STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

2006 MAY 18 PM 3 36

In the matter of the Application of the New Mexico Oil Conservation Division for Repeal of Existing Rules 709, 710 and 711 Concerning SurfaceWaste Management and Adoption of New Rules Governing Surface Waste Management.	))))	CASE NO. 13586

PROPOSED FINDINGS OF THE NEW MEXICO CITIZENS FOR CLEAN AIR & WATER AND JUSTIFICATION FOR PROPOSED MODIFICATIONS

Pursuant to the Commission's instructions, The New Mexico Citizens for Clean Air & Water, Inc. ("NMCCAW") hereby submits Proposed Findings – in the form of a redline/strike-out version of the Oil Conservation Division's February 27, 2006 proposed rule. Rather than submit a full copy of the February 27, 2006 rule, NMCCAW herewith submits only a redline/strike-out version of those specific provisions of the February 27, 2006 proposal which NMCCAW submits should be modified by the Commission.

Additionally, NMCCAW has prepared a brief explanation as to why each of its proposed modification should be adopted by the Commission. These explanations are not "interlineated" into the redline/strike-out version, but rather appear in a separate section of this filing.

I. NMCCAW's Proposed Modifications to OCD's February 27, 2006 Proposal

19.15.2.53 SURFACE WASTE MANAGEMENT FACILITIES

53 A. Definitions applicable to 19.15.2.53 NMAC only.

(1) Definitions relating to types of facilities:

(a) ...

(b) ...

(c) ...

(d) ...

(e) A small landfarm is a centralized landfarm that has a total capacity of 1400 cubic yards or less, a total area of two acres or less, remains active for a maximum of 3 years, and receives only petroleum hydrocarbon-contaminated soils (excluding drill cuttings) that are exempt waste.

(2) Other definitions.

(a) ...

(b) A cell is a confined area of ten acres or less engineered for the disposal or treatment of oil field waste.

53 C. Permitting requirements, application, public notice and financial assurance. ...

(5) Financial assurance requirements.

(a) Centralized facilities. Upon notification by the division that it has approved a permit but prior to the division issuing the permit, an applicant for a new centralized facility permit shall submit acceptable financial assurance in the amount of at least $25,000 per facility, or a statewide "blanket" financial assurance in the amount of at least $50,000 to cover all of that applicant's centralized facilities, unless such applicant has previously posted a blanket financial assurance for centralized facilities. If the application is for one or more landfarms, financial assurance shall be sufficient to assure removal of the treatment zone, disposal of the treatment zone material, and revegetation of the active cells in each of the permitted landfarms according to the plan specified in Section C, Paragraph (1), Subparagraph (i) of 19.15.2.53 NMAC.

(b) New commercial facilities or major modifications of existing facilities. Upon notification by the division that it has approved a permit for a new commercial facility or a major modification of an existing commercial facility but prior to the division issuing the permit, the applicant shall submit acceptable financial assurance in the amount of the facility's estimated closure and post closure cost, or $25,000, whichever is greater. If the application is for a landfarm, the estimated closure cost shall be based on the removal of the treatment zone, disposal of the treatment zone material, and revegetation of the active cells of the landfarm according to the plan specified in Section C, Paragraph (1), Subparagraph (i) of 19.15.2.53 NMAC. The facility's estimated closure and post closure cost shall be the amount provided in the closure plan the applicant submitted unless the division determines that such estimate does not reflect a reasonable and probable closure and post closure cost, in which event, the division shall determine the estimated closure and post closure cost and shall include such determination in its tentative decision. If the applicant disagrees with the division's

determination of estimated closure and post closure cost, the applicant may request a hearing as provided in Subparagraph (h) of Paragraph (4) of Subsection C of 19.15.2.53 NMAC. If the applicant so requests, and no other person files a request for a hearing regarding the application, the hearing shall be limited to determination of estimated closure and post closure cost.

53 E. Siting and operational requirements applicable to all permitted facilities. Except as otherwise provided in 19.15.2.53 NMAC:

(1) No surface waste management facility, except a small landfarm, shall be located where ground water is less than 100 ~~50~~ feet below the lowest elevation at which waste will be placed at the facility. No small landfarm shall be located where the depth to ground water is less than 50 feet beneath the ground surface.

53 F. Specific requirements applicable to landfills.

(3) Landfill design specifications. All new landfill design systems shall include a base layer and a lower geomembrane liner (e.g., composite liner), a leak detection system, an upper geomembrane liner, a leachate collection and removal system, a leachate collection and removal system protective layer, an oil field waste zone and a top landfill cover. The maximum elevation of wastes within the landfill shall not exceed the average elevation of the undisturbed ground surface surrounding the landfill.

(a) The base layer shall, at a minimum, consist of two feet of clay soil compacted to a minimum 90% Standard Proctor Density (ASTM D-698.) with a hydraulic conductivity of 1 x 10-7 cm/sec or less. In areas where depth to ground water is greater than 120 ~~100~~ feet, or where no ground water is present, or where a geologic layer beneath the wastes provides protection equivalent to that of the prescribed base layer, the operator may propose an alternative base layer design, subject to division approval.

(b) ...
(c) ...
(d) ...
(e) ...
(f) ...
(g) ...

(h) The top landfill cover design shall consist of the following layers (top to bottom): a soil erosion layer composed of fertile topsoil (at least 6 inches) re-vegetated in accordance with the post closure provisions of Paragraph (1) of Subsection J of 19.15.2.53 NMAC; a protection or frost protection layer composed of native soil (12 to 30 inches), a drainage layer composed of ~~sand or~~ gravel (at least 12 inches) with a saturated hydraulic conductivity of 1 x 10^{-2} cm/sec or greater and a minimum bottom slope of four percent, a hydraulic barrier-layer- geomembrane (minimum 30-mil flexible PVC or 60-mil HDPE liner, or an equivalent liner approved by the division), and a gas vent or foundation layer composed of sand or gravel (at least twelve inches) above waste with soils compacted to the minimum eighty percent Standard Proctor Density. The operator shall install the top landfill cover within one year of achieving the final landfill cell waste elevation. The operator shall ensure that the final landfill design elevation of the working face of waste is achieved in a timely manner with date recorded in a field construction log. The date of top landfill cover installation shall also be recorded to document the timely installation of all top landfill covers. The operator shall provide a minimum of three working days notice to the division in advance of the installation of any top landfill cover to allow the division to witness the installation of all top landfill covers.

53 G. **Specific requirements applicable to landfarms.**

(3) (j) [in the 3/31 amendment]

The division's environmental bureau may approve other treatment procedures if the operator demonstrates that they provide equivalent protection for fresh water, public health, safety and the environment. Approved other treatment procedures shall not reduce operating standards, vadose zone standards, or closure standards.

(4) Treatment zone monitoring. The operator shall spread contaminated soils on the surface in six-inch or less lifts. The operator shall conduct treatment zone monitoring to ensure that the TPH concentration of each lift, as determined by EPA SW-846 Method 8015M or EPA Method 418.1, does not exceed 2500 mg/kg and that the chloride concentration, as determined by EPA Method 300.1, does not exceed 500 ~~1000~~ mg/kg, prior to adding an additional lift. The maximum thickness of treated soils in any landfarm cell shall not exceed two feet. When that thickness is

reached, the operator shall not place additional oil field waste in the landfarm cell until it has demonstrated by monitoring the treatment zone ~~at least semi-annually~~ that the contaminated soil has been treated to the standards specified in Paragraph 6 of Subsection G of 19.15.1.53 NMAC or the contaminated soils have been removed.

(5) Vadose zone monitoring.

(a) Sampling. The operator shall monitor the vadose zone beneath the treatment zone in each landfarm cell to ensure that contaminants do not migrate to the underlying native soil or to ground water The vadose zone samples shall be taken from soils between one and two ~~three and four~~ feet below the cell's original surface.

(b) ~~Semi-a~~Annual monitoring program. The operator shall collect and analyze a minimum of eight ~~four~~ representative, independent samples from the vadose zone at least ~~semi-~~annually using the methods specified below, for TPH, BTEX and chlorides.

(c) Biennial~~Annual~~ monitoring program. The operator shall collect and analyze a minimum of eight ~~four~~ representative, independent samples from the vadose zone at least once in every 24-month interval, using the methods specified below, for the metals and inorganics listed in Subsections A and B of 20.6.2.3103 NMAC.

(d) Record keeping. The operator shall maintain a copy of the monitoring reports in a form readily accessible for division inspection.

(e) Corrective action for releases. If any vadose zone sampling results show that the concentrations of TPH, BTEX, chlorides, or constituents listed in Subsections A and B of 20.6.2.3103 NMAC, exceed the closure ~~background~~ concentrations, then the operator shall notify the division's environmental bureau of the exceedance, and shall submit a corrective action plan, within 15 days. The corrective action plan shall address changes in the operation of the landfarm to prevent further contamination and a plan for isolating or remedying any existing contamination.

(6) Treatment zone closure performance standards. ...

(a) ...

(b) ...

(c) ...

(d) Chlorides, as determined by EPA Method 300.1 shall not exceed 500 ~~1000~~ mg/kg.

(e) The concentration of the constituents listed in Subsections A and B of 20.6.2.3103 NMAC, as determined by EPA SW-846 Methods 6010B or 6020, or other methods approved by the division, shall not exceed the background soil concentration or

the applicable closure concentration specified below, whichever is greater:

Landfarm Soil Closure Standards

Constituent	Concentration (mg/kg) (Except where noted)
(i) Arsenic (As)	0.0146
(ii) Barium (Ba)	106
(iii) Cadmium (Cd)	1.37
(iv) Chromium (Cr)	2.10
(v) Cyanide (CN)	7.35
(vi) Fluoride (F)	329
(vii) Lead (Pb)	56 ~~400~~
(viii) Total Mercury (Hg)	0.105
(ix) Nitrate (NO3 as N)	17.1
(x) Selenium (Se)	0.953
(xi) Silver (Ag)	1.57
(xii) Uranium (U)	16
(xiii) Radioactivity: Combined Radium-226 and Radium-228	30 pCi/g
(xiv) Polychlorinated biphenyls (PCBs)	0.0224
(xv) Toluene	0.347
(xvi) Carbon Tetrachloride	0.000988
(xvii) 1,2-dichloroethane (EDC)	0.000248
(xviii) 1,1-dichloroethylene (1,1-DCE)	.133
(xix) 1,1,2,2-tetrachloroethylene(PCE)	0.00215
(xx) 1,1,2-trichloroethylene(TCE)	0.000131
(xxi) ethylbenzene	1.01
(xxii) total xylenes	0.167
(xxiii) methylene chloride	0.00853
(xxiv) chloroform	0.000414
(xxv) 1,1-dichloroethane	0.201
(xxvi) ethylene dibromide (EDB)	0.000029
(xxvii) 1,1,1-trichloroethane	1.34
(xxviii) 1,1,2-trichloroethane	0.000498
(xxix) 1,1,2,2-tetrachloroethane	0.000172
(xxx) vinyl chloride	0.000143
(xxxi) PAHs: total naphthalene plus monomethylnaphthalenes	0.0197
(xxxii) benzo-a-pyrene	0.6210
(xxxiii) Chloride (Cl)	500 ~~1000~~
(xxxiv) Copper (Cu)	51.5
(xxxv) Iron (Fe)	277
(xxxvi) Manganese (Mn)	334
(xxxvii) Phenols	2.37
(xxxviii) Sulfate (SO4)	background
(xxxix) Zinc (Zn)	0.0682

(7) Disposition of treated soils.

(a) If the operator achieves the closure performance standards specified in Paragraph (6) of Subsection G of 19.15.1.53 NMAC, then the operator may either leave the treated soil in place, or with prior division approval dispose or reuse the treated soil in an alternative manner.

(b) If the operator cannot achieve the closure performance standards specified in Paragraph (6) of Subsection G of 19.15.1.53 NMAC, then the operator shall remove all contaminated soil from the landfarm cell and properly dispose of it at a division-approved landfill, or reuse or recycle it in a manner approved by the division. ~~The operator may request approval of an alternative soil closure standard from the division, provided that the operator shall give public notice of an application for alternative soil closure standards in the manner provided in Paragraph (4) of Subsection C of 19.15.2.53 NMAC. The division may grant the request administratively if no person files an objection thereto within 30 days after publication of notice; otherwise the division shall set the matter for hearing.~~

(8) ~~Environmentally acceptable B~~bioremediation endpoint approach.

(a) A landfarm operator may utilize a~~n environmentally acceptable~~ bioremediation endpoint approach to landfarm management in lieu of compliance with the requirements of Subparagraphs (a) through (ce) of Paragraph (6) of Subsection G of 19.15.2.53 NMAC. The bioremediation endpoint in soil occurs when TPH is reduced to a minimal concentration as a result of bioremediation and is dependent upon the bioavailability of residual hydrocarbons. ~~An environmentally acceptable bioremediation endpoint occurs when the TPH concentration has been reduced by at least 80% by a combination of physical, biological and chemical processes and the rate of reduction in TPH concentration is essentially zero. The environmentally acceptable bioremediation endpoint in soil is determined statistically by the operator's demonstration that the rate of reduction in TPH concentration is essentially zero.~~ For assessment of the bioremediation endpoint, a treatment month is 30 consecutive days when the daily maximum bare soil temperature at a 4-inch depth exceeds 10 degrees Centigrade. Use of the bioremediation endpoint requires that wastes containing only condensate must be treated for at least six treatment months, and wastes containing crude oil must be treated for at least twelve treatment months. Closure standards are met when the sampling procedure indicates no distinguishable change in hydrocarbon concentration across a time interval of at least two treatment months, and when the contaminant concentrations in the

treatment zone are less than the following limits or background, whichever is larger:

(i) The total extractable petroleum hydrocarbons as determined by EPA method 418.1 or an EPA approved equivalent method is less than 10,000 mg/kg;

(ii) a saturated paste extract has an Electrical Conductivity less than 4 mmhos/cm or the treated materials have less than 500 mg/kg chloride;

(iii) the Soil Absorption Ratio (SAR) of treated materials is less than 13.

(b) In addition to the requirements specified in Paragraph (1) of Subsection C of 19.15.2.53 NMAC, an operator who plans to utilize the ~~an environmentally acceptable~~ bioremediation endpoint approach shall submit for the division's review and approval a detailed landfarm operation plan for those landfarm cells exclusively dedicated to the use of the ~~environmentally acceptable~~ bioremediation endpoint approach. ~~At a minimum, t~~The operations plan shall include detailed information on the soils, procedures to characterize each lift of contaminated soil, operating procedures and management procedures that the operator shall follow. The operation plan shall also contain:

(i) demonstration that the applicant has legal and physical access to irrigation water of sufficient quantity to maintain the moisture required by Paragraph (8) of Subsection G of 19.15.2.53 NMAC; and

(ii) demonstration that the irrigation water has EC less than 1.25 mmho/cm at 25 degrees centigrade, SAR less than 4.5, and pH between 5.5 and 7.5.

(c) In addition to the other operational requirements specified in subsection G of 19.15.2.53 NMAC, the operator utilizing an environmentally acceptable bioremediation endpoint approach shall comply with the following:

(i) Soil information required. The operator shall submit detailed information on the soil conditions present for each of its landfarm cells immediately prior to the application of the petroleum hydrocarbon-contaminated soils, including: treatment cell size; soil porosity, soil bulk density, soil pH, moisture content, field capacity, organic matter concentration, soil structure, sodium adsorption ration (SAR), electrical conductivity (EC), soil composition, soil temperature, soil nutrient (C:N:P) concentrations, and oxygen content.

(ii) Characterization of contaminated soil. The operator shall submit a description of the procedures that it will follow to characterize each new lift ~~of contaminated soil or drill cuttings, prior to treating each lift of contaminated soil or drill cuttings,~~ for: petroleum hydrocarbon loading factor; TPH; BTEX; chlorides; constituents listed in Subsections A and B of 20.6.2.3103 NMAC; contaminated soil moisture; contaminated soil pH; total organic carbon (TOC); and API gravity of the petroleum hydrocarbons.

(iii) Operating procedures. The operator shall submit a description of the procedures, including a schedule, that it shall follow to properly monitor and amend each lift of contaminated soil in order to maximize bioremediation, including, but not limited to: tilling procedures and schedule; procedures to limit petroleum hydrocarbon loading to less than 5%; procedures to maintain pH between six and eight; procedures to monitor and apply proper nutrients; procedures to monitor, apply and maintain moisture to 60-80% of field capacity; and procedures to monitor TPH concentrations.

(iv) Management procedures. The operator shall submit a description of the management procedures that it shall follow to properly schedule landfarming operations, including modifications during cold weather, record keeping, ~~sampling and analysis, statistical procedures,~~ routine reporting, determination and reporting of achievement of the ~~environmentally acceptable~~ bioremediation endpoint and closure and postclosure plans.

(v) Sampling procedure. The sampling unit shall be one acre for commercial landfarms and two acres for centralized landfarms. To document the bioremediation endpoint, the operator shall obtain from the treatment zone of each sampling unit one set of three composite samples, and a second set after an interval exceeding two treatment months. Each composite sample shall be composed of 20 discrete samples obtained at random throughout the depth of the treatment zone across the area of one sampling unit.

(vi) Closure conditions. To document a bioremediation endpoint, the means of the TPH concentrations of the two sample sets in each unit must be statistically equivalent using the Student t-test with alpha equal to 0.1. To document achievement of the TPH limit at a sampling unit, the mean of both sets of composited samples shall be statistically less than 10,000 mg/kg total extractable petroleum hydrocarbons, using the Student t-test with alpha equal to 0.1. Particles of solid phase hydrocarbons must be less than ½ inch in largest dimension, and visibly occupy less than one percent of any area

that is or may be exposed to view. Revegetation shall be self-sustaining for two years after termination of intentional watering and other human care. For lands under OCD authority, the vegetation shall consist of at least three native species from the surrounding climatic zone, including one grass specie. Vegetation shall cover 70 percent of the ground area or coverage equivalent to background native vegetation that is unimpacted by overgrazing, fire, or other intrusion damaging to native vegetation. The landowner may establish alternative requirements for vegetation or other site use, as provided by Paragraph J, Subparagraph (5) of 19.15.2.53 NMAC.

53 H. Small landfarms. Small landfarms as defined in Subparagraph (e) of Paragraph (1) of Subsection A of 19.15.2.53 NMAC are exempt from 19.15.2.53 NMAC except for the following requirements:

(5) Small landfarm closure:

(a) Closure performance standards and disposition of soils. If the operator achieves the closure performance standards specified below, then the operator may return the soil to the original site of generation, leave the treated soil in place at the small landfarm or, with prior division approval, dispose or reuse the treated soil in an alternative manner. If the operator cannot achieve the closure performance standards within three years from the date of registration, then the operator shall remove all contaminated soil from the landfarm and properly dispose of it at a permitted landfill, unless the division authorizes a specific alternative disposition. The following standards shall apply:

(i) Benzene, as determined by EPA SW-846 method 8021B, shall not exceed 0.2 mg/kg.

(ii) Total BTEX, as determined by EPA SW-846 method 8021B, shall not exceed 50 mg/kg.

(iii) TPH, as determined by EPA SW-846 method 418.1, shall not exceed 1000 mg/kg. The GRO and DRO combined fraction, as determined by EPA SW-846 Method 8015M, shall not exceed 500 mg/kg.

(iv) Chlorides, as determined by EPA method 300.1, shall not exceed 500 ~~1000~~ mg/kg.

(b) Closure Requirements. The operator shall:

(i) re-vegetate soils remediated to the closure performance standards if left in place;

(ii) remove landfarmed soils that have not been or cannot be remediated to the closure performance standards (or that the operator determines to return to the original site, or, with division permission, re-cycle), and re-vegetate the cell filled in with native soil;

(iii) remove all berms on the facility and any buildings, fences, roads and equipment.

(iv) Clean-up the site and collect one vadose zone soil sample from one to two ~~three to five~~ feet below the middle of the treatment zone, or in an area where liquids may have collected due to rainfall events. The vadose zone soil sample shall be collected and analyzed using the methods specified above, for TPH, BTEX and chlorides.

53 J. Closure and post closure.

(4) Facility and cell closure and post closure standards. The following minimum standards shall apply to closure and post closure of the installations indicated, whether the entire surface waste management facility is being closed or only a part of the facility.

(a) ...

(b) Landfill cell closure.

(i) The operator shall properly close all landfill cells, covering the cell with a top cover pursuant to Subparagraph (h) of Paragraph (3) of Subsection F of 19.15.2.53 NMAC, with soil contoured to promote drainage of precipitation; side slopes shall not exceed eight ~~a 25~~ percent grade (12.5 ~~four~~ feet horizontal to one foot vertical), such that the final cover of the landfill's top portion has a gradient between ~~of~~ two percent and ~~to~~ five percent, and the slope is sufficient to prevent the ponding of water and erosion of the cover material.

(ii) The operator shall re-vegetate the area overlying the cell, pursuant to Paragraph (1) of Subsection J of 19.15.2.53 NMAC.

53 K. Exceptions and waivers.

(1) In a permit application, the applicant may propose alternatives to any of the requirements of 19.15.2.53 NMAC, and the division may approve any ~~such~~ alternative that does not alter a standard or process prescribed by rule if it determines that the proposed alternative will provide equivalent protection of fresh water, public health, safety and the environment. Approval of any proposed alternative that would

except a standard or process prescribed by rule must follow an adjudicatory hearing in which any person may have standing.

(2) ~~Any division approval specifically described in 19.15.2.53 NMAC that relates to a change in the operations, closure, or post-closure of a facility that is not specified in the facility's permit may be granted administratively, without public notice or hearing, unless otherwise specifically provided.~~ If the division denies any requested approval, the operator may file an application for review of such denial through the division hearing process. ~~In such cases, the operator shall give notice of such application in accordance with Paragraph (4) Subsection C of 19.15.2.53 NMAC.~~

(3) The division may grant exceptions to, or waivers of, or approve alternatives to, any requirement of 19.15.2.53 NMAC, in an emergency, or otherwise after notice and opportunity for a hearing as specified in Paragraph (1) of Subsection K of 19.15.2.53 NMAC. ~~An operator requesting an exception or waiver pursuant to Paragraph (3) of Subsection K J of 19.15.2.53 NMAC, except in an emergency, shall provide notice of such request in accordance with Paragraph (4) Subsection C of 19.15.2.53 NMAC.~~ The division may grant the requested exception, waiver or approval administratively, without hearing, if no person files a notice of intervention or pre-hearing statement objecting to the exception~~written objection with the division within thirty days after the mailing of such notice~~.

II. NMMCAW's Justification for its Proposed Modifications

53 A (1) (e) Definition of small landfarm.

The proposed rule would limit the treated content of a small landfarm to 1400 cubic yards, but would not limit the area over which the wastes could be spread. This could invite spreading of wastes over large areas, rendering sampling and compliance difficult or impossible. The area of a small landfarm should be limited to two acres, which is adequate for the specified volume of waste.

53 A (2) (b) Definition of a cell.

A cell is defined only as an engineered area for treatment of wastes. The proposed regulations refer to a cell, but the proposed regulations specify neither the cell size nor the area within which samples are to be obtained. Consequently, the proposed regulations would allow the specified samples of the vadose zone to be gathered from such a large area as to be potentially meaningless. Testimony related to landfarms using the bioremediation endpoint has suggested that several samples are needed per acre or per two acres. It appears that similar controls should apply to any permitted landfarm. The intent of the rule may be clarified by defining a maximum cell size. A maximum allowed cell size would also enable control of run-on and run-off waters better than an unlimited cell size.

53 C (5) (a) and (b) Financial assurance.

For centralized facilities, the proposed rule would require a $25,000 assurance for a single facility or a $50,000 blanket assurance for any number of facilities. For a commercial facility, the rule would require assurance in the amount of the estimated closure cost or $25,000, whichever is greater.

The closure plan specified by 53 C (1) (i) recognizes that the most assured closure method for landfarms is to remove the treated material and to dispose of it. Testimony suggested that the specified dollar amounts are probably inadequate for such closure of even one acre of landfarm. Financial assurance should be adequate to cover remediation of all active cells, but need not presume that the entire permitted area must be remediated.

53 E (1) Depth to ground water.

The proposed rule would require that the depth to ground water be at least 50 feet beneath the lowest elevation of wastes in any

facility. This is based on modeling of the transport of chloride under a particular uniform infiltration, with consequent contamination of groundwater. In the model, contamination of the groundwater to less than the water quality standard was allowed.

Transport by preferential pathways was not considered. The model did not address landfarms with size of tens to hundreds of acres. Furthermore, it is questionable whether a remediation facility should be allowed to contaminate groundwater, even if the resulting concentration is less than the water quality standard. Testimony suggested that, in time, vapors from a landfill could reach depths exceeding 100 feet. For permitted facilities, the minimal depth to ground water should be 100 feet.

53 F (3) Landfill design.

The proposed rule would allow burial of wastes above the level of the undisturbed surrounding ground. Erosion of the cover might then allow exposed wastes to be distributed on the surrounding landscape. We recommend that the maximum elevation of wastes not exceed the elevation of the immediately surrounding undisturbed land.

53 F (3) (a) Base layer beneath landfills.

The proposed rule makes no provision that would encourage a landfill operator to choose a site with geology that is superior for retaining wastes. We suggest that a landfill operator might propose an alternative base layer if the depth to ground water is more than 120 feet beneath the lowest wastes, or if there is a geologic layer beneath the wastes that provides protection equivalent to that of the base layer. The 120-foot depth is consistent with the suggested change to 53 E (1).

53 F (3) (h) Gas vent layer in landfills.

The proposed rule specifies installation of a gas vent layer composed of sand or gravel above the wastes. If the layer were composed of gravel, it would also serve as a capillary barrier to prevent the upward migration of moisture carrying salts or other dissolved contaminants. We suggest that the layer be prescribed as gravel, rather than "*sand or gravel... .*"

53 G (3) (j) [in the 3/31 amendment] Other treatment procedures.
It is appropriate that OCD approve improvements to landfarming practices, for example, increased use of water or fertilizers. However the approval should not alter the required standards.

53 G (4) Treatment zone monitoring for chloride.
The proposed rule specifies that the chloride concentration in the landfarm treatment zone not exceed 1000 mg/kg prior to addition of a new lift or at closure. We have offered testimony to the effect that this limit is not protective of a wide variety of plant species, although some salt-tolerant plants will grow at this chloride concentration if sufficiently watered. Laboratory tests have usually not combined salt with moisture restriction, so plants in the local climate may be more sensitive to salt than indicated by the tests on the same species. Testimony showed that a chloride limit specified as *EC less than 4 mmho/cm* is widely regarded as appropriate for soils rated as fair to good, although not regarded as pristine soils. In some soils, this EC value may be equated with 500-600 mg/kg chloride. Therefore, if the chloride limit is to be specified by chloride content rather than by EC value, we urge that the chloride limit in the treated material be maintained less than 500 mg/kg. This will assure compliance with the same concentration at closure, while avoiding excessive leaching of chloride into the soil. Note that this limit in the treatment zone does not prohibit an operator from accepting a limited amount waste with a larger chloride concentration that becomes mixed with wastes or a prior lift of a lower concentration.

53 G (5) (a), (b), (c) and (e) Vadose zone monitoring at landfarms.
The proposed rule specifies that samples shall be obtained between three and four feet beneath the cell's original surface; that samples be obtained semi-annually and annually depending on the specified analytes; that at least four samples be obtained; and that corrective action be taken if any concentration exceeds background.
If a significant release were to occur, a large volume of soil might be contaminated before the release were detected at a depth of four feet. For example, this might occur if chloride were being gradually leached into the ground by intermittent rainfall. We therefore suggest that samples be acquired at a maximum depth of two feet beneath the wastes, and that corrective action be required if any sample exceeds the *treatment zone closure limit* rather than background. Use of the closure limit rather than background would avoid initiation of

remedial procedures due to infiltration of insignificant amounts of contaminants.

The proposed rule specifies that background and routine sampling events utilize only four samples. With so few samples, the statistics of each sampling event may show large variance, leading to difficulty in ascertaining whether background is exceeded. For improved statistics, we suggest that eight samples be obtained per event per cell of defined area, rather than four samples per cell of undefined area. Additionally, we suggest that monitoring for TPH, BTEX, chloride be conducted annually rather than semi-annually; and that treatment zone monitoring be conducted biennially or prior to addition of a new lift, whichever occurs first. This revised schedule would enable more samples and consequently better statistics at each event while retaining the same total number of samples as proposed. This procedure would reduce the number of sampling events, thereby reducing cost to the operator.

53 G (6) (d) and (e) Chloride limit for treatment zone closure.

See discussion of chloride under 53 G (4) above.

53 G (6) (e) Treatment zone limit for lead (Pb).

The proposed limit for lead is 400 mg/kg, based on human exposure. One probable use for a closed landfarm is grazing by domestic or wild animals. Therefore, the limit should be set at the EPA screening level for mammalian wildlife, 56 mg/kg.

53 G (7) (B) Exception to disposition of treated soils.

We suggest deletion of this special provision for exceptions to standards. A single exception procedure in 53 K should be used for all exceptions. To allow administrative approval of exceptions to standards after limited notice will establish a new precedent with each exception, negating the purpose of the rule and relegating the rule to becoming an unenforceable guideline.

53 G (8) (a) through (c) Bioremediation endpoint.

For clarity throughout G (8), we suggest using the distinct term "*bioremediation endpoint*" rather than the vague and arguable term, "*environmentally acceptable bioremediation endpoint.*"

Because we are instructed to base our submission on the draft of February 27, rather than the draft of March 31, we note the crucial typographical error in (a) relating to paragraph (6).

In agreement with industry, we suggest replacing the 80% limit with other particular closure conditions.

In (8) (b), we suggest that, as part of the application, the operation plan contain demonstration of access adequate water, which is crucial to use of the bioremediation endpoint.

In (8) (c) (ii) we suggest a change of language that will clarify the meaning without altering it. Presumably, so long as drill cuttings are not prohibited in landfarms, the term "lift" is adequate to specify what must be characterized.

In (8) (c) (iv) and (v) we suggest a particular sampling procedure and statistical method, in agreement with industry.

53 H (5) (a) (iv) Chloride closure standard for small landfarms.

For reasons given under 53 G (4) above, we suggest that the closure limit for chloride be 500 mg/kg. This is particularly important for small landfarms, which may proliferate widely across the landscape.

53 H (5) (b) (iv) Sampling at closure of a small landfarm.

The proposed rule specifies that sampling be conducted at a depth of three to five feet beneath the treatment zone. During the three years that a small landfarm operates, contaminants leached from the treatment zone would rarely reach a depth of five feet. Sampling at a five foot depth would therefore be nearly meaningless. Thus, the rule as proposed is an invitation to put wastes containing high concentrations of chlorides into small landfarms with the intent of leaching the chlorides into the underlying soil. Particularly for a small landfarm, where sampling will occur only at closure, sampling of the vadose zone should be done at a depth not exceeding two feet. Particularly at a small landfarm, there is no rationale for sampling at a depth greater than that specified for a permitted landfarm. Setting the vadose zone limits at treatment zone closure standards (discussed in G (5) above) would avoid initiating remedial investigations upon detection of insignificant concentrations of contaminants.

53 J (4) (b) (i) Landfill cell cover slope.

The proposed rule specifies that the side slope of a landfill cell cover shall not exceed a 25 percent grade. Testimony suggested that this may encourage erosion, and that the maximum grade should not exceed 8 percent. Suggested language for the gradient of the top portion is meant to simplify the language without altering meaning.

53 K (1) through (3).

As proposed, 53 K (1) through (3) would allow de facto exception to any requirements, and thereby de facto alteration of the rule, by administrative exception with minimal input. Because one exception

becomes precedent for another, the proposed exception process is, in effect, rulemaking. Standards or processes that are specifically established by rule should not be altered without notice and opportunity for a hearing with participation by the same persons who receive notice and participate in rulemaking. We suggest simplified language that will allow exceptions as provided within the rule, for example as the rule provides exception to the prescribed bottom layer in a landfill. However, we suggest that exception to standards or prescribed processes would become subject to a hearing if any person filed an objection.

Respectfully submitted this 18th day of May 2006,

ALLETTA BELIN
STEVEN SUGARMAN
BELIN & SUGARMAN
618 Paseo de Peralta
Santa Fe, New Mexico 87501
(505) 983-8936