION DIVISION  
1220 S. ST. FRANCIS DRIVE  
SANTA FE, NM 87505  
(505) 476-3460  
(505)476-3462 (Fax)

PLEASE DELIVER THIS FAX:

TO:

Dick Maloney

FROM:

Jim Griswold

DATE:

7/13/09



New Mexico Energy, Minerals and Natural Resources Department

**Bill Richardson**  
Governor  
Joanna Prukop  
Cabinet Secretary  
Reese Fullerton  
Deputy Cabinet Secretary

Mark Fesmire  
Director  
Oil Conservation Division



July 13, 2009

Mr. Dick Maloney  
Loco Hills Water Disposal Company  
PO Box 68  
Loco Hills, New Mexico 88255

TRANSMITTED VIA FACSIMILE: (575) 677-2128  
ORIGINAL BY US MAIL

**Re: Backfilling Of Collapsed Brine Well**  
**Loco Hills #1 (API 30-015-32068-00-00; Permit BW-21)**  
**Unit Letter M, Section 16, Township 17 South, Range 30 East, NMPM**  
**Eddy County, New Mexico**

Mr. Maloney,

Based upon discussions and observations made last Wednesday when I was on-site in Loco Hills, at least a portion of the materials being placed into the sinkhole have been derived from landfarming operations at the facility. A condition the Oil Conservation Division (OCD) placed in our approval for the backfilling process was only "...soils free of debris and contamination..." are to be used.

Per our telephone conversation of this morning, suspend all backfilling activities using landfarmed materials until further notice. I will discuss the use of waste materials as soon as possible with OCD staff and get back to you.

Respectfully,

Jim Griswold  
Hydrologist, Environmental Bureau

cc: Mike Bratcher, OCD District 2  
Jim Carr, State Land Office





New Mexico Energy, Minerals and Natural Resources Department

**Bill Richardson**  
Governor

Joanna Prukop  
Cabinet Secretary

Mark Fesmire  
Director  
Oil Conservation Division



May 12, 2009

Mr. Ray Westall  
Mr. James Maloney  
Loco Hills Water Disposal Company  
PO Box 68  
Loco Hills, New Mexico 88255

**RE: BACKFILLING OF COLLAPSED BRINE WELL  
LOCO HILLS #1 (API 30-015-32068-00-00; PERMIT BW-21)  
UNIT LETTER M, SECTION 16, TOWNSHIP 17 SOUTH, RANGE 30 EAST,  
NMPM, EDDY COUNTY, NEW MEXICO**

Gentlemen:

The Oil Conservation Division (OCD) has reviewed your letter of March 16, 2009, regarding Loco Hills' plan to backfill the sinkhole which resulted from the November 2008 collapse of the underground cavern associated the brine well. OCD shares your concerns for both public safety and the integrity of the Loco Hills disposal facility. As such, OCD agrees that backfilling the sinkhole in a safe and effective manner is prudent.

Smith Engineering Company estimated the volume of the sinkhole at 523,300 cubic yards based on a cylindrical shape with a diameter of 300 feet and a depth of 200 feet. Based on available information, OCD believes that Smith's calculations may overestimate the material required to restore the area to previous grade. As you are aware, the brine well was taken out of production on June 18, 2008. The last sonar log of the well was completed on February 7, 2001, which measured the cavern volume at 156,781 cubic yards (753,993 barrels). Brine production information provided to OCD is incomplete and no data is available after September 2002. However, if brine production at your facility averaged 40,000 barrels per month since 2001, 3.54 million additional barrels of brine could have been produced. Assuming a salt content of 15%, this would have increased the cavern volume an additional 110,413 cubic yards (531,000 barrels). OCD estimates that the cavern volume at the time of collapse would then have been 267,194 cubic yards, which is significantly less than Smith's estimate.

OCD's estimate is consistent with the total historic brine production of 7,978,000 barrels that you provided as part of your November 18, 2008 response to OCD's brine well questionnaire. If your figure is accurate, the volume of the cavern prior to collapse would have been 248,835 cubic yards. The amount of material needed to backfill the sinkhole would be even less due to



Mr. Ray Westall and Mr. James Maloney

May 12, 2009

Page 2

bulking of overburden as the void rose to the surface and if the cavern were only partially collapsed.

Regardless of the amount of backfill that may be required, OCD understands that you will attempt to backfill the sinkhole using a conveyor system incorporating a cantilevered extension so that equipment and personnel will not be staged near the edge of the existing sinkhole. To further mitigate risk to personnel and equipment if the deeper part of the cavern is not fully collapsed, OCD requires that all soils used to backfill the sinkhole must be free of debris and contamination. OCD also requires that the soil be backfilled into the sinkhole in incremental steps, allowing time to elapse between episodes of backfilling because the weight of the backfill could precipitate additional collapse. Smith should determine a backfill schedule and the appropriate safety setbacks.

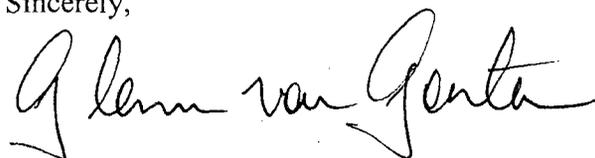
Mechanical compaction equipment obviously cannot be used during most, if not all, of the backfilling process. Therefore, OCD also requires Loco Hills to add sufficient volume of clean water to be added to the introduced soils. This can be accomplished either by surface mixing immediately before emplacement, by remotely spraying water into the sinkhole during the backfilling process, or by other practical means that Smith recommends.

Loco Hills must submit a written report to OCD describing all actions taken to date and must continue to monitor surface subsidence thereafter by appropriate means within 30 days of the completion of the backfilling process. Loco Hills must also submit a weekly report to OCD that documents the amount of backfill and water used and any additional subsidence or collapse.

The objectives of the Loco Hills backfill project are to enhance public safety, preserve the viability of ongoing operations at the facility, and to protect state lands as well as the environment. If these objectives are not achieved, OCD may require Loco Hills to take additional corrective action. OCD's approval of this backfill project does not relieve Loco Hills Water Disposal Company of its responsibilities, liability, or compliance with other governmental authority's rules and regulations.

If you have any questions, please feel free to contact Jim Griswold at (505) 476-3465 or by email at [jim.griswold@state.nm.us](mailto:jim.griswold@state.nm.us).

Sincerely,



Glenn von Gonten

Acting Environmental Bureau Chief

GVG/jg

cc: Sherrie Bonham, OCD District 2  
Mike Bratcher, OCD District 2  
Jim Carr, State Land Office

**LOCO HILLS WATER DISPOSAL CO.**

P. O. Box 68

Loco Hills, NM 88255

**FAX COVER SHEET**

FAX NO. : 505-476-3462 DATE : 3/16/09  
 TO : WAYNE PRICE  
 ATTENTION : \_\_\_\_\_  
 SUBJECT : SINK HOLE  
 SENDER : LHWD

Number of Pages: Cover Sheet + 4 = 5 Pages

Please call (505) 677-2118 if you have problems receiving this document.

MESSAGE: \_\_\_\_\_  
HARD COPY IN MAIL  
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LOCO HILLS WATER DISPOSAL CO.  
P. O. Box 68  
Loco Hills, NM 88266

March 16, 2009

Mr. Wayne Price  
New Mexico Oil Conservation Division  
1220 South St. Francis Drive  
Santa Fe, New Mexico 87505

Dear Mr. Price,

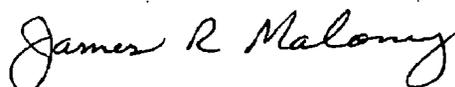
Per our meeting on Tuesday, February 24, 2009, Loco Hills Water Disposal Company expressed its concern of the sinkhole. The number one concern is that of public safety. Another concern is preserving the integrity of the disposal facility. Our solution to both of these concerns is to back fill the sinkhole.

Enclosed are an engineering statement from Smith Engineering Company and an excerpt from the report of Ed L. Reed & Associates, Inc. concerning the geology of the area of the sinkhole. We believe this is the information that you requested so that we may start back filling the sinkhole.

If you have any questions or additional information, I can be reached at 575-677-2118. My fax number is 575-277-2128.

Sincerely,

LOCO HILLS WATER DISPOSAL CO.



James R. Maloney  
Vice President

Enclosure(s) 2

## PROPOSED SALT WATER DISPOSAL FACILITY

LOCO HILLS, EDDY COUNTY, NEW MEXICO

## INTRODUCTION

This firm has examined an area just north of Loco Hills, in northeastern Eddy County, New Mexico, for the feasibility of surface disposal of produced oil field brines. The investigation has shown that no fresh ground water is present in the vicinity of the proposed disposal site and thus no ground water degradation is anticipated. The area designated for surface disposal is the north half of the southwest quarter of the southwest quarter of Section 16, T.17S., R.30E.

## GEOLOGY

The surface in the vicinity of Section 16 is underlain by about 10 feet of caliche and sandy caliche. This caliche cap rests on top of Triassic redbeds. The Triassic generally extends to a depth of about 250 to 300 feet where it lies on the Permian-age Rustler Formation.

The Triassic redbeds in the study area have been assigned to the Santa Rosa Formation, the lower member of the Dockum Group. The upper member (Chinle) consisting predominantly of red clay which is present in far southeastern New Mexico, is absent in northeastern Eddy County. The Santa Rosa consists principally of fine-grained sand with interbedded siltstone, silty clay and clay. Three cross-sections have been constructed (figures 1, 2, and 3) using gamma ray-neutron logs from oil wells and sample logs from test holes drilled for this study. An attempt was made to correlate the clay zones in the Santa Rosa Formation to determine if the clays were continuous across the site. We

have concluded from this exercise that the clays are essentially discontinuous and cannot be correlated with any confidence.

The Rustler Formation consists predominantly of gypsum and anhydrite in its upper part. The lower part of the Rustler Formation consists of dolomite interbedded with anhydrite. Figure 4 is a structure map contoured on the top of the Rustler Formation. This map shows that the Rustler has a regional southeastward dip. In the vicinity of Section 16 the Rustler has an irregular upper surface. A collapsed or erosional depression in the Rustler lies just southeast of Section 16. This depression plunges southwestward. The southwest quarter of Section 16 lies on the northwestern flank of this depression. The regional dip brings the Rustler Formation to the surface about 10 miles west of Section 16. The older Paleozoic formations dip regionally to the southeast into the Delaware Basin at the rate of about 80 feet per mile (Kelly, 1971).



## Smith Engineering Company

A Full Service Engineering Company

March 09, 2009

Mr. Dick Maloney  
Loco Hills Water Disposal Co.  
P.O. Box 68  
Loco Hills, NM 88255

Re: **On-Site Sinkhole**

Dear Mr. Maloney:

I appreciated visiting with you at your office on Thursday, March 5, 2009 and getting a first-hand look at the sinkhole on your company's leased property. As you requested, I calculated a volume of the sinkhole void using the horizontal measurements you had taken in the field and assuming a reasonable depth. The sinkhole is circular in shape. Based on the field measured distance from one side to the other of 300 feet, the radius of the sinkhole is estimated to be 150 feet. A reasonable depth is assumed to be 200 feet.

Assuming that the sides are vertical and the bottom is flat, the volume of the sinkhole void can then be calculated using the following equation:

$$V = \pi r^2 d / 27$$

where:        V = Volume (cy)  
                   $\pi = 3.14$   
                  r = radius (ft)  
                  d = depth (ft)

$$V = (3.14)(150\text{ft})^2 200\text{ft} / 27$$

$$V = 523,300 \text{ cy}$$

It is not clear if the walls are vertical to the bottom or if they are coned. The actual depth of the sinkhole is also unknown. Obviously, this is a ball park figure of the soil volume required to fill the sinkhole based on the stated assumptions. It does not take into account any compaction or consolidation of the soil which increases the required soil volume depending on the soil type. Non-cohesive, sandy soils consolidate much less than cohesive, clayey soils.

Typical construction costs of loading and moving loose material from a stockpile and placing it at another on-site location range from about \$1.50 to \$3.00 per cubic yard. If the material is compacted, an additional \$3.00 to \$5.00 per cubic yard is common, depending on the amount of compaction. The total unit price will vary with the overall amount of soil being moved.

If you have any questions, please feel free to give me a call.

Sincerely,  
Smith Engineering Company

Scott E. Hicks, PE  
Civil Engineer

401 N. Pennsylvania Ave.  
PO Box 2565

Roswell, NM 88202-2565  
ScottH@smithengineering.pro

Tel 575/622-8866 Fax 575/623-3951

**LOCO HILLS WATER DISPOSAL CO.**

P. O. Box 68  
Loco Hills, NM 88255

RECEIVED

2009 FEB 20 AM 11 18

February 19, 2009

Mr. Wayne Price  
Oil Conservation Division  
1220 S. St. Frances Drive  
Santa Fe, New Mexico 87505

Dear Mr. Price,

Regarding our telephone conversation about the plugging of Monitor Well #5 for the re-routing of Highway 217.

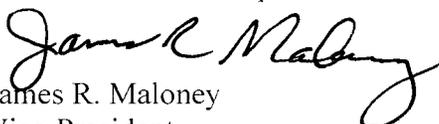
The #5 well, 60 ft deep is plugged with concrete. The GPS reading you requested for the #5 well is as follows: N. 32 degrees – 49.666/W. 103 degrees – 59.206. The elevation is 3663.

You will find enclosed a plat of all Monitor Wells at Loco Hills Water Disposal.

If additional information is required, please call me at 575-677-2118.

Sincerely,

Loco Hills Water Disposal Co.

  
James R. Maloney  
Vice-President

Enclosure (1)

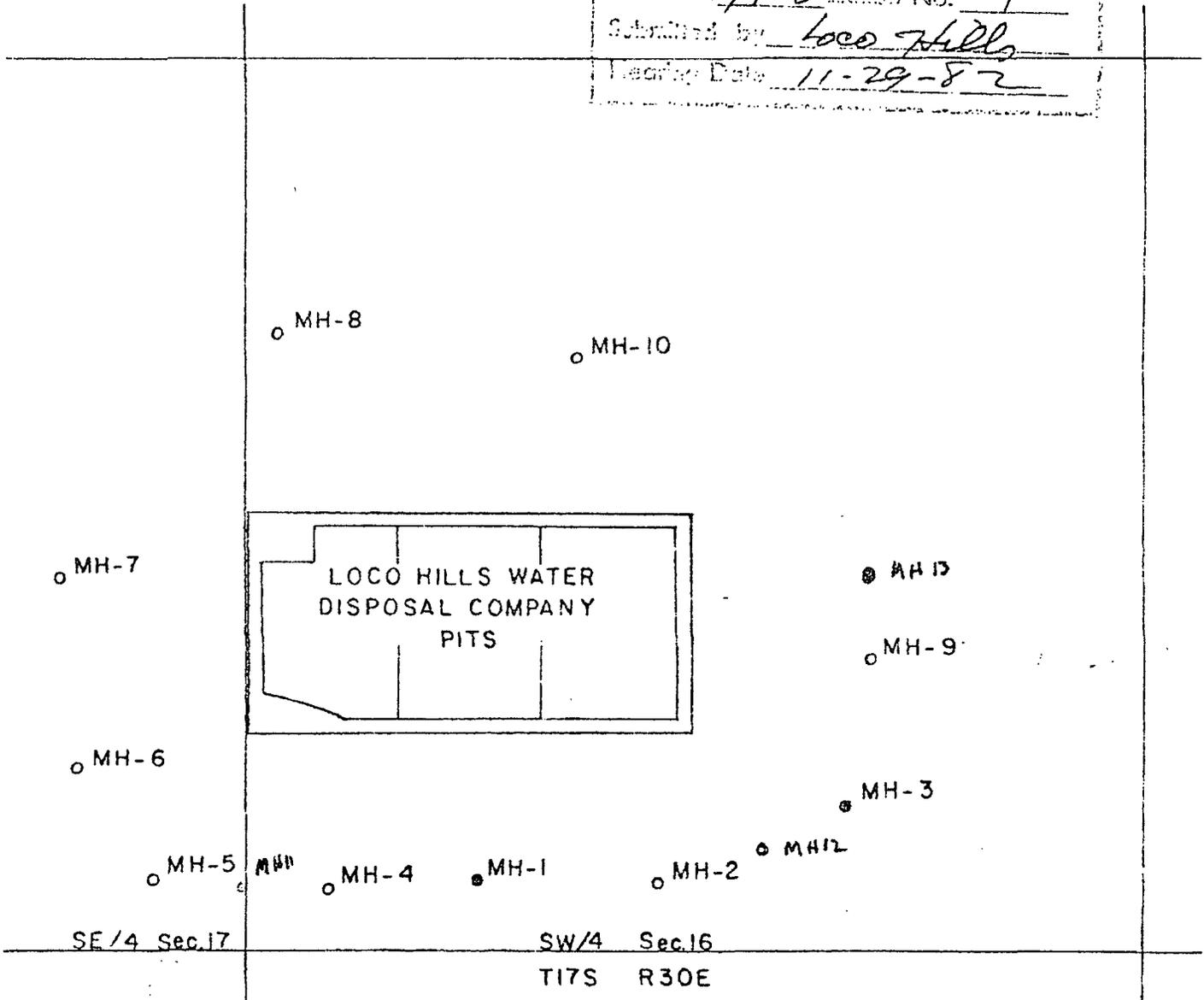
REF: TLE

OIL CONSERVATION COMMISSION  
Santa Fe, New Mexico

Case No. 7720 Exhibit No. 1

Submitted by Loco Hills

Filing Date 11-29-82



- 60' MONITOR HOLES
- RUSTLER DEPTH MONITOR HOLES

500 0 500 1000

N

EDDY COUNTY, NEW MEXICO  
MONITOR HOLE LOCATIONS  
LOCO HILLS WATER DISPOSAL CO.

9/17/82

ED L. REED & ASSOCIATES, INC.  
CONSULTING HYDROLOGIST  
MIDLAND & CORPUS CHRISTI, TEXAS

# New Mexico Energy, Minerals and Natural Resources Department

**Bill Richardson**  
Governor

**Joanna Prukop**  
Cabinet Secretary  
**Reese Fullerton**  
Deputy Cabinet Secretary

**Mark Fesmire**  
Division Director  
Oil Conservation Division



November 5, 2008

Hand Delivered

James R. Maloney  
Loco Hills Water Disposal Company  
P.O. Box 68  
Loco Hills, NM 88210

**Re: BW-21 (API #30-015-36119) Collapse Site located approximately one mile north of Loco Hills on Eddy County Road 217**

Dear Mr. Maloney:

Due to the brine well (BW-21) collapse, the New Mexico Oil Conservation Division (OCD) requires the following in order to protect the public and the environment:

1. Public access must be excluded by temporary fencing (i.e., 4-strand bared wire or other designs) with warning signs at a safe distance completely around the collapse site.
2. A temporary subsidence monitoring plan must be submitted for the collapse site to the Incident Commander and OCD within 48 hours for OCD approval.
3. A Safety Officer is required to be assigned to the site and approved by the OCD. The Safety Officer must report to the OCD any major activities at the site on a daily basis. This Officer must be a participant of the Incident Command System and report to the Incident Commander, if different than OCD. The Safety Officer may be responsible for the Incident Command once the OCD has released the site from the Incident Command System.
4. The Safety Officer shall be responsible for the coordination with the Eddy County Road Department, or other parties, to provide safe and adequate access for vehicular traffic in the area of the collapse. A progress report shall be submitted to the OCD with copies to the Incident Commander, New Mexico State Land Office on a daily basis until OCD approves otherwise. E-mails are acceptable.
5. The Safety Officer shall be responsible for the coordination with the Central Valley Electric Coop to ensure an uninterrupted power supply for the area oil field and area residences. A progress report shall be submitted to the OCD with copies to the Incident

Oil Conservation Division \* 1220 South St. Francis Drive  
\* Santa Fe, New Mexico 87505

\* Phone: (505) 476-3440 \* Fax (505) 476-3462\* <http://www.emnrd.state.nm.us>



Commander, New Mexico State Land Office on a daily basis until OCD approves otherwise. E-mails are acceptable.

6. The Safety Officer shall be responsible for the coordination with any pipeline companies that have pipelines in the area of the collapse site to ensure the public safety. A progress report shall be submitted to the OCD with copies to the Incident Commander, New Mexico State Land Office on a daily basis until OCD approves otherwise. E-mails are acceptable.
7. The Safety Officer shall prepare a contingency plan for a catastrophic release that may be caused by the collapse. The plan must include measures to monitor and contain any release. The plan must be submitted to the Incident Commander and OCD within 48 hours for OCD approval.
8. The Safety Officer shall make recommendations to the Incident Commander and OCD to ensure safety at the site (e.g., removal of water from ponds in close proximity to collapse site). In addition, the Safety Officer shall be responsible for maintaining safety barriers, signs, detours and/or another on and off-site safety issues.

If you have any questions regarding this matter, please contact me at (505) 476-3490.

Sincerely,



Wayne Price  
Environmental Bureau Chief

WP:ejh

cc: Mark Fesmire, Director, OCD, Santa Fe  
Daniel Sanchez, OCD, Santa Fe  
Tim Gum, OCD, Artesia  
Brian G. Henington, State Land Office, Santa Fe  
David Herrell, BLM Incident Commander  
Joel Arnwine, Eddy County Emergency Manager, Carlsbad  
Frank Weldon, Eddy County Road Department, Artesia  
Gary Conklin, Central Valley Electric Coop, Inc., Artesia  
Ray Westall, Loco Hills Water Disposal, Artesia



Submit 3 Copies To Appropriate District Office  
 District I  
 1625 N. French Dr., Hobbs, NM 88240  
 District II  
 1301 W. Grand Ave., Artesia, NM 88210  
 District III  
 1000 Rio Brazos Rd., Aztec, NM 87410  
 District IV  
 1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
 Energy, Minerals and Natural Resources

Form C-103  
 May 27, 2004

OIL CONSERVATION DIVISION  
 1220 South St. Francis Dr.  
 Santa Fe, NM 87505



WELL API NO.  
 30-015-32068  
 5. Indicate Type of Lease  
 STATE  FEE   
 6. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS  
 (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well: Oil Well  Gas Well  Other Brine Well

2. Name of Operator  
 Loco Hills Brine Company

3. Address of Operator  
 P.O. Box 68, Loco Hills, NM 88255

4. Well Location  
 Unit Letter M : 660 feet from the South line and 230 feet from the West line  
 Section 16 Township 17S Range 30E NMPM County

11. Elevation (Show whether DR, RKB, RT, GR, etc.)

Pit or Below-grade Tank Application  or Closure   
 Pit type \_\_\_\_\_ Depth to Groundwater \_\_\_\_\_ Distance from nearest fresh water well \_\_\_\_\_ Distance from nearest surface water \_\_\_\_\_  
 Pit Liner Thickness: \_\_\_\_\_ mil Below-Grade Tank: Volume \_\_\_\_\_ bbls; Construction Material \_\_\_\_\_

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

<b>NOTICE OF INTENTION TO:</b> PERFORM REMEDIAL WORK <input type="checkbox"/> PLUG AND ABANDON <input type="checkbox"/> TEMPORARILY ABANDON <input type="checkbox"/> CHANGE PLANS <input type="checkbox"/> PULL OR ALTER CASING <input type="checkbox"/> MULTIPLE COMPL <input type="checkbox"/> OTHER: <input type="checkbox"/>		<b>SUBSEQUENT REPORT OF:</b> REMEDIAL WORK <input type="checkbox"/> ALTERING CASING <input type="checkbox"/> COMMENCE DRILLING OPNS. <input type="checkbox"/> P AND A <input checked="" type="checkbox"/> CASING/CEMENT JOB <input type="checkbox"/> OTHER: <input type="checkbox"/>	
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13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

6/18/2008 Pressure test casing did not pass MIT. Plugging approved by Carl Chaves and Wayne Price of the NMOCD Santa Fe. Set CIBP @ 402'

6/19/2008 Circulate 80 sxs Class "C" cement from CIBP to Surface.

I hereby certify that the information above is true and complete to the best of my knowledge and belief. I further certify that any pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines , a general permit  or an (attached) alternative OCD-approved plan .

SIGNATURE \_\_\_\_\_ TITLE Geologist DATE 7/17/2008

Type or print name Randall Harris E-mail address: rharrisnm@aol.com Telephone No. 575.677.2370

For State Use Only **Accepted for record**

APPROVED BY: NMOCD TITLE \_\_\_\_\_ DATE 7/21/08

Conditions of Approval (if any):

Approved for plugging of well bore only. Liability under bond is retained pending receipt of C-103 (Subsequent Report of Well Plugging) which may be found at OCD Web Page under Forms. www.emnrd.state.nm.us/oed.

Submit 3 Copies to Appropriate District Office  
 District I  
 1625 N. French Dr., Hobbs, NM 88240  
 District II  
 1301 W. Grand Ave., Artesia, NM 88210  
 District III  
 1000 Rio Brazos Rd., Aztec, NM 87410  
 District IV  
 1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
 Energy, Minerals and Natural Resources

Form C-103  
 May 27, 2004

OIL CONSERVATION DIVISION  
 1220 South St. Francis Dr.  
 Santa Fe, NM 87505

WELL API NO.  
 30-015-32068

5. Indicate Type of Lease  
 STATE  FEE

6. State Oil & Gas Lease No.

7. Lease Name or Unit Agreement Name

8. Well Number 1

9. OGRID Number

10. Pool name or Wildcat

**SUNDRY NOTICES AND REPORTS ON WELLS**  
 (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well: Oil Well  Gas Well  Other Brine Well

2. Name of Operator  
 Loco Hills Brine Company

3. Address of Operator  
 P.O. Box 68, Loco Hills, NM 88255

4. Well Location  
 Unit Letter M: 660 feet from the South line and 230 feet from the West line  
 Section 16 Township 17S Range 30E NMPM County

11. Elevation (Show whether DR, RKB, RT, GR, etc.)

Pit or Below-grade Tank Application  or Closure

Pit type \_\_\_\_\_ Depth to Groundwater \_\_\_\_\_ Distance from nearest fresh water well \_\_\_\_\_ Distance from nearest surface water \_\_\_\_\_

Pit Liner Thickness: \_\_\_\_\_ mil Below-Grade Tank: Volume \_\_\_\_\_ bbls; Construction Material \_\_\_\_\_

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

<b>NOTICE OF INTENTION TO:</b>		<b>SUBSEQUENT REPORT OF:</b>	
PERFORM REMEDIAL WORK <input type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>	REMEDIAL WORK <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	COMMENCE DRILLING OPNS. <input type="checkbox"/>	P AND A <input checked="" type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>	MULTIPLE COMPL <input type="checkbox"/>	CASING/CEMENT JOB <input type="checkbox"/>	
OTHER: <input type="checkbox"/>		OTHER: <input type="checkbox"/>	

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

6/18/2008 Pressure test casing did not pass MIT. Plugging approved by Carl Chaves and Wayne Price of the NMOCD Santa Fe. Set CIBP @ 402'

6/19/2008 Circulate 80 sxs Class "C" cement from CIBP to Surface.

I hereby certify that the information above is true and complete to the best of my knowledge and belief. I further certify that any pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines , a general permit  or an (attached) alternative OCD-approved plan .

SIGNATURE \_\_\_\_\_ TITLE Geologist DATE 7/17/2008

Type or print name Randall Harris E-mail address: rharrisnm@aol.com Telephone No. 575.677.2370  
**For State Use Only**

APPROVED BY: [Signature] TITLE EBC DATE 9/30/08  
 Conditions of Approval (if any):

**Chavez, Carl J, EMNRD**

**From:** Chavez, Carl J, EMNRD  
**Sent:** Tuesday, April 15, 2008 4:19 PM  
**To:** 'Randall Harris'  
**Cc:** Price, Wayne, EMNRD; Gum, Tim, EMNRD  
**Subject:** Loco Hills Disposal Company Brine Well #2 (BW-021) Discharge Permit Renewal w/ New Brine Well

Randall:

Re:

RAY WESTALL OPERATING (Loco Hills Brine Company) ; P.O. Box 4, Loco Hills, NM 88255	LOCO HILLS BRINE - LOCO HILLS	BW- 21	30- 015- 32068	N 32.82899694985 W - 103.984854187961	(UL- M) 16- 17S- 30E	Eddy	12/18/2005	A	Ass
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I am writing to follow-up on our telephone conversation this afternoon regarding the new bond amount requirement by the OCD for the new brine well and other issues. The OCD has yet to receive a \$50,000.00 single well cash bond for the new brine well. You informed me that the old brine well (see table above) is currently in operation and that the new brine well has yet to be drilled and has not been scheduled for drilling. You may recall that the APD for the new brine well was approved by the OCD with conditions and a new API# was issued so that the owner/operator could submit a new \$50,000.00 bond for the new brine well. The old brine well is to be plugged and abandoned, but the OCD has not received a C-103 for authorization and signature.

The OCD was in the process of sending out a couple of signed discharge permits to the owner/operator for signature and final fee remittance (check in the amount of \$1,700 made payable to the "Water Quality Management Fund" for the new brine well (API# 30-015-36119). However, the OCD cannot issue the discharge permit renewal for a well that has no bond and has not been drilled. In addition, an original single well cash bond in the amount of \$50,000.00 needs to be submitted to the OCD for the new brine well (please reference new API# on bond) before it can be approved and the old bond (see table above) can be released by the OCD. The owner/operator needs to submit a C-103 with plugging and abandonment specifications for the old brine well (API# 30-015-32068). The OCD will review and sign it if it approves or sign with conditions. A final C-103 must be submitted by the owner/operator within 30 days of approved work to verify that the well was properly plugged and abandoned.

In order to move forward, please do the following within the next 60 days: 1) Send a single well cash bond in the amount of \$50,000.00 for the new brine well, now that you have a new API# from the OCD; 2) Inform the OCD of

4/15/2008

the date and time the new brine well will be constructed, since the OCD has already approved the APD with conditions for the new brine well ; 3) Submit a C-103 for the plugging and abandonment of the old brine well for OCD authorization and signature. At the completion of the plugging and abandonment work, the owner/operator shall submit another C-103 verifying that the old brine well has been plugged and abandoned in accordance with the C-103. The forms establish a record of events for the OCD and the owner/operator.

I am copying Wayne Price to determine how the OCD should proceed in the event the owner/operator does not comply with the above. Your existing permit for the old brine well expired on 12/18/2005, and the owner/operator is currently operating under the old discharge permit. Please contact me if you have questions. Thank you.

Carl J. Chavez, CHMM  
New Mexico Energy, Minerals & Natural Resources Dept.  
Oil Conservation Division, Environmental Bureau  
1220 South St. Francis Dr., Santa Fe, New Mexico 87505  
Office: (505) 476-3491  
Fax: (505) 476-3462  
E-mail: [CarlJ.Chavez@state.nm.us](mailto:CarlJ.Chavez@state.nm.us)  
Website: <http://www.emnrd.state.nm.us/ocd/index.htm>  
(Pollution Prevention Guidance is under "Publications")

**Chavez, Carl J, EMNRD**

---

**From:** Chavez, Carl J, EMNRD  
**Sent:** Wednesday, February 20, 2008 9:11 AM  
**To:** 'Randall Harris'  
**Cc:** Price, Wayne, EMNRD; Gum, Tim, EMNRD  
**Subject:** BW-21 Loco Hills Water Disposal Brine Well No. 2 API# 30-015-36119  
**Attachments:** BW-21 Loco Hills BW No. 2 2-15-08.doc; BW-21 C-101 Final.tif

Mr. Harris:

The OCD has issued API# 30-015-36119 for the new brine well listed above. I have attached the conditions for approval of the new brine well (see attached Word file) and the OCD forms with various schematics received with the forms (see attached Tiff file).

Please work to submit a new bonafide single well bond in the amount of \$50,000.00 (original or duplicate original) directly from the loan institution to my address below. The bond must be received before the new brine well is constructed. In addition, a follow-up C-103 report on the plugging and abandonment (PA) of the former Brine Well No. 1 (API# 30-015-32068) is required within 30 days of completing the PA work.

Please contact me if you have questions. Thank you.

Carl J. Chavez, CHMM  
New Mexico Energy, Minerals & Natural Resources Dept.  
Oil Conservation Division, Environmental Bureau  
1220 South St. Francis Dr., Santa Fe, New Mexico 87505  
Office: (505) 476-3491  
Fax: (505) 476-3462  
E-mail: [CarlJ.Chavez@state.nm.us](mailto:CarlJ.Chavez@state.nm.us)  
Website: <http://www.emnrd.state.nm.us/ocd/index.htm>  
(Pollution Prevention Guidance is under "Publications")

**C-101 Loco Hills Brine Well No. 2 (BW-21)**  
**Conditions of Approval**

- 1) Casing and tubing shall be constructed of steel.
- 2) The 8 5/8 inch casing shoe must be set a minimum of 100 feet below the top of the salt section.
- 3) Cement must be circulated back to surface.
- 4) A double tubing packer must be installed no more than 20 feet above the casing shoe. An approved packer fluid shall be maintained above the packer to surface.

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
1301 W. Grand Avenue, Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy Minerals and Natural Resources

Form C-101  
May 27, 2004

Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Submit to appropriate District Office

AMENDED REPORT

**APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE**

<sup>1</sup> Operator Name and Address Loco Hills Water Disposal P.O. Box 68 Loco Hills, NM 88255		<sup>2</sup> OGRID Number	
		<sup>3</sup> API Number 30 -	
<sup>4</sup> Property Code	<sup>5</sup> Property Name Brine Well		<sup>6</sup> Well No. 2
<sup>9</sup> Proposed Pool 1		<sup>10</sup> Proposed Pool 2	

<sup>7</sup> Surface Location

UL or lot no. L	Section 16	Township 17 S	Range 30 E	Lot Idn	Feet from the 1453	North/South line South	Feet from the 221	East/West line West	County Eddy
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<sup>8</sup> Proposed Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
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Additional Well Information

<sup>11</sup> Work Type Code N	<sup>12</sup> Well Type Code M	<sup>13</sup> Cable/Rotary R	<sup>14</sup> Lease Type Code S	<sup>15</sup> Ground Level Elevation 3667'
<sup>16</sup> Multiple NO	<sup>17</sup> Proposed Depth 1020'	<sup>18</sup> Formation SALT	<sup>19</sup> Contractor Circle Diamond Drilling	<sup>20</sup> Spud Date ASAP
Depth to Groundwater None		Distance from nearest fresh water well 2 miles		Distance from nearest surface water 5 miles
Pit: Liner: Synthetic <input checked="" type="checkbox"/> 20_mils thick Clay <input type="checkbox"/>		Pit Volume: 250_bbls		Drilling Method: Fresh Water <input checked="" type="checkbox"/> Brine <input type="checkbox"/> Diesel/Oil-based <input type="checkbox"/> Gas/Air <input type="checkbox"/>
Closed-Loop System <input type="checkbox"/>				

<sup>21</sup> Proposed Casing and Cement Program

Hole Size	Casing Size	Casing weight/foot	Setting Depth	Sacks of Cement	Estimated TOC
12 1/4"	8 5/8"	32	620	500	Circulated
7 7/8"					

<sup>22</sup> Describe the proposed program. If this application is to DEEPEN or PLUG BACK, give the data on the present productive zone and proposed new productive zone. Describe the blowout prevention program, if any. Use additional sheets if necessary.

Drill with fresh water to 100' below top of salt (T/Salt est 520') Set casing circulate cement.  
Drill out to base of salt est. 1020'

<sup>23</sup> I hereby certify that the information given above is true and complete to the best of my knowledge and belief. I further certify that the drilling pit will be constructed according to NMOCD guidelines , a general permit , or an (attached) alternative OCD-approved plan .

Printed name: Randall Harris

Title: Geologist

E-mail Address: rharrisnm@aim.com

Date: 9/20/07

Phone: 505.677.2370

OIL CONSERVATION DIVISION

Approved by:

Title: ENVL SUPERVISOR

Approval Date: 2/15/08

Expiration Date: 8/15/08

Conditions of Approval Attached

State of New Mexico

DISTRICT I  
1225 N. FRENCH DR., HOBBS, NM 88240

Energy, Minerals and Natural Resources Department

Form C-102

DISTRICT II  
1301 W. GRAND AVENUE, ARTESIA, NM 88210

OIL CONSERVATION DIVISION  
1220 SOUTH ST. FRANCIS DR.  
Santa Fe, New Mexico 87505

Revised October 12, 2005  
Submit to Appropriate District Office  
State Lease - 4 Copies  
Fee Lease - 3 Copies

DISTRICT III  
1000 Rio Brazos Rd., Artec, NM 87410

DISTRICT IV  
1220 S. ST. FRANCIS DR., SANTA FE, NM 87506

WELL LOCATION AND ACREAGE DEDICATION PLAT

AMENDED REPORT

API Number	Pool Code	Pool Name
Property Code	Property Name <b>BRINE WELL</b>	Well Number <b>2</b>
OGRID No.	Operator Name <b>LOCO HILLS WATER DISPOSAL</b>	Elevation <b>3667'</b>

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	16	17-S	30-E		1453	SOUTH	221	WEST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

<p style="text-align: center;">GEODETTIC COORDINATES NAD 27 NME</p> <p style="text-align: center;">Y=666265.5 N X=607201.0 E</p> <p style="text-align: center;">LAT.=32.831164° N LONG.=103.984334° W</p>	<p><b>OPERATOR CERTIFICATION</b></p> <p><i>I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</i></p> <p>Signature _____ Date _____</p> <p>Printed Name _____</p>
	<p><b>SURVEYOR CERTIFICATION</b></p> <p><i>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</i></p> <p style="text-align: center;">OCTOBER 15, 2006</p> <p>Date Surveyed _____ JR</p> <p>Signature &amp; Seal of Professional Surveyor _____</p> <p style="text-align: center;"> </p>
	<p>Certificate No. <b>GARY EIDSEN</b> 12841 <b>RONALD J. EIDSON</b> 3239</p>

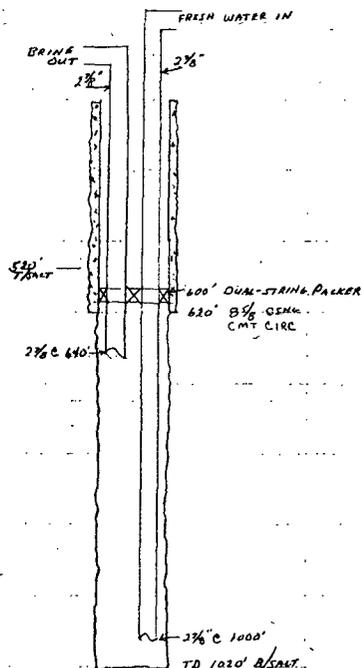
INJECTION WELL DATA SHEET

OPERATOR: Loco Hills Water Disposal Company

WELL NAME & NUMBER: Brine Well # 2

WELL LOCATION: 1453' FSL & 221' FWL      K      16      17 S      30E  
FOOTAGE LOCATION      UNIT LETTER      SECTION      TOWNSHIP      RANGE

WELLBORE SCHEMATIC



WELL CONSTRUCTION DATA

Surface Casing

Hole Size: 12 1/4"      Casing Size: 8 5/8"

Cemented with: 500 sx.      or \_\_\_\_\_ ft<sup>3</sup>

Top of Cement: Surface      Method Determined: Circulated

Intermediate Casing

Hole Size: \_\_\_\_\_      Casing Size: \_\_\_\_\_

Cemented with: \_\_\_\_\_ sx.      or \_\_\_\_\_ ft<sup>3</sup>

Top of Cement: \_\_\_\_\_      Method Determined: \_\_\_\_\_

Production Casing

Hole Size: \_\_\_\_\_      Casing Size: \_\_\_\_\_

Cemented with: \_\_\_\_\_ sx.      or \_\_\_\_\_ ft<sup>3</sup>

Top of Cement: \_\_\_\_\_      Method Determined: \_\_\_\_\_

Total Depth: \_\_\_\_\_

Injection Interval

640 feet to 1000 Open Hole

(Perforated or Open Hole; indicate which)



RECEIVED

2007 SEP 28 PM 1:31

Loco Hills Water Disposal Operating, Inc.

Independent Oil Producer  
Post Office Box 4  
Loco Hills, New Mexico 88255  
PH. 505-677-2370 • FAX 505-677-2361

NMOCD  
1220 S St Francis Dr  
Santa Fe, NM 87505

Attn: Carl Chavez

Re: Loco Hills Water Disposal  
Brine Well #2

Gentlemen:

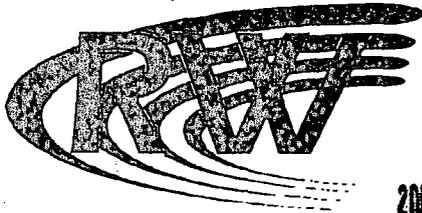
The one half mile area of review for the captioned well that is required on the C-108 (Application For Authorization To Inject) is to great of an area. A brine well circulates fluids under relative low pressure 50-200 psi, while a injection or disposal well forces fluid pressurizing the formation.

In the Brine Well #1 on this same lease, sonar mapping of the salt cavity was preformed after sixteen years of use. The maximum radius was only 178.4 feet. So a more reasonable area of review would be somewhere less than 500'.

The closest well to the proposed Brine Well #2 is the "COG ETZ Unit #109 at 481'. As stated in the C-108 the 8 5/8" surface set at 520' was circulated with cement and the 5 1/2" production casing set at 3305' was cemented with 360 sxs. This well should pose no foreseeable problems for a brine well at the proposed location.

Respectfully submitted,

Randall L. Harris  
Geologist



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2007 SEP 28 PM 1:31

Westall Operating, Inc.

Independent Oil Producer  
Post Office Box 4  
Loco Hills, New Mexico 88255  
PH. 505-677-2370 • FAX 505-677-2361

NMOCD  
1220 S St Francis Dr  
Santa Fe, NM 87505

Attn: Carl Chavez

Re: Loco Hills Water Disposal  
Brine Well #2

Gentlemen:

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Geologist

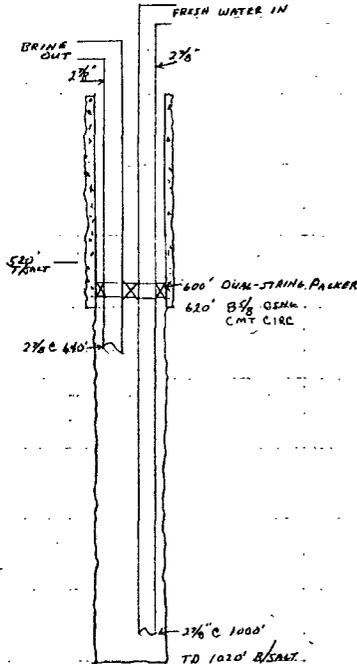
INJECTION WELL DATA SHEET

OPERATOR: Loco Hills Water Disposal Company

WELL NAME & NUMBER: Brine Well # 2

WELL LOCATION: 1453' FSL & 221' FWL      K      16      17 S      30E  
FOOTAGE LOCATION      UNIT LETTER      SECTION      TOWNSHIP      RANGE

WELLBORE SCHEMATIC



WELL CONSTRUCTION DATA

Surface Casing

Hole Size: 12 1/4"      Casing Size: 8 5/8"

Cemented with: 500 sx.      or \_\_\_\_\_ ft<sup>3</sup>

Top of Cement: Surface      Method Determined: Circulated

Intermediate Casing

Hole Size: \_\_\_\_\_      Casing Size: \_\_\_\_\_

Cemented with: \_\_\_\_\_ sx.      or \_\_\_\_\_ ft<sup>3</sup>

Top of Cement: \_\_\_\_\_      Method Determined: \_\_\_\_\_

Production Casing

Hole Size: \_\_\_\_\_      Casing Size: \_\_\_\_\_

Cemented with: \_\_\_\_\_ sx.      or \_\_\_\_\_ ft<sup>3</sup>

Top of Cement: \_\_\_\_\_      Method Determined: \_\_\_\_\_

Total Depth: \_\_\_\_\_

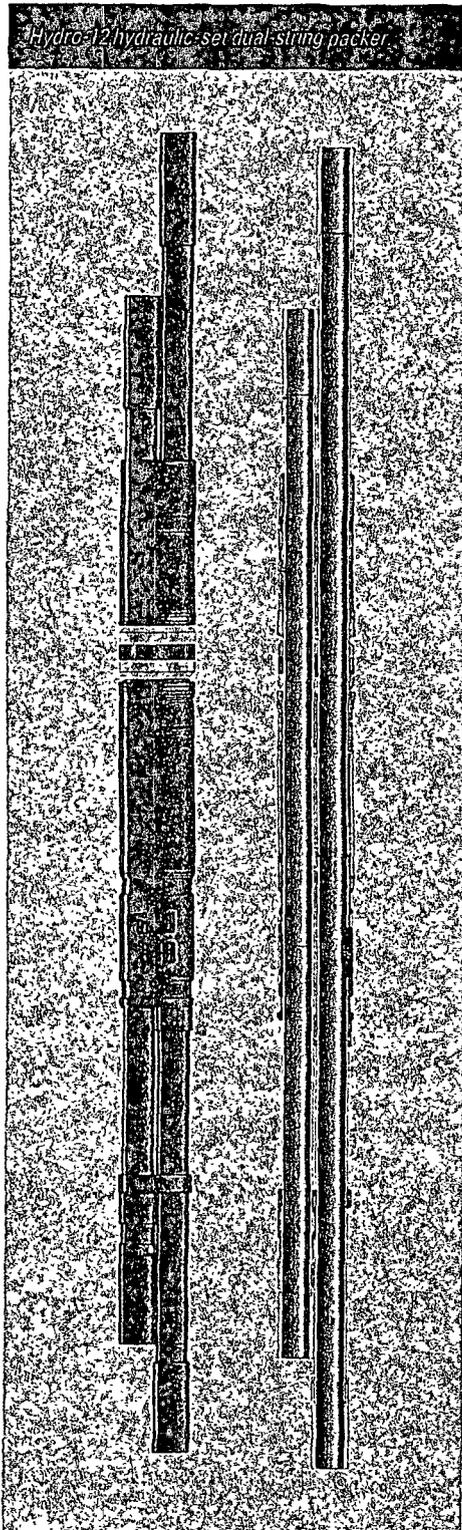
Injection Interval

640 feet to 1000 Open Hole

(Perforated or Open Hole; indicate which)

# Hydro-12 Hydraulic-Set Dual-String Packer

**Schlumberger**



The Hydro-12\* dual-string, hydraulic-set, double-grip, retrievable production packer is designed to be set from either the long or the short string. The Hydro-12 packer can be run in stacked dual installations or above almost any type of single-string packer. The unique design allows the packer to be set without tubing manipulation, and both mandrels are free to rotate for ease of makeup. In addition, the short string does not move during setting, which simplifies tubing space out. Orientation of the string is done by using an optional locking mechanism.

The packer is set by plugging the tubing below the setting ports in the packer and applying pressure to the setting string. Common plugging devices include pump out plugs, pressure trip subs, or blanking plugs. The bidirectional slips anchor the packer in the casing, keeping the packer from moving upward or downward in response to differential pressure or tubing movement. This packer is suitable for applications requiring installation of the wellhead prior to packer setting since no tubing manipulation or movement is required.

The Hydro-12 packer is released by straight upward pull on either the short or long string or simultaneously on both strings until the packer's primary shear pin value is exceeded. When releasing the packer, the primary and secondary mandrel movement is simultaneous. This feature permits the use of electrical submersible pump cable feed-through systems.

## Applications

- Vertical, deviated, or horizontal wellbores
- Dual production strings

## Benefits

- Packer may be set after the wellhead is installed.
- Elimination of mandrel movement during setting facilitates the use of this packer in electrical submersible pump installations.
- Rig time is saved by the simultaneous running of tubing strings.

## Features

- Can be set by the short or long string.
- No tubing manipulation is required to set the packer.
- No mandrel movement occurs during setting.
- Simultaneous mandrel movement occurs while releasing the packer.
- One-piece mandrel is designed with premium connections.
- Setting is not affected by tubing weight below the packer.
- Both mandrels are free to rotate.
- May be run with dual strings simultaneously.
- Tubing may be pulled without disturbing the packer.
- Mechanical locks prevent premature setting.

**Chavez, Carl J, EMNRD**

---

**From:** Chavez, Carl J, EMNRD  
**Sent:** Friday, February 15, 2008 9:12 AM  
**To:** Reno, Carmen, EMNRD  
**Cc:** Price, Wayne, EMNRD  
**Subject:** BW-21 Loco Hills Brine Well No. 2 C-101 w/ Conditions  
**Attachments:** BW-21 C-101.tif

Carmen:

Please find attached the information that you requested. Please contact me if you have questions. Thank you.

Carl J. Chavez, CHMM  
New Mexico Energy, Minerals & Natural Resources Dept.  
Oil Conservation Division, Environmental Bureau  
1220 South St. Francis Dr., Santa Fe, New Mexico 87505  
Office: (505) 476-3491  
Fax: (505) 476-3462  
E-mail: [CarlJ.Chavez@state.nm.us](mailto:CarlJ.Chavez@state.nm.us)  
Website: <http://www.emnrd.state.nm.us/ocd/index.htm>  
(Pollution Prevention Guidance is under "Publications")