AP - 018

STAGE 1 WORKPLAN

8/21/2001

AP018

CHAPARRAL ENERGY, INC.

701 CEDAR LAKE BOULEVARD
OKLAHOMA CITY, OKLAHOMA 73114-7806

AMENDED

STAGE 1 ABATEMENT PLAN

FOR THE

SOUTH LANGLIE JAL UNIT

CONSISTING OF PORTIONS OF SECTIONS 7, 8, 17 & 18 TOWNSHIP 25 SOUTH – RANGE 37 EAST LEA COUNTY, NEW MEXICO

RECEIVED

AUG 28 2001

ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

23 August 2001

INDEX

Stage 1 Abatement Plan for the South Langlie Jal Unit
Sections 7, 8, 17 & 18-T25S-R37E, Lea County, NM

1.0 INTRODUCTION

1.1 EXECUTIVE SUMMARY

Chaparral Energy, Inc. (hereinafter referred to as Chaparral) purchased the New Mexico assets of Bristol Resources Corporation (hereinafter referred to as Bristol) in late October 2000 with an effective date of 1 July 2000. Part of this purchase is the South Langlie Jal Unit (hereinafter referred to as SLJU) located along the northern edge of Jal, New Mexico. Mr. and Mrs. Clay Osborn (hereinafter referred to as Osborn or the surface owner) the surface owners upon whom this unit rests has reported his water wells have "salted out" in the aquifer located just below 45 feet from surface. Tests of his water wells over the years reportedly show a steadily increasing presence of chlorides to the point the water is no longer fit for human or livestock use. This is not surprising when considering the fact that the USGS has stated that the once potable ground water in this area started to become nonpotable as early as 1953. Chloride contents of 610 ppm and higher has been found in several shallow water wells in the Jal, New Mexico area at this time. Since the injection of saltwater in the SLJU did not begin until early 1971, it is highly improbable that this unit was the cause of any of the groundwater contamination of Mr. Osborn's wells. Irregardless, the New Mexico Energy, Minerals and Natural Resources Department has ordered Chaparral submit an abatement plan to investigate and abate ground water pollution underneath this unit.

1.2 SITE DESCRIPTION

The SLJU consists of parts of Sections 7, 8, 17 & 18 of Township 25 South, Range 37 East, Lea County, New Mexico, more precisely described as the E/2 SW/4, SE/4 and the SW/4 NE/4 of Section 7, the SW/4 of Section 8, the W/2 of Section 17 and the E/2 of Section 18, all lying in Township 25 South, Range 37 East, Lea County, New Mexico. (See Appendix A.1 and A.2)

1.3 SITE MAPS

1.3.1 7.5 Minute Series (1:24,000 Scale) Topographic Map (Composite using parts of the Jal NW Quadrangle and the Jal Quadrangle Maps, both dated 1969 and Photorevised in 1979.). See Appendix A.1.

1.3.2 Field Lease Map with the SLJU boundaries marked. Producing oil wells, saltwater injection wells and known monitoring wells are spotted on this map. See Appendix A.2.

1.3.3. Map indicating the projected location for drilling new monitoring wells. See Appendix A.3.

1.3.4. Map showing known water wells within the confines of the unit. Where known, the chloride content of the water is given. See Appendix A.4.

1.3.5. Copy of a portion of the Geologic Map of Southern Lea County, New Mexico showing type of material on the surface as well as the age of that material See Appendix A.5.

1.3.6. Copy of a portion of the Ground-Water Map of Southern Lea County, New Mexico showing water-table contours, type of rock from which the water is found, depth to water, depth of well and whether the well is flowing or being pumped. See Appendix A.6.

1.4 SITE HISTORY

The SLJU sits in undeveloped rangeland just north of Jal, New Mexico. This area has been productive of oil and natural gas since the 1920's. Prior to the discovery of oil and gas in this area the property had been used as rangeland. Few improvements have been made to the area other than scattered homes, barns, corrals, and other outbuildings needed for ranching and the facilities necessary for oil and gas exploration and production. Adjoining properties, surface and subsurface, have been used in a like manner since this area was settled. From the information provided Chaparral there are at least five waterwells on the property that are, or recently have been, in use. Several other water wells and groundwater monitoring wells are located within a mile of the unit. The Jal Country Club has drilled and developed several water wells to support the vegetation on the country club grounds. These wells lie south of Osborn's home in the southeast corner of Section 18-T25S-R37E, Lea County, New Mexico. To date, accurate and reliable well data on these wells as to their exact location and depth to groundwater has not been seen by Chaparral personnel. Bristol, Apache Corporation, Texaco Exploration and Production, Inc., Penroc Oil Corporation and possibly others have operated the SLJU or individual producing wells within the unit in the past, according to the information at hand.

According to the a book developed by the United States Geological Survey, Ground-Water Report 6, Geology and Ground-Water Conditions in Southern Lea County, New Mexico, 1961, by Alexander Nicholson, Jr. and Alfred Clebsch, Jr. once potable ground-water in this area started to become nonpotable as early as 1953, if not before. Chloride contents of 610 ppm and higher was found in several water wells in the Jal, New Mexico area at that time. This was attributed to the widespread use of brine disposal pits, leaking pipelines and oil production in general throughout the area. Chloride pollution of the shallow aquifer appears to cover most of Lea County, New Mexico.

1.5 SUMMARY OF PREVIOUS INVESTIGATIONS

Starting in January 1999, Cornerstone Environmental Resources, Inc. (hereinafter referred to as CERI), on behalf of Bristol, conducted a Phase II Environmental Assessment of the property. Trenches were dug along the paths of earlier saltwater releases, at abandoned tank battery sites and on other locations that warranted deeper investigation. Soil samples were taken in an attempt to ascertain the length, width and depth of any damage due to brine from pipeline leaks or other sources. Sampling and testing showed some high chloride levels, but it also indicated the damage done was either from much earlier releases (prior to Bristol taking over operations of the unit), releases from off-site or the chlorides could be naturally

occurring. Talks were held with the NMOCD to determine the appropriate actions to be taken concerning these discoveries. The NMOCD directed Bristol to determine the source of the brine water thought to have impacted the groundwater or the environment and to perform vertical and horizontal delineation of the contamination by sampling for BTEX, TPH and Chlorides.

In June 19999, CERI conducted a second Phase II Environmental Assessment of the property. Six soil borings were made to depths of 20 to 25 feet to further delineate chloride concentrations at and near the site of a recent pipeline release just north of the SLJU Well #13 WIW. These borings were to ascertain the presence and concentration of BTEX and TPH, if any exists. BTEX above the detection limit of 20µg/kg was not found in any of the samples analyzed. TPH was found in several places above the detection range of 1 mg/kg. (See Tables attached.) TPH in the diesel range was found only near the surface of Soil Sampling Well #3 and TPH in the gasoline range was found near the surface of Soil Sampling Well #6. Ground water was reportedly not encountered in any soil sampling well.

In January 2000, CERI conducted a third Phase II Environmental Assessment of the property. This time three sites were evaluated for the deeper presence of hydrocarbon contamination. Site 1 was an abandoned oil and gas lease tank battery. A sign at the facility identified the site as the Winters "E" Lease Tank Battery located near the W/2 NE/4 of Section 18-T25S-R37E. All production vessels had been removed and only the battery fence, concrete blocks and some junk iron remained. Site 2 was another tank battery site without production vessels. No lease sign was present to properly identify the lease, but according to the topographic map the location is near the SE/4 SW/4 NE/4 of Section 18-T25S-R37E. Site number 3 was a former flare pit located west of an abandoned tank battery located near the SW/4 SW/4 SE/4 of Section 18-25S-37E and it too had no production vessels. Soil material was found on top of a plastic tarp just west of the pit, indicating contaminated soil had been removed by parties unknown and allowed to bio-remediate in place.

Samples at Site 1 were analyzed and found to have TPH GRO of 23.1 mg/kg and TPH DRO of 13,900 mg/kg. No BTEX was detected. The positive test came from heavy, dried hydrocarbon contaminated soils that had been scrapped up and piled in the northeast corner of the tank battery pad. This soil reportedly can be dug up and hauled to a proper disposal facility in that it is not mobile hydrocarbon and does not appear to extend below ground level more than an inch or two. Similar type hydrocarbon deposits were found at Site 2 and again no BTEX was detected. Testing in 1999, using EPA Method 8015 Modified, had detected TPH GRO of 1.55 mg/kg and TPH DRO of 4,160 mg/kg from this soil at the surface. Additional testing in June 2000, using EPA Method 418.1, detected TPH in the 8,000 to 8,800 mg/kg range at the surface. A surface sample at Site 3 showed TPH DRO of 24,300 mg/kg, but no BTEX or TPH GRO. Tests were also conducted on the soil that had been placed on the plastic tarp. BTEX, TPH DRO and TPH GRO were not detected. However, TPH using EPA Method 418.1 did detect TPH of 8,700 mg/kg from this source. CERI recommended the top six inches of soil at each site be removed for off-site disposal and the pit backfilled with clean soil. Bristol and CERI felt that was all that would be necessary to bring these sites into full compliance with NMOCD regulations.

In March 2000, Safety & Environmental Solutions, Inc. (hereinafter referred to as SESI) reportedly conducted an Environmental Site Assessment on behalf of the Osborn's. They reportedly made eight test borings around the Winters "E" Lease Tank Battery (SESI Site #1), four test borings at Cornerstone's second site located at SE/4 SW/4 NE/4 of Section 18-T25S-R37E (SESI Site #2) and three test borings near Cornerstone's Site #3 (SESI Site #3) in an attempt to determine the vertical extent of BTEX, TPH and Chloride contamination. Chlorides in soil were alleged to be in excess of 250 ppm to a depth of 45 feet from surface at all locations. The next set of test borings was reportedly made north of the SLJU #3 Water Injection Well and it appears SESI put in 6 bore holes to a depth of 25 feet. Results were reported to be similar to those found earlier. Several other sites were mentioned as being visually identified but not yet tested. A final site, which appears to be just south of Osborn's home, was identified by SESI as a place to install three test borings. From what Chaparral has been told by the surface owner and SESI personnel, SESI sampled and tested the known water wells in the immediate vicinity of Osborn's home for the presence and concentration of chlorides. Reportedly, chloride concentrations ranged from 121 mg/l to 857 mg/l, but data was not provided on a specific well to well basis. Also, a sample of the water used by the City of Jal for watering the country club was analyzed by SESI and found to have a chloride concentration of 610 mg/l. Again, exactly which well was tested was not reported. This information is being sought.

2.0 WORKPLAN – SUBSURFACE

2.1 SITE GEOLOGY AND HYDROLOGY

The surface of the unit is comprised of sediments of Quaternary age that are in the form of either alluvial deposits or dune sands of Recent age. The alluvium was deposited in topographically low areas where the Triassic Ogallala formation has been eroded away. The dune sands normally cover both the alluvium and the Ogallala formation. In several areas the older alluvium is exposed in small duneless patches or in pits, natural or man made. The alluvium varies in thickness from just a few inches to several hundreds of feet, with an average depth of around 100 feet. At the surface it is generally calcareous silt. Surface sands are usually very porous and permeable, as are alluvial deposits, with fractured caliche at or just below the surface. The sand encountered in this area is generally a fine- to medium-grained, uniformly reddish-brown or white and poorly cemented. The dunes are stable to semistable over most of the area with some active dune migration. Average thickness of the sand runs between 5 to 10 feet with some areas as much as 30 feet in thickness.

Structurally, this portion of Lea County, New Mexico sits in the Delaware Basin. Triassic rocks in the area have a regional dip of less than 1 degree to the southeast. There are reverse dips in the area generally around depressions. Groundwater flow tends to follow this regional dip within the area of the SLJU. The only other structural features are major unconformities due to subsidence or differential compaction of the sediments to the west. These other structural features have some effect on the direction of groundwater flow, usually directing it to the south.

2.2 VERTICAL & HORIZONTAL EXTENT OF THE POLLUTION

Several test borings apparently have been made throughout the unit area. However, the exact extent of any pollution, both horizontally and vertically, has not been adequately established. The proposed request for information from Bristol and SESI should help determine if chloride contamination extends off-site (off of the SLJU) and how much of the 45 foot aquifer is chloride contaminated. Existing data may also help determine the source or sources of any contamination, or at least enable one to make a logical decision on where to drill next. Chaparral proposes to drill test holes down to the base of the first aquifer (approximately 60 feet from surface) in the following locations:

1. SW/4 NW/4 SE/4 Section 18-T25S-R37E, Lea County, New Mexico
2. SW/4 SE/4 SW/4 Section 7-T25S-R37E, Lea County, New Mexico
3. SW/4 SW/4 NE/4 Section 7-T25S-R37E, Lea County, New Mexico

Soil samples shall be taken every 10 feet and analyzed for TPH, BTEX and chlorides. The results of these tests shall be compiled with the results from previous testing and an attempt shall be made to ascertain from where the aquifer contamination is coming. Water samples shall also be taken and analyzed for BTEX, TDS, Chlorides (Cl), Bromides (Br), Bicarbonates (SO_4), Magnesium (Mg), Potassium (K) and Sodium (Na) in an attempt to determine the presence of natural waters in the area as opposed to waters from oil and gas production operations.

2.3 MAGNITUDE OF VADOSE-ZONE & GROUNDWATER CONTAMINATION

Vadose-zone contamination has not been determined. No report made available to Chaparral to date mentions by name or reference a vadose-zone being encountered. It is hoped data on the vadose-zone and groundwater contamination is available in already completed reports. Should data be missing or otherwise unavailable this area shall be addressed in this investigation and report.

2.4 SUBSURFACE HYDRAULIC PARAMETERS, INCLUDING:

2.4.1 HYDRAULIC CONDUCTIVITY

This has yet to be determined. When the proposed test wells are drilled and completed hydraulic conductivity calculations shall be made. Existing water wells completed in this zone shall also be tested so long as the well's owner allows the work to be completed.

2.4.2 HYDRAULIC TRANSMISSIBILITY

This has yet to be determined. When the proposed test wells are drilled and completed hydraulic transmissibility calculations shall be made. Existing water wells completed in this zone shall also be tested so long as the well's owner allows the work to be completed.

2.4.3 HYDRAULIC STORATIVITY

This has yet to be determined. When the proposed test wells are drilled and completed hydraulic storativity calculations shall be made. Existing water wells completed in this zone shall also be tested so long as the well's owner allows the work to be completed.

2.4.4 RATE OF CONTAMINATE MIGRATION

This has yet to be determined. When the proposed test wells are drilled and completed rate of contamination migration calculations shall be made. Existing water wells completed in this zone shall also be tested so long as the well's owner allows the work to be completed.

2.4.5 DIRECTION OF CONTAMINATE MIGRATION

Previous borings and measurements appear to indicate groundwater is moving to the southeast, possibly from the hills located north and west of Jal, New Mexico. This flow crosses the unit and would cause pollution from sources west of the unit to pass underneath the property of the surface owner and the City of Jal, New Mexico. The proposed test wells should help confirm the direction of groundwater flow. In order to determine the direction of groundwater flow, all existing water wells used in this survey and all new wells put in by Chaparral shall be surveyed in, accurately spotted on a USGS Topographic Map and from this an accurate direction of contaminate migration determined.

2.5 INVENTORY OF WATER WELLS INSIDE THE CONTAMINATED AREA

The true extent of groundwater contamination is not fully known at this time. From previous sampling it appears most of the water wells underlying Osborn's surface have chloride concentrations in excess of permissible levels (250 mg/l). The same may possibly be said of the water wells used by the City of Jal, New Mexico in their golf course watering operations. As the full extent of the contamination of these wells is determined a more accurate water well count will be made. See the attached table provided by Bristol representatives listing known water wells in the area for a partial listing of water wells with known chloride contamination problems. At present, no reliable data has been seen as to the exact location and depth of any water well in the area. Water well owners in the area may need to be required to provide well data should said data not be a part of the State of New Mexico's records. A request is being made to the State of New Mexico State Engineer's Office for all data pertaining to known water wells in the area. This data shall be incorporated into the initial report filled by Chaparral.

2.6 INVENTORY OF WATER WELLS WITHIN ONE-MILE OF THE PERIMETER OF THE THREE-DIMENSIONAL BODY WHERE THE STANDARDS OF SEC. 4103.B ARE EXCEEDED

The one-mile perimeter of the three-dimensional body where the standards of Section 4103.B are exceeded is not fully known at this time. Further examination of existing records is required to determine this perimeter after which an inventory can be conducted. A partial list of waterwells in the area is attached in Appendix B. Attempts are being made to locate all water wells within one mile of the SLJU boundaries. As they are identified and properly located on the map they will be listed. Surface owners shall be questioned as to each well's depth, age, water quality and present use. Water samples may be taken to ascertain contaminates present and their concentration.

2.7 LOCATION OF SUCH WELLS ACTUALLY AFFECTED BY POLLUTION

A listing of known wells actually affected by pollution is attached to this document. See Appendix C. See paragraph 2.6 above in regards to adding to this list.

2.8 LOCATION OF SUCH WELLS POTENTIALLY AFFECTED BY POLLUTION

The exact location of wells potentially affected by pollution is unknown at this time. Once this phase of the investigation is over a list will be prepared. See paragraph 2.6 above in regards to adding to this list.

3.0 WORKPLAN – SURFACE

At the present time no formal written surface workplan has been prepared. Company crews have been working to remove surface trash, debris, abandon equipment and materials from the unit surface. This includes concrete pumping unit bases, collapsed buildings, empty 55-gallon drums, buckets, pails and oil-contaminated soils. Furthermore, the existing oil storage facility has been rebuilt with a new oil storage tank to replace a bad one and new flowlines between pieces of equipment. Once this investigation is over and a source, or sources, of possible contamination have been determined a surface workplan will be prepared that addresses the possible pollution of groundwater in the area. Steps are already underway to restore abandoned wellsites and remediate known areas of surface pollution on the SLJU.

3.1 SURFACE-WATER HYDROLOGY

A preliminary assessment of the surface water hydrology on the unit proper indicates a relatively flat surface cut by several shallow northwest to southeast running gullies. No intermittent streams or creeks nor any ponds or lakes are shown on the topographic map for the lands comprising the unit. No lakes, ponds, creeks or streams were seen during the course of a recent physical investigation of the surface, only very shallow and broad areas that can conduct floodwater runoff were seen.

3.2 SEASONAL STREAM FLOW CHARACTERISTICS

There are no streams or creeks on the surface of the unit. Erosional gullies contain flowing water only after heavy rainfall events and even then only for a very short period of time.

3.3 GROUNDWATER/SURFACE WATER RELATIONSHIPS

Based on the maps seen to date, a physical inspection of the property and conversations with those who claim to know the area, surface waters in the form of rainfall tend to soak into the ground very quickly. Just beneath the top soil (mostly sand) is a layer of fractured caliche and limestone, but they allegedly provide little to no protection for the aquifer.

3.4 IMPACT TO SURFACE WATER AND STREAM SEDIMENTS

Any release of produced water onto the surface will have little to no impact upon surface waters and stream sediments. Surface waters are seldom in the area and then only during storm events. There are no streams in the area where excess sediments would be a detriment to the stream.

3.5 MAGNITUDE OF CONTAMINATION AND IMPACTS ON SURFACE WATER

From visual inspections, no surface water exists nearby which can be contaminated.

3.5.1 BIOLOGICAL ASSESSMENT OF FISH

There are no known fish in this area.

3.5.2 BIOLOGICAL ASSESSMENTS OF BENTHIC MACROINVERTEBRATES

There are no known benthic macroinvertebrates in this area.

3.5.3 BIOLOGICAL ASSESSMENT OF OTHER WILDLIFE POPULATIONS

Any produced water that may have been released on the unit lands does not appear to have had any affect on local wildlife. No pools or ponding of saltwater or crude oil has been seen and surface soils appear to have absorbed any produced water that may have come into contact with the surface. Evaporation in this area is at such a rapid pace that little remains for wildlife to drink or become exposed to should produced waters pond.

4.0 MONITORING PROGRAMS

At the present time Chaparral does not have any monitoring wells in place on this unit. A physical investigation of the unit revealed a monitoring well just north of the SLJU Well #13 WIW. Bristol reportedly put this in after a pipeline release in January 1999. Chaparral has no verifiable data from this well, but CERI states the well was drilled to a total depth of 52 feet with the top of the aquifer being found at 45 feet from surface. From other correspondence it appears SESI does have, or at least has had, several monitoring wells located south of the injection well (Well #13) now owned by Chaparral. A physical inspection of the unit failed to reveal any of the monitoring wells alleged to have been installed by SESI. The surface owner states he is not aware of any left behind by SESI and he has not been paying for any water testing by a laboratory, nor has he been invoiced by SESI for any water testing. A conversation with representatives of SESI confirms they plugged all of the test wells they dug. The well left behind by Bristol has not been tampered with since Chaparral took possession of the unit and it has not had its water tested for well over a year now. Once data has been received from Bristol as to this monitoring well Chaparral may use it to help monitor the ground water at this location.

4.1 SAMPLING STATIONS

At the present time Chaparral does not have any sampling stations in place on the unit. Bristol did have some sampling trenches and borings made by CERI, but they allegedly were closed. Some test trenches attributable to Bristol were found at several sites and they were not properly closed. Chaparral had a roustabout crew clean up this site, closing off the open pits with the tailings left behind. The open trenches were a safety hazard for domestic animals and a potential collection point for waste materials, thus they were closed off. This site is scheduled to be cleaned up as part of the overall plan to put this unit back on line.

4.2 FREQUENCIES OF SAMPLING

Chaparral has no sampling points at this time. Present plans are to catch soil and water samples from any test wells put in and then develop the wells for use as monitoring wells. Soil samples shall be taken and tested where field-testing indicates pollution may exist as well as every ten feet into the ground. Water samples shall be taken and tested regardless of what field-testing indicates. Monitoring wells shall have their waters sampled semi-annually thereafter unless required to be tested more often by the NMOCD. Monitoring shall continue for the life of the abatement process, or until such time as Chaparral Energy Inc. requests they be closed and the NMOCD sees fit to have them abandon.

4.3 LABORATORY TESTS TO BE RUN AND ANALYTES

The groundwater-sampling program shall include testing for Total Dissolved Solids (TDS), chlorides (Cl), bromides (Br) sulfates (SO_4), sodium (Na), magnesium (Mg), potassium (K), calcium (Ca), metals and alkalinity. Should petroleum products be detected, the groundwater shall be tested for TPH and BTEX using state-approved methods.

The soil shall be tested for BTEX, TPH GRO, TPH DRO and chlorides (Cl) using state-approved methods.

4.4 QUALITY ASSURANCE PLAN

The quality assurance plan used shall be consistent with the sampling and analytical techniques listed in Section 3107.B of 20 NMAC 6.2, Ground and Surface Water Protection.

4.5 SITE HEALTH AND SAFETY PLAN

A Site Health and Safety Plan is attached as Appendix D at the end of this plan. Appendix F contains a Material Safety Data Sheet (MSDS) for crude oil, the only expected chemical to be found on location.

5.0 ACTIVITIES SCHEDULE

A Schedule of Activities is attached as Appendix E at the end of this plan.

5.1 SUBMISSION OF QUARTERLY PROGRESS REPORTS

A report shall be prepared by Chaparral, or its agent, for submission to the NMOCD within 30 days of the completion of the initial work and not later than 10 days after the end of each calendar quarter so long as the abatement process continues. With said report shall be a recommendation (or recommendations) as to further work deemed necessary.

5.2 SUBMISSION OF FINAL SITE INVESTIGATION REPORT

A final report submission date is unknown at this time, but Chaparral, or its agent, shall submit this report as required by the NMOCD.

6.0 ADDITIONAL INFORMATION

No additional information is provided.

6.1 FIGURES AND SITE DIAGRAMS

Attached to the end of this plan are copies of the following:

1. Topographic map covering the unit.
2. Field lease map showing the location of know oil and gas wells and production facilities. The unit boundary is outlined on this map.
3. Map indicating the projected location for drilling new monitoring wells.
4. Map showing known water wells within the confines of the unit. Where known, the chloride content of the water is given.
5. Copy of a portion of the Geologic Map of Southern Lea County, New Mexico showing type of material on the surface as well as the age of that material. Ground-water Report

6, Geology and Ground-Water Conditions in Southern Lea County, New Mexico, United States Geological Survey, 1961.

6. Copy of a portion of the Ground-Water Map of Southern Lea County, New Mexico showing water-table contours, type of rock from which the water is found, depth to water, depth of well and whether the well is flowing or being pumped. Ground-water Report 6, Geology and Ground-Water Conditions in Southern Lea County, New Mexico, United States Geological Survey, 1961.

6.2 PHOTOGRAPHS

No photographs are provided with this document. The reports submitted after each phase of work is completed should contain photographs as is warranted in the field.

6.3 LABORATORY REPORTS AND CHAIN OF CUSTODY FORMS

This document contains no laboratory reports or chain-of-custody forms. Subsequent reports may contain this material after samples are taken and analyzed. Previous reports submitted to the NMOCD are not included. Chaparral does not have possession of the original documents and cannot vouch for the accuracy of the copies in hand.

6.4 APPENDICES

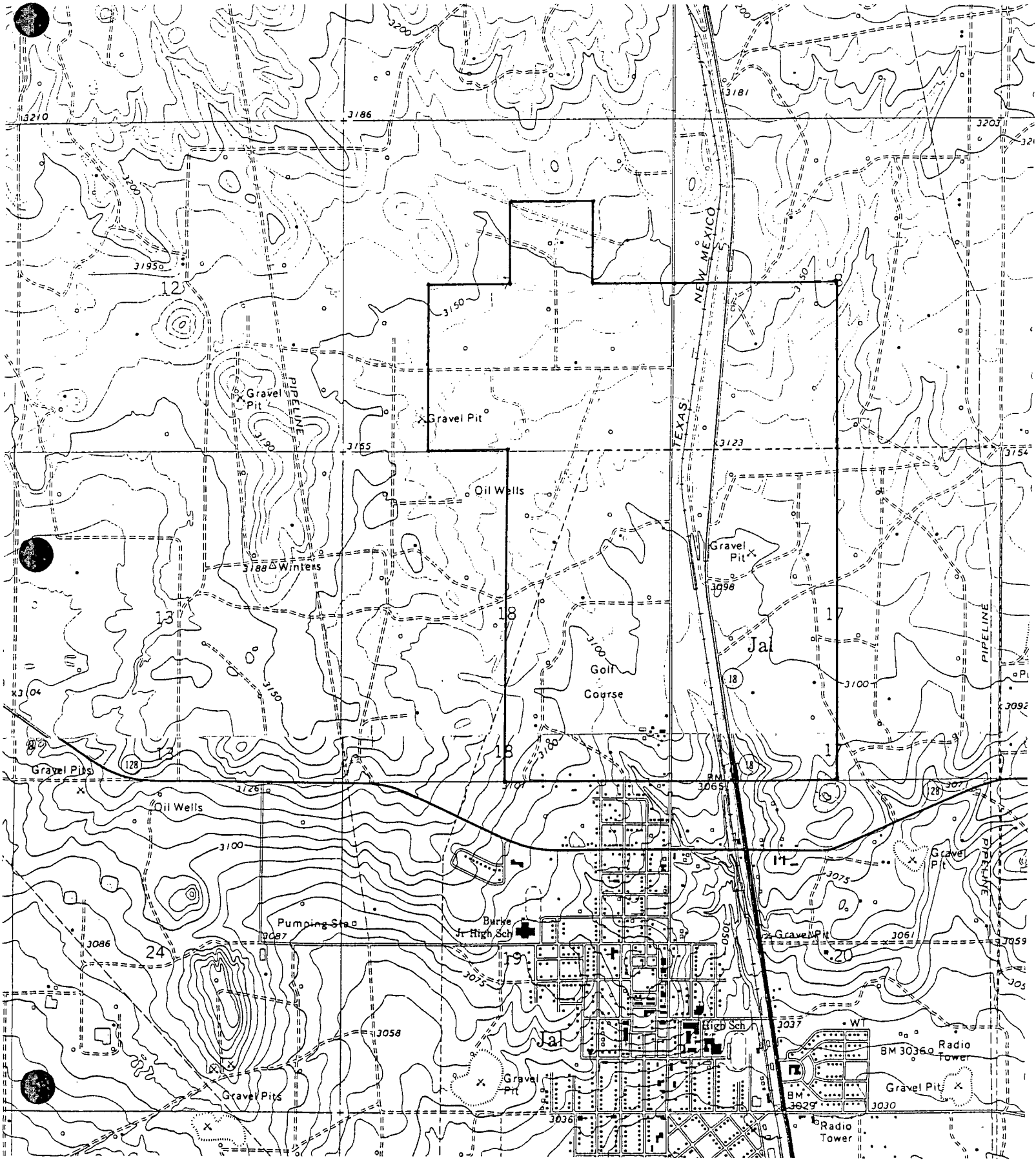
A	Site Maps
A.1	7.5 Minute Series (1:24,000 Scale) Topographic Map
A.2	Field Lease Map with the South Langlie Jal Unit Boundaries Marked.
A.3	Map indicating the projected location for drilling new monitoring wells.
A.4	Map showing known water wells within the confines of the unit. Where known, the chloride content of the water is given.
A.5	Copy of a portion of the Geologic Map of Southern Lea County, New Mexico showing type of material on the surface as well as the age of that material
A.6	Copy of a portion of the Ground-Water Map of Southern Lea County, New Mexico showing water-table contours, type of rock from which the water is found, depth to water, depth of well and whether the well is flowing or being pumped
B	Water and Monitoring Wells List
C	Waterwells Actually Affected by Pollution South Langlie Jal Unit
D	Site Safety and Health Plan
E	Activities Schedule
F	Material Safety Data Sheet – Crude Oil

APPENDIX A

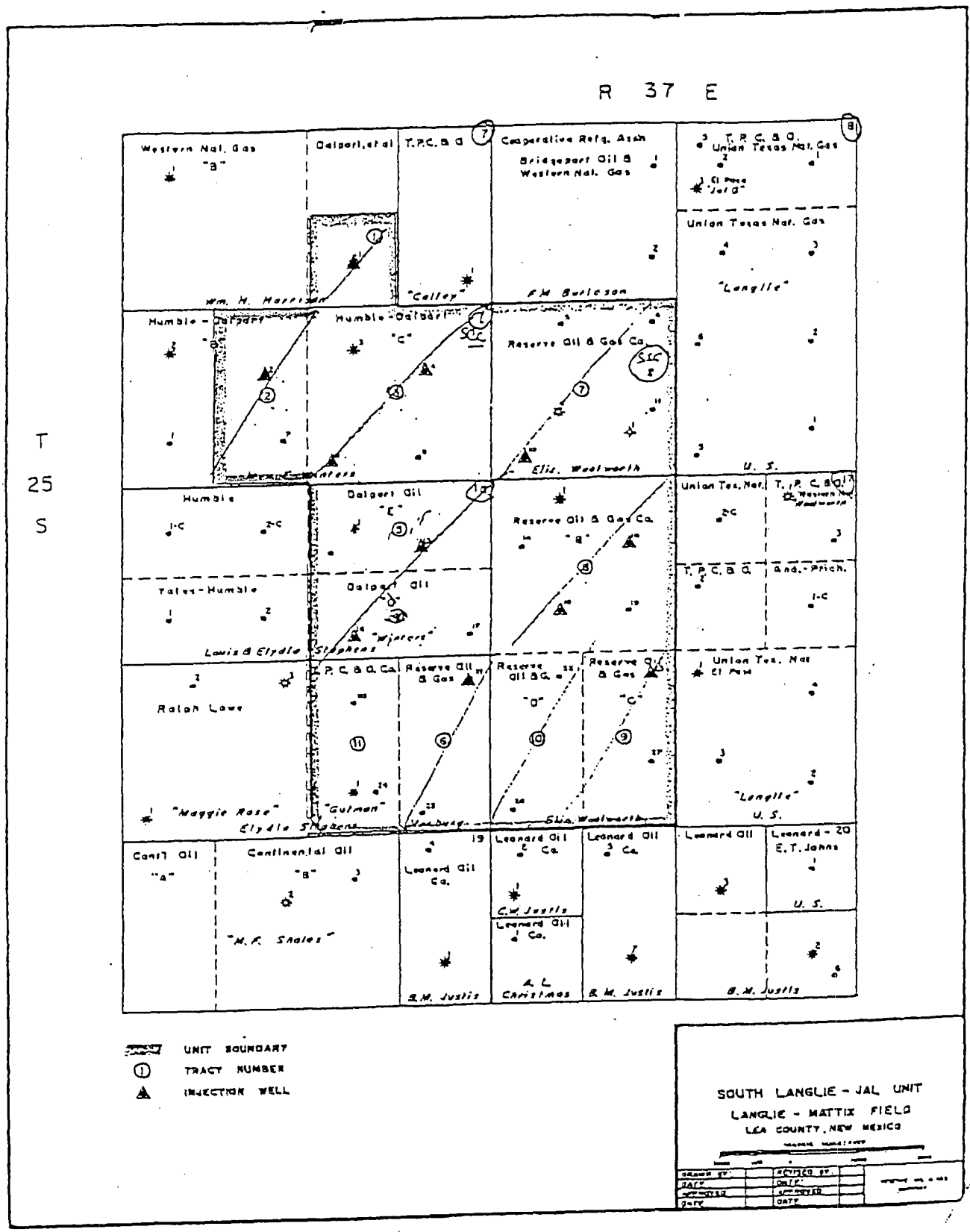
SITE MAPS

A.1 7.5 Minute Series (1:24,000 Scale) Topographic Map

Stage 1 Abatement Plan for the South Langlie Jal Unit
Sections 7, 8, 17 & 18-T25S-R37E, Lea County, NM



A.2 Field Lease Map with the South Langlie Jal Unit Boundaries Marked.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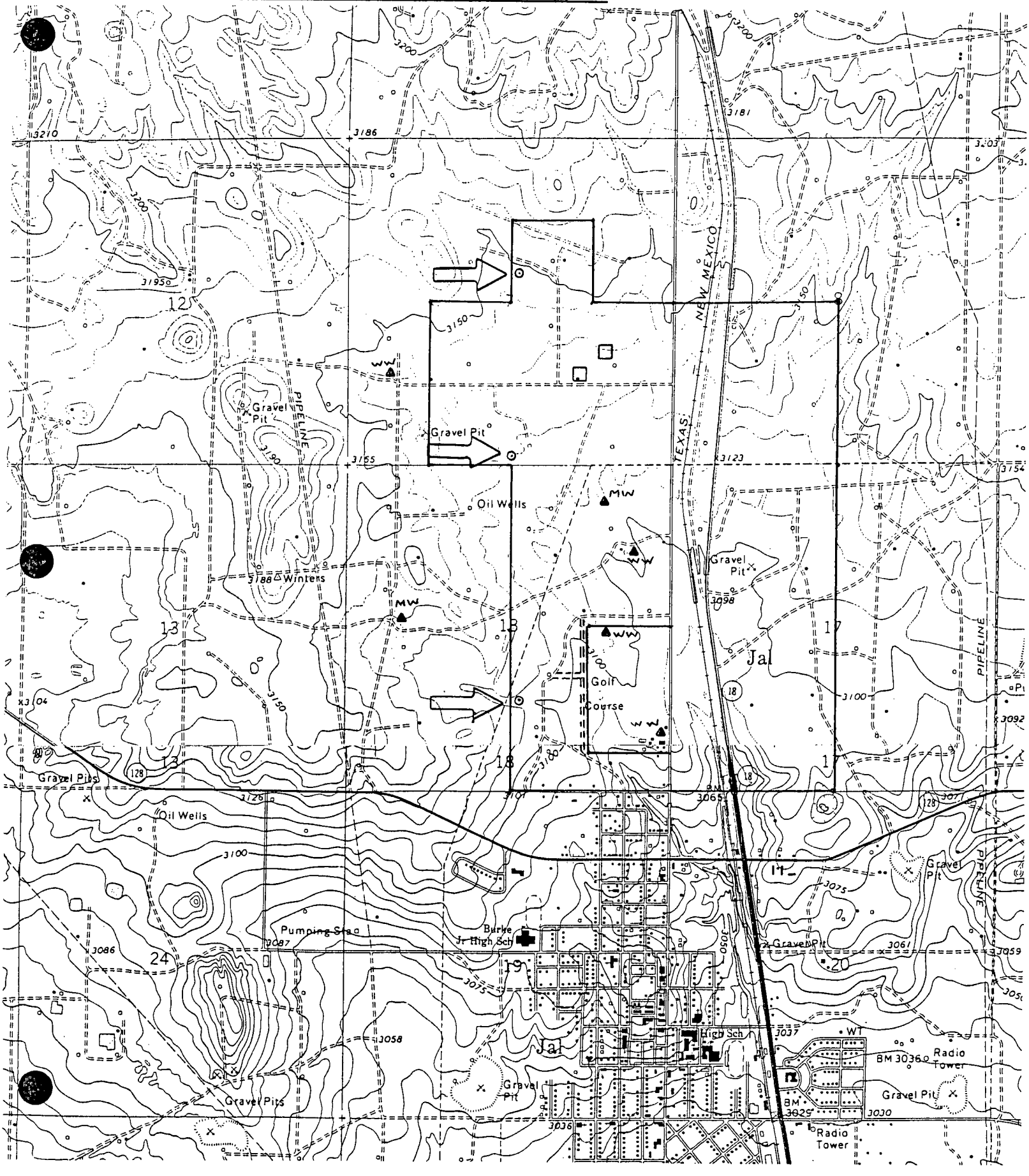
T 25 S
Western Nat. Gas "B"
Dalport, et al
T.P.C. & G
Cooperative Refg. Assn
Bridgeport Oil & Western Nat. Gas
T. P. C. & G.
Union Texas Nat. Gas
El Paso "Jal"
Union Texas Nat. Gas
"Langlie"
Wm. H. Morrison
"Calley"
F.M. Burleson
Humble - Dalport
Humble - Dalport "C"
Reserve Oil & Gas Co.
SEC
Eliz. Woolworth
U. S.
Humble
Dalport Oil "E"
Reserve Oil & Gas Co. "B"
Union Tex. Nat.
T. P. C. & G.
Western
Yates - Humble
Dalport Oil
Lewis & Elydia Stephens
"Wisters"
T. P. C. & G.
And. - Prich.
Ralph Lowe
P. C. & G. Co.
Reserve Oil & Gas
Reserve Oil & G.
"D"
Reserve Oil & Gas
"C"
Union Tex. Nat
El Paso
"Maggie Rose"
Elydia Stephens
"Gulman"
Woolworth
Eliz. Woolworth
"Langlie"
U. S.
Cont'l Oil "A"
Continental Oil "B"
"M. F. Snales"
19
Leonard Oil Co.
Leonard Oil Co.
C.W. Justis
Leonard Oil Co.
Leonard Oil
Leonard - 20
E.T. Johns
U. S.
B.M. Justis
A. L. Christmas
B. M. Justis
B. M. Justis
UNIT BOUNDARY
TRACT NUMBER
INJECTION WELL
SOUTH LANGLIE - JAL UNIT
LANGLIE - MATTIX FIELD
LEA COUNTY, NEW MEXICO

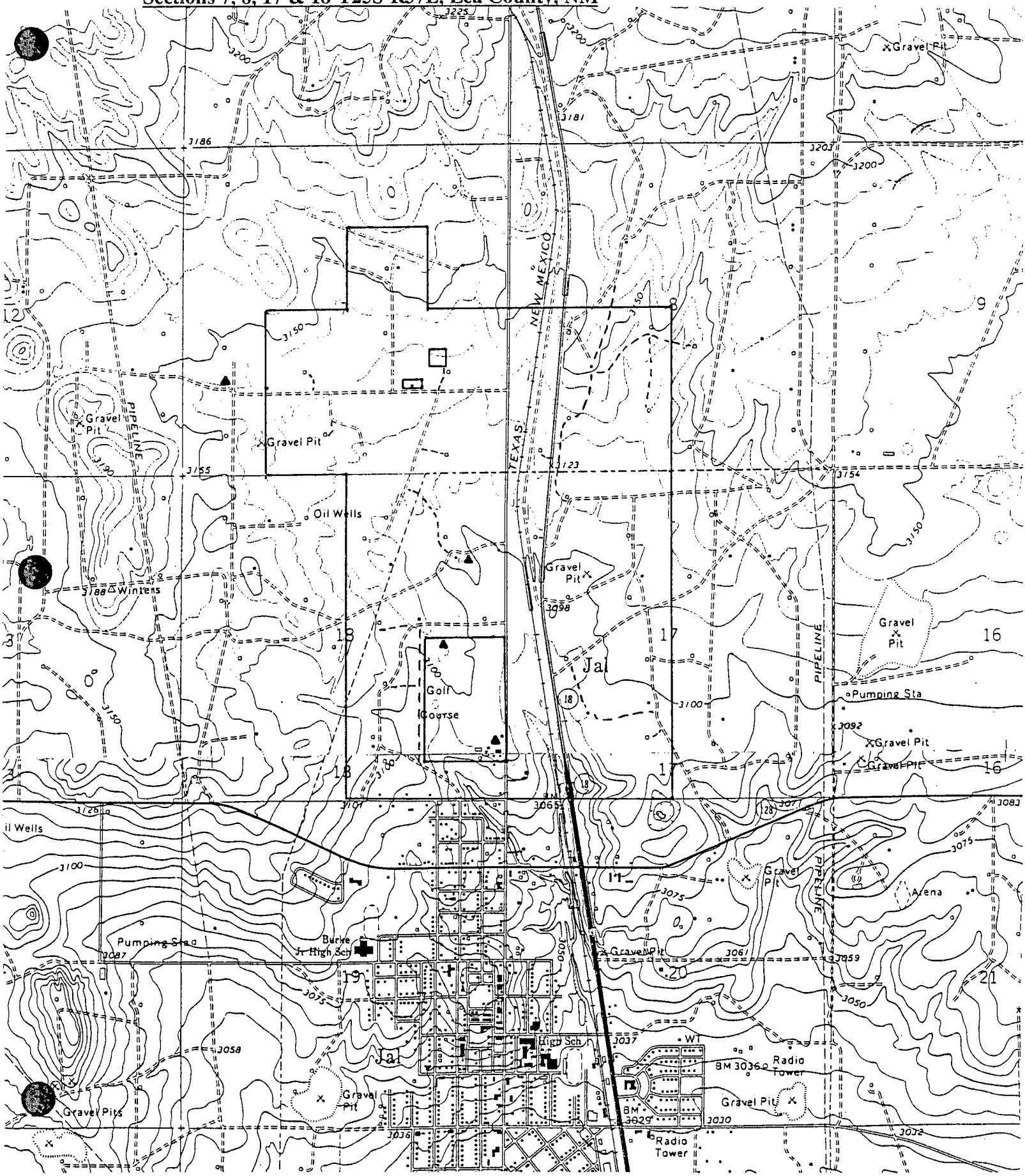
A.3 Map indicating the projected location for drilling new monitoring wells.

Stage 1 Abatement Plan for the South Langlie Jal Unit
Sections 7, 8, 17 & 18-T25S-R37E, Lea County, NM



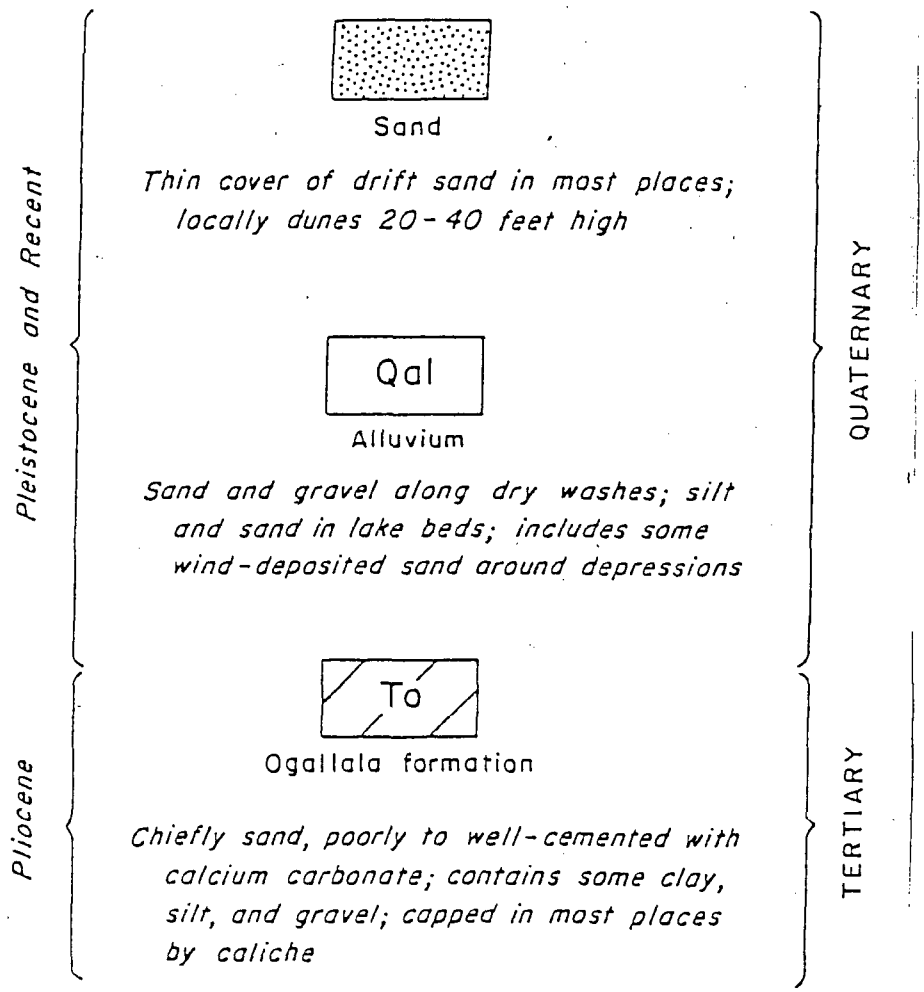
A.4 Map showing known water wells within the confines of the unit. Where known, the chloride content of the water is given.

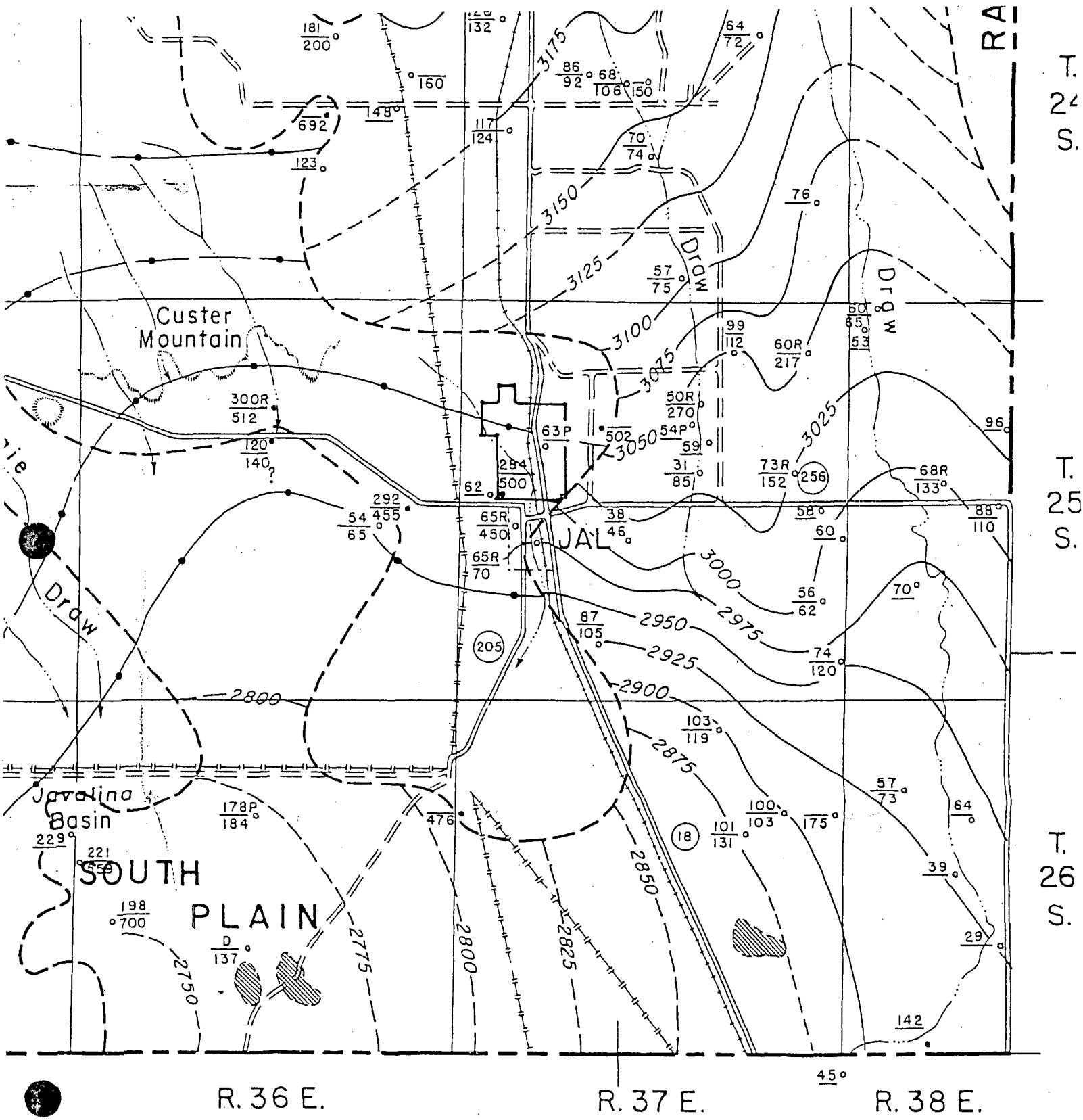
Stage 1 Abatement Plan for the South Langlie Jal Unit
Sections 7, 8, 17 & 18-T25S-R37E, Lea County, NM



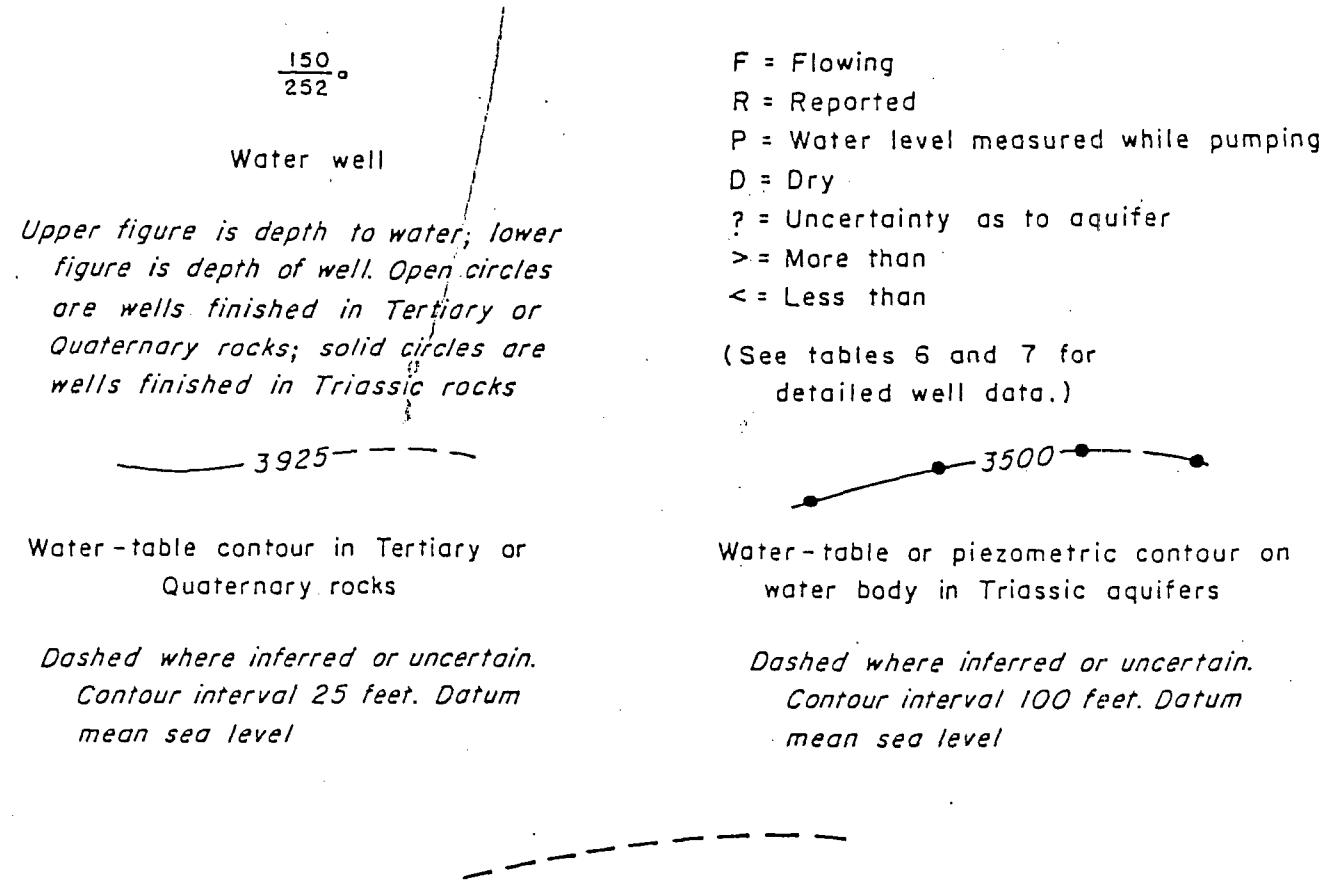
A.5 *Copy of a portion of the Geologic Map of Southern Lea County, New Mexico showing type of material on the surface as well as the age of that material*

EXPLANATION

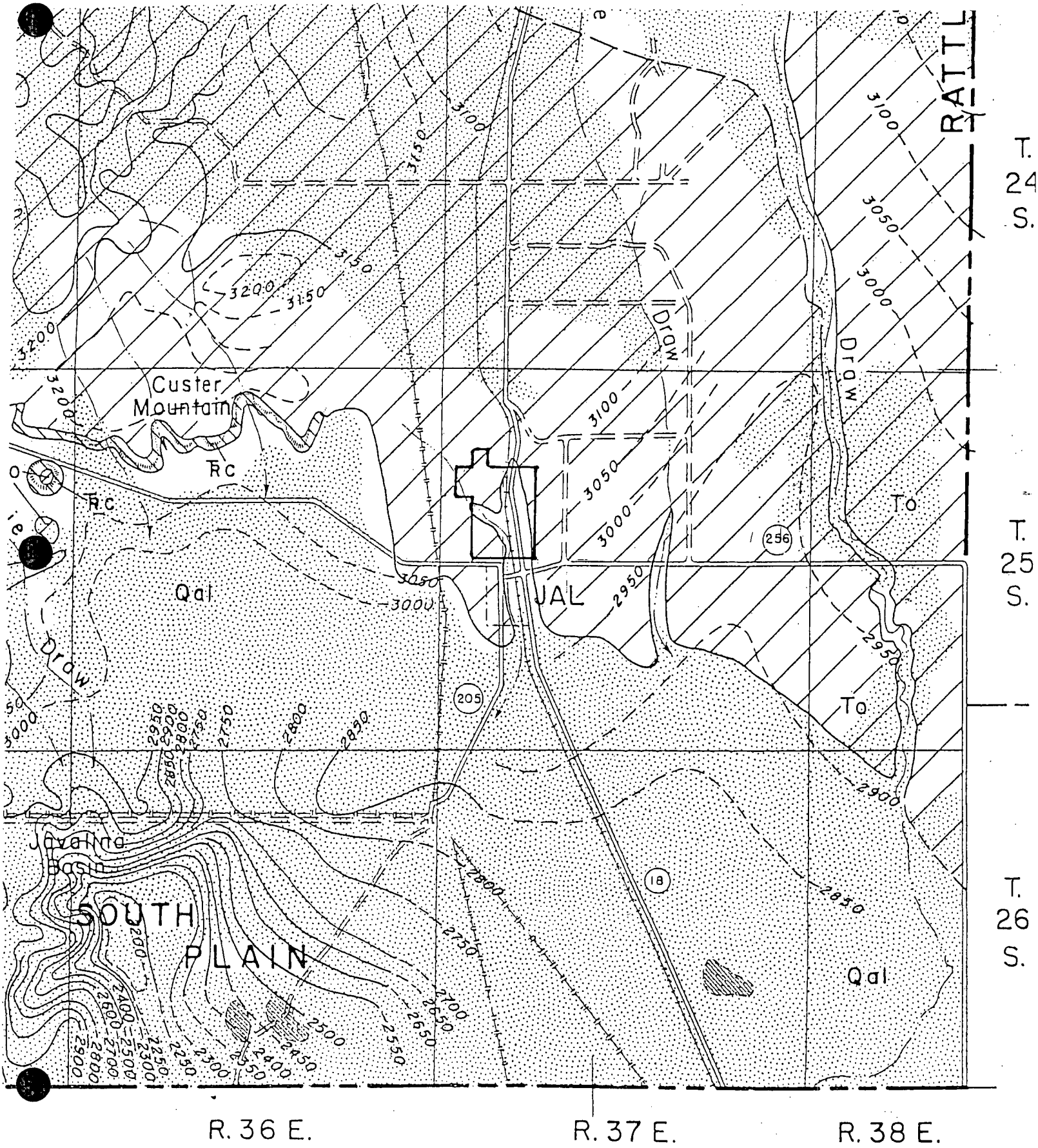



Custer Mountain
Draw
Draw
Draw
JAL
Javalina Basin
SOUTH PLAIN
3175
3150
3125
3100
3075
3050
3025
3000
2975
2950
2925
2900
2875
2850
2825
2800
2775
2750
R. 36 E.
R. 37 E.
R. 38 E.
T. 25 S.
T. 26 S.

A.6 Copy of a portion of the Ground-Water Map of Southern Lea County, New Mexico showing water-table contours, type of rock from which the water is found, depth to water, depth of well and whether the well is flowing or being pumped



Stage 1 Abatement Plan for the South Langlie Jal Unit
Sections 7, 8, 17 & 18-T25S-R37E, Lea County, NM



APPENDIX B
WATER and MONITORING WELLS

List of Water and Monitoring Wells in the Vicinity of the Osborn Ranch, Jal, New Mexico (As provided by Bristol representatives from work submitted by Safety & Environmental Solutions, Inc.)

Well Name	Reported Location	Comment
Front House Windmill	NE SE NE NE Sec. 18-T25S-R37E	Owner's Well #4
Main House Well & Jal Country Club MW#11	NE SW NE NE Sec. 18-T25S-R37E	Owner's Well #1
Back House Well	NE SW NE NE Sec. 18-T25S-R37E	Owner's Well #2
Bristol Resources Well	N/2 NE/4 Sec. 18-T25S-R37E	Monitoring Well
Front House Well	NE SE NE NE Sec. 18-T25S-R37E	Owner's Well #5
North Water Well	NW NE SW SW Sec. 18-T25S-R37E	Owner's Well #6 Unused
SW (TX-NM pipeline) Well	E/2 of Sec.12 or 19-T25S-R37E	Monitoring Well
Jal Country Club MW-3	SE Sec. 18-T25S-R37E	Production & Monitoring Well
Jal Country Club MW-4	SE Sec. 18-T25S-R37E	Production & Monitoring Well
Jal Country Club NE MW	SE Sec. 18-T25S-R37E	Unused Well
Jal Country Club NW MW	SE Sec. 18-T25S-R37E	Unused Well
Jal Country Club Windmill & Jal Country Club MW#18	SE Sec. 18-T25S-R37E	Plugged
Jal Country Club MW-2	SE Sec. 18-T25S-R37E	Production & Monitoring Well
West Water Well	SE Sec. 18-T25S-R37E	Owner's Well #3
Jal Country Club Center MW	SE Sec. 18-T25S-R37E	Unused Well
Section 13 Water Well	NE SE NE NE Sec. 18-T25S-R37E	Owner's Well #7 Unused

Wells 8 through 15, as well as several other wells located at the Jal Country Club, are reportedly registered with the State Engineer Office as Permit CP-473.

Appendix C
Waterwells Actually Affected by Pollution
South Langlie Jal Unit
Lea County, New Mexico

(As reported by Safety & Environmental Solutions, Inc. in their Environmental Site Assessment dated March 20, 2000. Chaparral Energy, Inc. has only a portion of this report.)

5.1 CERI Groundwater Analytical Data

"...In addition, two of Mr. Clay Osborn's well (sic) were sampled and found to contain concentrations of chlorides of 342 mg/l and 687 mg/l. Both concentrations are in excess of WQCC standard of 250 mg/l. (Exhibit 6)"

5.2 SESI Groundwater Analytical Data

"On December 15, 1999, SESI took samples from five (5) water wells located in the immediate vicinity of the Clay Osborn home. ...The results of the analysis (Exhibit) indicate no BTEX and chloride levels from 121 mg/l to 432 mg/l. The well servicing Mr. Osborn's home exhibited the 432 mg/l concentration. This concentration is in excess of the WQCC standards."

"On December 30, 1999, SESI sampled the north water well in the manner cited above and found no BTEX concentrations and chloride levels of 857 mg/l. The chloride concentration is in excess of the WQCC standards."

"On January 6, 2000, SESI sampled a monitor well on the west side of the property, which was installed by Texas-New Mexico Pipeline to monitor a previous leak. ...No BTEX was found in the sample and the chlorides were 210 mg/l. On the same day, the water from the commercial sales tank at the Jal Country Club was sampled and analyzed. This water comes from three wells located on the Country Club property and due south of the Osborn home. There was no BTEX found and the chloride concentration was 610 mg/l."

"Seven (7) water and monitor wells were tested on the subject property and only three (3) of the seven did not exhibit chloride levels in excess of the WQCC standards. (Exhibit 5)"

Appendix D
SITE SAFETY PLAN

PREPARED BY: _____
DATE: _____
TIME: _____

FOR AREA AS FOLLOWS: Location of Facility is in Sections 7 and 18 of Township 25 South, Range 37 East, Lea County, NM. Actual sites will vary and are marked on the attached maps.

NOTE: THIS IS AN - ☑ ORIGINAL PLAN ☐ UPDATED PLAN

SAFETY MONITORING RESULTS FOR THIS PLAN:
H2S LEVEL: N/A
OXYGEN %: N/A
LEL %: N/A

WEATHER & TIDAL CONDITIONS WHEN THIS PLAN WAS PREPARED:
TEMP.: _____
HUMIDITY: _____
WIND-SPEED: _____
WIND-FROM DIRECTION: _____
WATER TEMP.: _____

TIDE: ☐ EBB ☐ FLOOD ☐ HIGH ☐ LOW ☑ N/A

SKY CONDITION: _____ PRECIPITATION?: ☐ NO ☐ YES - FORM: _____

SITE DESCRIPTION:

The site is a production and water injection facility for oil and natural gas production operations. In addition to the oil field operations, the land is used as rangeland for cattle.

OBVIOUS HAZARDS AT SITE: None

SPECIAL PRECAUTIONS TO BE TAKEN: None

HABITATIONS, BUSINESSES OR REC. AREAS AFFECTED / ENDANGERED: N/A

SITE SAFETY CONTROLS:

COORDINATOR OF SITE ACCESS/SECURITY: _____

SAFE PERIMETER DESIGNATED AS: _____

ON SITE COMMAND POST LOCATION: Field Office

SITE STAGING AREA LOCATION: N/A

SITE CONTROL BOUNDARIES: N/A

<> HOT: EXCLUSION ZONE (CONTAMINATED AREA): N/A

<> WARM: CONTAMINATION REDUCTION ZONE (DECON AREA): N/A

<> COOL: SUPPORT ZONE: N/A

BOUNDARIES DESIGNATED BY MEANS OF: Field engineer will make this determination onsite as is warranted.

HAZARD EVALUATION:

SUBSTANCE INVOLVED: Substance To Be Evaluated is naturally occurring and produced water as well as oil associated with oil and gas operations that may be present in soil and ground water.

MSDS AVAILABLE?:

☐ NO		☐ NO
☑ YES	(ATTACHED TO THIS PLAN)	☑ YES

HEALTH/SAFETY HAZARDS:

- ☐ H2S CONCENTRATION - %:_____
- ☐ TOXIC VAPOR ACCUMULATION
- ☐ FLAMMABILITY
- ☐ SKIN ABSORPTION
- ☐ INGESTION

SITE HAZARDS: _____

PERSONAL PROTECTIVE EQUIPMENT:

CHECK-OFF (x) LIST AS FOLLOWS FOR SITE WORKERS:

EYE PROTECTION: X
GLOVES: X
SPLASH SUIT: _____ (CHEMICAL RESISTANT, LEVEL "C")
STEEL-TOED BOOTS: X
HARD HAT: X
LIFE VESTS: _____ (OR OTHER CG-APPROVED PFD'S)
RESPIRATOR: _____
HEARING PROTECTION: X

DECONTAMINATION PROCEDURES:

NOTE: THIS PLAN CONCERNS ITSELF WITH A SPILL OF CRUDE OIL, GASOLINE, AND DIESEL. DECONTAMINATION SHALL BE LIMITED TO A 4-STATION SYSTEM, WHICH INCLUDES A SAFETY/FIRST-AID STATION.

PERSON IN OVERALL CHARGE OF DECONTAMINATION: N/A

ADDITIONAL PERSONNEL:

STA. #1 - GROSS DECONTAMINATION: N/A (WARM ZONE)
(SCRUB & TOOL DROP)
STA. #2 - LIGHT DECONTAMINATION: N/A (WARM ZONE)
(RINSE)
STA. #3 - SITE EXIT POINT: N/A (COOL ZONE)
(PROTECTIVE CLOTHING REMOVAL)
STA. #4 - SAFETY/FIRST AID: N/A (COOL ZONE)
(* SEE BELOW: SUPPLIES)

EMERGENCY MEDICAL CARE:

DESIGNATION OF RESCUE ASST.: N/A (NAME)

* EQUIPMENT/SUPPLIES ON-SITE:

- ☑ 10-UNIT FIRST-AID KIT (BANDAGES, ETC.)
- ☐ BURN TREATMENT KIT
- ☐ HEAT-STRESS RELIEF ITEMS
- ☐ SKIN-CARE MEDICATIONS
- ☐ BLANKETS
- ☐ EMERGENCY EYE WASH
- ☐ OXYGEN & CPR EQUIPMENT.
- ☐ VENOM EXTRACTION DEVICES
- ☑ MSDS SHEETS (SEVERAL COPIES)

MEDICAL TRANSPORT TO BE ARRANGED BY: _____ (NAME)

NEAREST EMERGENCY MEDICAL TREATMENT FACILITY:

NAME OF HOSPITAL/CLINIC: Jal Medical Clinic

DISTANCE FROM SITE: <2 (MILES)

PHONE NUMBER OF FACILITY: (505) 395-3400

PHONE NUMBER OF AMBULANCE: 911

QUALIFIED EMT ON SITE?: ☑ NO
☐ YES - NAME: _____

SAFETY/HEALTH/HYGIENE INFORMATION:
NOTE: THE FOLLOWING ITEMS ARE TO BE ON SITE &AVAILABLE AS REQUIRED.
FOR SITE CONDITIONS (CHECK (x) AS APPROPRIATE)

CONFINED SPACE ENTRY PROGRAM: N/A
MSDS SHEETS: Attached
HEALTH & SAFETY MANUAL: N/A

ADDITIONAL INFORMATION ON MATERIAL SPILLED ✳: _____

✳ IDENTIFICATION OF INFORMATION: _____

✳ WHERE THIS INFORMATION MAY BE FOUND: _____

COMMUNICATIONS ON SITE:

EMERGENCY SIGNAL FOR RECALL FROM EXCLUSION ZONE: N/A

Communications in field are via cellular telephones. Land lines are used from nearby homes or offices.

COMMAND POST TELEPHONE NUMBER: _____

ENVIRONMENTAL MONITORING:

MONITORING TO BE PERFORMED BY: _____ (NAME)

EQUIPMENT AS LISTED BELOW SHALL BE USED AS INDICATED:
CHECK (x) APPROPRIATE BOXES:

MONITORING FREQUENCY

MONITORING EQUIPMENT	CONTINUOUS	HOURLY	DAILY	AS NEEDED	N/A
COMBUSTIBLE GAS IND.					X
H_2S MONITOR					X
OXYGEN MONITOR					X
LEL MONITOR					X
OTHER (SPECIFY)					X
CONDUCTIVITY METER				X	
pH METER				X	
PID METER				X	

RESULTS OF MONITORING TO BE ATTACHED TO THIS PLAN, WITH COPY TO COMMAND POST.

EMERGENCY PHONE NUMBERS:
(NEAREST EMERGENCY SERVICES)

EMERGENCY SERVICES	TELEPHONE	LOCATION (TOWN)
FIRE	911 / 505-395-2221	Jal, New Mexico
POLICE	911 / 505-395-2501/2121	Jal, New Mexico
SHERIFF (Jal Police Department answers phone)	911 / 505-395-2121	Jal, New Mexico
HOSPITAL/CLINIC	911 / 505-395-3400	Jal, New Mexico
AMBULANCE	911	Jal, New Mexico
OTHERS:		
OTHERS:		
EMERGENCY MANAGEMENT COORDINATOR	505-397-9231	Hobbs, New Mexico
DPS		
ETMC HOSPITAL	N/A	
CHAPARRAL (USA) ENERGY, INC. (FIELD FOREMAN)	915-445-6081 (O) 915-553-3559 (M)	Pecos, Texas
CHAPARRAL ENERGY, INC. (EH&S MANAGER)	405-478-4643 Ext 130 405-202-1025 (M)	Oklahoma City, Oklahoma
CHAPARRAL ENERGY, INC. (DISTRICT ENGINEER)	405-478-8770 Ext 280	Oklahoma City, Oklahoma

Appendix E
Activities Schedule
Stage 1 Abatement Plan
South Langlie Jal Unit
Lea County, New Mexico

Pre-Field Trip Preparation:

1. Obtain aerial photographs and existing well spot maps covering the unit.
2. Coordinate with legal counsel on timing of sampling the test and monitoring wells and notification of surface owners sampling is to be done.
3. Settle surface damages for well sites, as determined by legal counsel.
4. Contact at least 48 hours in advance the Environmental Engineer Specialist with the New Mexico Oil Conservation Division to schedule activities.
5. Contact the laboratory and arrange for sample containers to be either available for pick up or for delivery to the site in ample time for testing operations.
6. Make other notifications as may be necessary or required by the NMOCD or by legal council.
7. With permission of the surface owner(s) and with the concurrence of legal counsel, survey the existing water wells within the unit, those water wells within one-quarter mile of the unit boundaries, and the chosen locations of all test-wells to be drilled. Correctly spot each on a USGS Topographic Map for field and office use.
8. Survey all oil and gas wells, pipelines, production battery sites and related sites within the unit. Correctly spot each on a USGS Topographic Map for field and office use.
9. Call the City of Jal, New Mexico to arrange for picking up copies of hydrological and analytical data from all city owned and/or operated water wells within the unit area.

Day 1

1. Travel to laboratory to pick up sample containers or arrange for them to be delivered to location.
2. Go to site and verify the locations of the private water, test and monitoring wells.
3. Contact the City of Jal, NM in person to obtain chemical information on the water being applied to the golf course. Pick up well locator map if available.

Days 2, 3 and 4

1. Rig up drilling rig over test well sites. (See attached maps with well spots.)
2. Drill each well to at least 60 feet, or to the base of the first groundwater zone below 45 feet from surface, catching soil samples every ten feet into the ground.
3. Run PVC casing to TD and develop each well for water testing.
4. Obtain water samples from test wells drilled and completed. Obtain water samples from at least two wells at the Osborn home as well as those surrounding private water wells selected for this study.

5. Start hydrological testing of all wells. Collect data needed for determining hydraulic conductivity, transmissibility, storativity, direction of contaminate flow and related parameters.
6. Prepare chain-of-custody for all water and soil samples.
7. Take iced-down samples to laboratory for testing.
8. Re-survey in all test wells should any well be drilled at a location other than the one originally surveyed.

Post Fieldwork

1. Secure laboratory reports made on all water and soil samples.
2. Develop accurate maps of the SLJU and adjacent properties, showing the correct location of all water wells, oil and gas wells, production facilities and other such items of interest.
3. Draw maps showing chloride levels in each well tested. Contour to indicate possible source(s) of chlorides.
4. Complete the hydraulic calculations required by the NMOCD.
5. Analyze results and evaluate the extent of chloride contamination under the South Langlie Jal Unit.
6. Prepare reports for the NMOCD, Chaparral Energy, Inc., legal counsel and other parties to the evaluation as directed by the NMOCD and legal counsel.
7. Mail reports to appropriate parties.
8. Set up a semi-annual well sampling and testing schedule for the unit if required by the NMOCD.
9. Prepare for any Stage II Abatement Plan requirements.

Appendix F

Material Safety Data Sheets

MATERIAL SAFETY DATA SHEET

Section I CORPORATION IDENTIFICATION	
Chaparral Energy Inc. 701 Cedar Lake Boulevard Oklahoma City, OK 73114-7806	Telephone Number for Information (450) 478-8770 (O) (405) 478-4643 Ext 130 (EH&S)

Section II PRODUCT/INGREDIENT				
Trade Name: Crude Oil	CAS Registry Number: 8002-05-9	NFPA Hazard Rate: (0=Low , 4=Extreme) 1 HEALTH 3 FIRE 0 REACTIVITY		
HAZARDOUS COMPONENTS				
Chemical Name(s)	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (Opt)
Crude Oil, Oil, Petroleum, Hydrogen sulfide (may or may not contain), Benzene	20 ppm 1 ppm	10 ppm 10 ppm	NIOSH 10 ppm	
Common Name(s): Crude Oil, Petroleum, Oil				
Formula: Complex mixture of petroleum hydrocarbons, along with sulfur and nitrogen compounds. May contain hydrogen sulfide and may also contain a low percentage of benzene.				

Section III PHYSICAL / CHEMICAL CHARACTERISTICS	
Boiling Point: Variable, depending on individual crude oils.	Specific Gravity (H_2O = 1): Various
Vapor Pressure (mmHg): Varies with individual crude	Melting Point: N/A
Vapor Density (Air=1): Heavier than air to lighter than air. Varies.	Evaporation Rate: (Butyl Acetate = 1): Variable
Solubility in Water: Insoluble	Volatile, % by volume: Up to 50%
Appearance: Dark Liquid	Odor: Sulfur odor

Section IV FIRE AND EXPLOSION HAZARD DATA	
Stability: Stable	Conditions to Avoid: Oxidizers
Incompatibility (Materials to Avoid): Strong oxidants such as liquid chlorine, concentrated oxygen, sodium or calcium hypochlorite.	
Hazardous Decomposition of By-products: Burning may result in Hydro Sulfide, Sulfur Dioxide, and Sulfur Trioxide fumes, smoke, carbon monoxide and carbon dioxide.	
Hazardous Polymerization: Will not occur	Conditions to avoid: N/A

MATERIAL SAFETY DATA SHEET

Section VI HEALTH HAZARD DATA
Routes of Entry: Inhalation? Yes Skin? Yes Eye? Yes Ingestion? Yes
Health Hazards (Acute and Chronic): Inhalation of high vapor concentrations may have results ranging from eye and respiratory irritation, dizziness and headaches to unconsciousness, depending on concentrations and length of exposure. Prolonged or repeated liquid contact with skin will dry and defat the skin, leading to skin irritation, dermatitis, and an increased possibility of skin cancer. Crude oil may contain hydrogen sulfide gas. Breathing may stop after a few seconds of exposure to hydrogen sulfide concentrations greater than 700 ppm, with immediate loss of consciousness and subsequent death. Light hydrocarbons may contain low percentages of benzene. Benzene may cause leukemia and other blood diseases after prolonged or repeated exposures at high concentration.
Signs and Symptoms of Exposure: Irritation to eyes, lungs or skin after prolonged or repeated exposure. Over exposure may cause CNS depression. Hydrogen Sulfide can cause pulmonary edema and respiratory paralysis at high concentrations. Do not induce vomiting.
Medical and First Aid Procedures: Eyes: Immediately flush with water for 20 minutes and seek medical attention. Inhalation: Remove to fresh air immediately. Provide respirator support if needed. Skin: Remove contaminated clothing and wash skin thoroughly with soap and water. If irritation persists, seek medical attention. Launder contaminated clothing before reuse and discard extremely contaminated leather products. Ingestion: DO NOT induce vomiting. Seek medical attention immediately.

SECTION VII PRECAUTIONS FOR SAFE HANDLING AND USE
Steps to be taken in case material is released or spilled: Remove all ignition sources. Keep people away. Recover free liquid. Add absorbent (sand, earth, sawdust, etc.) to spill area. Minimize breathing vapors. Ventilate confined spaces. Open windows and doors. Keep petroleum products out of sewers and watercourses by diking or impounding. Advise authorities if product has entered or may enter sewers, watercourses, or extensive land areas. Federal, state and local regulations must be followed. Waste Disposal Method: Recycle as much of the recoverable product as possible. Dispose of absorbed materials at an approved disposal site or facility. Assure conformity with applicable regulations.
Precautions to be taken in handling and storing: Observe precautions for volatile, flammable vapors from absorbed materials. Toxic quantities of hydrogen sulfide may be present in storage tanks and bulk transport vessels, which contain or have contained crude petroleum. Persons opening or entering these compartments should first determine if H_2S is present. Do not attempt to rescue without wearing approved supplied air or self-contained breathing equipment.
Other precautions: Wash thoroughly with soap and water after contact. Avoid ignition sources.

MATERIAL SAFETY DATA SHEET

Section VIII CONTROL MEASURES		
Respiratory Protection (Specific Type): Use supplied air self-contained breathing equipment in confined space or enclosed spaces.		
Ventilation	Local Exhaust Ventilate to avoid accumulation of explosive vapors.	Special: No smoking or open lights.
	Mechanical (General): Use explosion proof equipment and non-sparking tools in areas where explosive vapors may form.	Other: N/A
Protective Gloves: Use chemical resistant gloves to avoid skin contact.		Eye Protection: Goggles or face shields for spray/mist or if splashing possible.
Other Protective Clothing or Equipment: Use chemical-resistant apron or other clothing if needed to avoid contaminating regular clothing.		
Work/Hygienic Practices: Keep containers closed when not in use. Do not handle or store near heat, sparks, flame, or strong oxidants. Ventilation must be sufficient to prevent build up of toxic or explosive concentration of vapor in air. Wash before eating, smoking or drinking. Soiled clothing should be removed and laundered.		

Date Prepared: 23 February 2001