

**AP - 053**

**STAGE 1  
WORKPLAN**

**10/09/2008**



New Mexico Energy, Minerals and Natural Resources Department

**Bill Richardson**

Governor

**Joanna Prukop**  
Cabinet Secretary  
**Reese Fullerton**  
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Division Director  
Oil Conservation Division



October 9, 2008

Mr. Charles B. Read  
New Mexico Salt Water Disposal Company  
P.O. Box 1518  
Roswell, NM 88201

**RE: STAGE 1 ABATEMENT PLAN WORKPLAN (AP053)  
REPORT ON INFRASTRUCTURE AND OPERATING GUIDELINES**

Dear Mr. Read:

The Oil Conservation Division (OCD) has reviewed the Stage 1 Abatement Plan Report entitled "*State (sic) 1 Abatement Plan / Monitor Well Installation Report*", submitted on August 10, 2007, by CMB Environmental and Geological Services Inc. on behalf of the New Mexico Salt Water Disposal Company (NMSWDCo) and the *Report On Infrastructure and Operating Guidelines* submitted on December 16, 2006 in accordance with the stipulations specified in the Agreed Compliance Order 96, executed on January 12, 2006. OCD hereby conditionally approves the Stage 1 Report and the Infrastructure Report. OCD is conditionally approving both reports because of several deficiencies noted below. The deficiencies do not impact the overall quality of the reports. OCD is providing NMSWDCo with a list of deficiencies for future reference.

**STAGE 1 ABATEMENT PLAN REPORT DEFICIENCIES**

1. NMSWDCo installed 20 feet of screen in its three new monitoring wells (see p. 5). However, Section 3.3 (p. 9) of the approved Stage 1 Abatement Plan Proposal specified 15 foot screens.
2. NMSWDCo advanced MW-1 from 63.5 feet BGS to 135 feet BGS using a mud rotary. This contingency was never discussed in the approved Stage 1 Abatement Plan Proposal and is usually not acceptable to OCD. However, because NMSWDCo advanced two other monitor wells, OCD is willing to accept the analytical results from MW-1. NMSWDCo is cautioned against using mud rotary methods in the future without first justifying to OCD first.
3. NMSWDCo committed to a more comprehensive monitoring list that it actually analyzed for. In its approved Stage 1 Abatement Plan Proposal, NMSWDCo committed to analyzing for

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*“general chemistry, including chlorides and total dissolved solids (TDS)...”* General chemistry parameters include all constituents specified at 40 CFR 136, not just chlorides and TDS.

4. NMSWDCo refers to *“perched water”* several places in its report and appears to be under the assumption that *“perched water”* is not afforded the same protection as a regional aquifer. Perched water is ground water and is protected to the same degree as a more extensive regional aquifer.

5. NMSWDCo refers to *“perched produced water”* (see p. 6) encountered in MW-1 at a depth of 60.0-63.5 feet BGS. The chlorides concentration in this *“perched produced water”* was 21,000 mg/l. Previously, NMSWDCo had reported that the chlorides concentration in SB-4A at a depth of 29-31 feet BGS was 45,000 mg/l. The chlorides concentration in the produced water taken from its tank battery was 83,000 mg/l.

Water wells in the same township encountered ground water from 7 to 55 feet BGS. OCD concludes that the *“perched water”* at both 29-31 feet BGS and 60.0-63.5 feet BGS was fresh, high quality Ogallala water and that at Station 11, two shallow perched zones have been contaminated by produced water, resulting in chlorides concentrations in the two perched zones that is intermediate between fresh water and produced water.

6. NMSWDCo encountered saturated conditions at approximately 60 to 63.5 feet BGS in MW-1; however, the well bore was only left open for only 30 minutes. This is not an adequate amount of time to allow for fluid entry into a well bore. This same inappropriate procedure was followed at MW-2, MW-3, and RW-1 although the well bore was left open for 60 minutes at RW-1.

7. On page 11, NMSWDCo indicates that while bailing RW-1, the recovery rate was slow and attribute the water level to well completion procedures. OCD is skeptical of this interpretation. OCD notes that no water samples were collected or analyzed; therefore, there is no analytical data to support NMSWDCo's assertion. As discussed below, OCD will require NMSWDCo to analyze the water from the 29-31 feet BGS perched zone.

8. Beginning on page 13, NMSWDCo discusses the chloride concentrations in the soil samples and uses *“mg/l”* or PPM rather than *“mg/kg”*. In all future reports, NMSWDCo should be careful to use the correct unit to avoid confusion.

9. In Summary Comment 1 (p. 15), NMSWDCo that it has *“defined the vertical and horizontal extent of alleged chloride contamination.”* OCD disagrees; NMSWDCo has not depicted the vertical extent of the soil or ground water contamination on its cross section nor has it provided a map depicting the horizontal extent of soil and ground contamination on a map.

10. In Summary Comment 1 (p. 15), NMSWDCo indicates that the hydraulic gradient is 0.66 ft/ft, which is obviously incorrect.

11. In Summary Comment 3 (p. 15), NMSWDCo again refers to "perched produced formation water" in MW-1. As noted above, OCD has determined that the perched ground water in MW-1 is fresh water which has been contaminated by produced water released from the produced water tank batteries. NMSWDCo chose to not adequately test the perched zone. As discussed below, OCD will require NMSWDCo to offset MW-1 and complete a monitor well in the perched zone.

12. OCD accepts NMSWDCo's conclusion that the deeper, regional aquifer encountered at 100-105 feet BGS has not been contaminated by a release from Station 11.

### **REPORT ON INFRASTRUCTURE AND OPERATING GUIDELINES DEFICIENCIES**

13. NMSWDCo must revise its proposed *Operational and Emergency Policy* by deleting items 4 and 5 of its *Operation Policy*. NMSWDCo is not a regulatory agency and has no authority over "adversarial tenants" or to "uphold the rights of the State of New Mexico". The State Land Office has authority over tenants on state land. NMSWDCo must submit a revised *Operational and Emergency Policy* within 10 days of its receipt of this Notice of Deficiency.

### **REQUIREMENT TO SUBMIT PHASE TWO OF STAGE 1 ABATEMENT PLAN**

OCD has determined that NMSWDCo failed to adequately test the ground water encountered at 29-31 feet BGS in RW-1 and at 60.0-63.5 feet BGS in MW-1 and has determined the horizontal and vertical extent of soil and ground water contamination. NMSWDCo must submit a phase two workplan which documents the tasks that it will perform to determine the ground water quality in the perched zones in RW-1. The phase two workplan must also specify that NMSWDCo will offset MW-1 and install a monitor well screened above 60.0-63.5 feet BGS. NMSWDCo's phase two workplan must also specify that it will install a new monitor well on the north side of the bermed area to determine the extent of and water quality of the perched zone encountered in MW-1.

### **REBUILDING OF PUMP STATION 11**

NMSWDCo's Stage 1 investigation did not address the soil contamination beneath the bermed tank battery area. NMSWDCo has committed to rebuild Pump Station 11 in its letter of December 15, 2005. OCD has determined that it is extremely likely that the soil beneath the tank battery area is grossly contaminated by chlorides and that this contamination poses a very real threat to ground water as long as the source of the contamination remains. Therefore, OCD is also requiring NMSWDCo to move its tank batteries from the present location to another location to be determined by NMSWDCo and the State Land Office. The new location should be constructed with a berm that will contain at least 150% of the combined volume of the tank batteries and be lined with 40 mil plastic.

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NMSWDCo has at least two options for source removal. First, it can conduct a soil boring investigation to determine the horizontal and vertical extent of the chlorides contamination and then propose how much of the contamination source should be removed. Second, it can presumptively remove all soil to a depth of 30 feet BGS and backfill, avoiding the cost of the soil investigation.

NMSWDCo should consider its options and include a source removal proposal to OCD when it submits its phase two Stage 1 workplan.

#### **REQUIREMENT TO CLOSE PERMANENT PIT**

NMSWDCo's report documents the presence of a permanent pit located on the south side of the tank batteries. NMSWDCo's must submit a separate workplan to close this permanent pit pursuant to 19.15.17.13 NMAC, with a contingency plan to investigate the extent of any soil or ground water contamination detected during closure.

NMSWDCo should submit one paper copy with and an electronic copy on CD of all future workplans and/or reports. Please include "AP053" on all future correspondence. If you have any questions, please contact Glenn von Gonten of my staff at (505) 476-3488.

Sincerely,



Wayne Price  
Environmental Bureau Chief

WP/gvg

xc:   OCD District I Office, Hobbs  
      Thaddeus Kostrubala, State Land Office  
      Rory McMinn, Sage Service Group