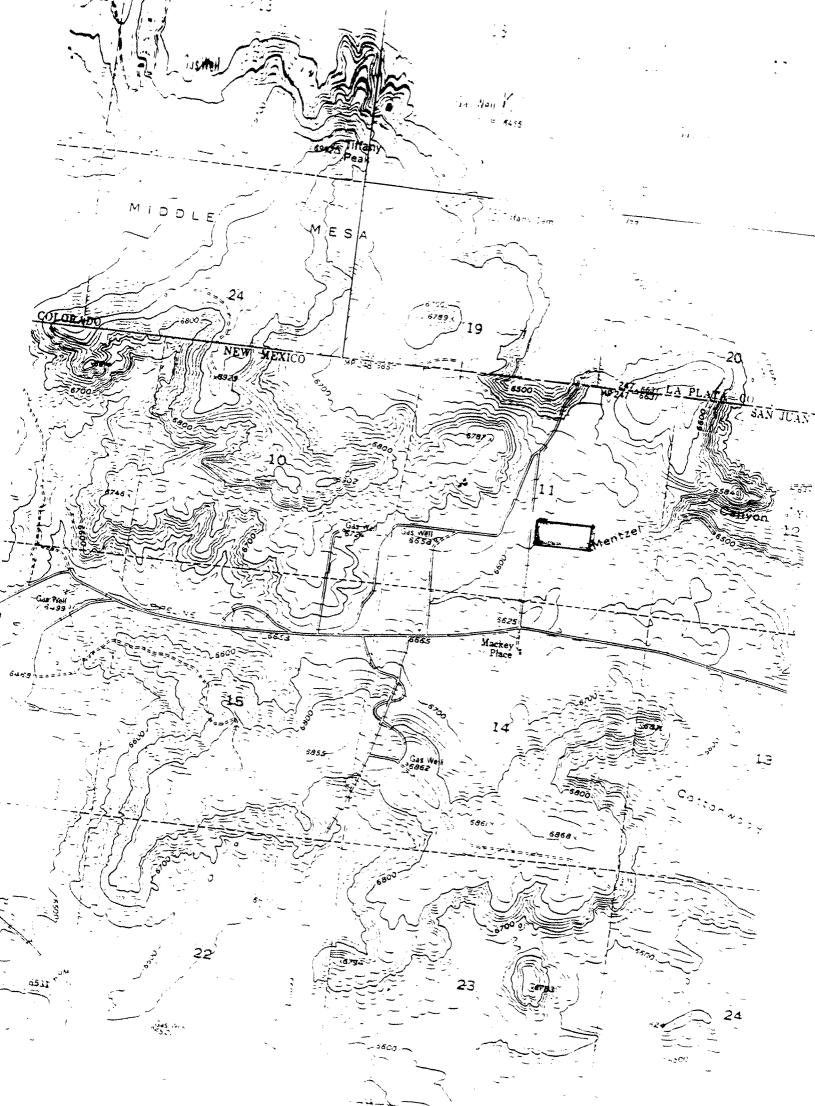
,	State of New Mexico Energy, Minerals and Natural Resources Department OIL CONSERVATION DIVISION P.O. Box 2088 Santa Fe, NM 87501		
•	1994 APPLICATION FOR SURFACE WASTE DISPOSAL FACILITY		
	(ION DIV. (Refer to OCD Guidelings for assistance in completing the application) OIL CC. SANIA FE Commercial Centralized		
I.	Type: X Produced Water Drilling Muds XX Other Reverse Osmosis Solids/Landfarm Treating Fluids Concentrate		
II.	OPERATOR: RMI Environmental Services, Inc.		
	ADDRESS: 2080 Afton Place Farmington, New Mexico 87401		
	CONTACT PERSON: Pat Steenburg PHONE: 505/327-5966		
III.	LOCATION: <u>See Map /4 See Map /4 Section 11</u> Township <u>32 N</u> Range <u>7 W</u> Submit large scale topographic map showing exact location.		
IV.	IS THIS AN EXPANSION OF AN EXISTING FACILITY? U Yes No		
فبلا	Attach the name and address of the landowner of the disposal facility site and landowners of record within one-half mile o the site.		
3 1.	Attach discription of the facility with a diagram indicating location of fences, pits, dikes, and tanks on the facility.		
YH.	Attach detailed engineering designs with diagrams prepared in accordance with Division guidelines for the construction/installation of the following: pits or ponds, leak-detection systems, aerations sytems, enhanced evaporation (spray) systems, waste treating systems, security systems, and landfarm facilities.		
ym.	Attach a contingency plan for reporting and clean-up of spills or releases.		
JX.	Attach a routine inspection and maintenance plan to ensure permit compliance.		
X :*	Attach a closure plan.		
ST.	Attach geological/hydrological evidence demonstrating that disposal of oil field wastes will not adversely impact fresh water. Depth to and quality of ground water must be included.		
XII.	Attach proof that the notice requirements of OCD Rule 711 have been met (Commercial facilities only).		
XJH.	Attach a contingency plan in the event of a release of H ₂ S.		
XIV.	Attach such other information as necessary to demonstrate compliance with any other OCD rules, regulations and/or orders.		
¥V.	CERTIFICATION		
	I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.		
	Name: Brad F. Simmons Title: President		
	Signature: <u>Brad</u> J Simmon Date: <u>4/25/94</u>		

DISTRIBUTION: Original and one copy to Santa Fe with one copy to appropriate Division District Office.



LANDOWNERS OF RECORD WITHIN 1/2 MILE OF PROPOSED FACILITY

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Mr. & Mrs. Larry Barnes (LANDOWNER) County Road 4012, #20 Middle Mesa Area Ignacio, Colorado 81137

Mr. David Meyer III 727 Birdie Drive Grand Junction, Colorado 81506

Mr. Jack Mackey Route 2, County Road 328 Ignacio, Colorado 81137

Bureau of Land Management 1235 La Plata HWY Farmington, New Mexico 87401

FACILITY DESCRIPTION

The proposed water disposal pits will allow the treatment of water produced in conjunction with coalbed methane by reverse osmosis. The reverse osmosis system (located approximately 1.5 miles north in Colorado) will recover approximately 75% of the total feed stream, allowing the surface discharge of this water under the authority of the National Pollutant Discharge Elimination System. The remaining 25%, however, is a concentrated brine that contains the majority of the dissolved solids from the produced water feedstream.

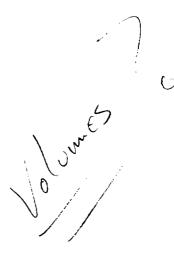
It is this concentrated 25% that will be disposed of in the proposed pond. Also, in the event of RO system downtime, the entire produced water feedstream will be directed to the ponds for disposal. Diagrams of the pond, facility, tanks, leak detection system and fence have been included for your review.

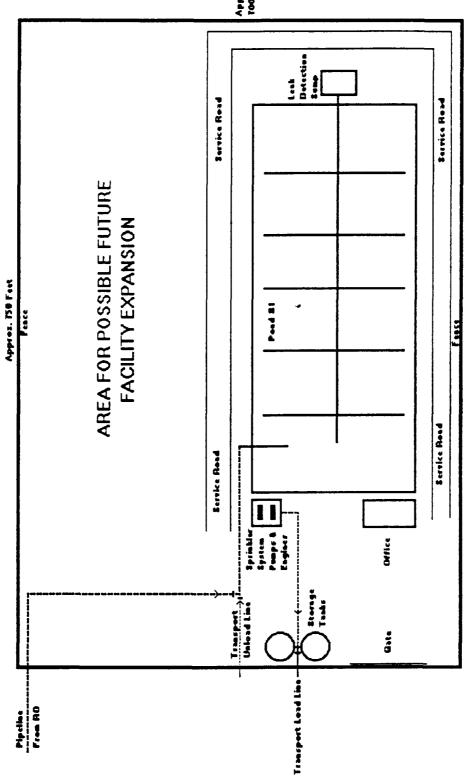
The concentrate will be stored on site at the RO before being pumped to the pond. The tanks used to store the brine will be equipped with level controllers to allow the automatic transfer to the pond. The pipeline to transfer said water is presently being permitted and construction should be complete no later than August 01.

In addition to the CBM reverse osmosis feed water and concentrate, the pond will take limited amounts of produced water from other CBM and conventional gas wells in the area. All produced water from conventional wells will pass through a skimming system before it is pumped from the RO treatment facility to the pond.

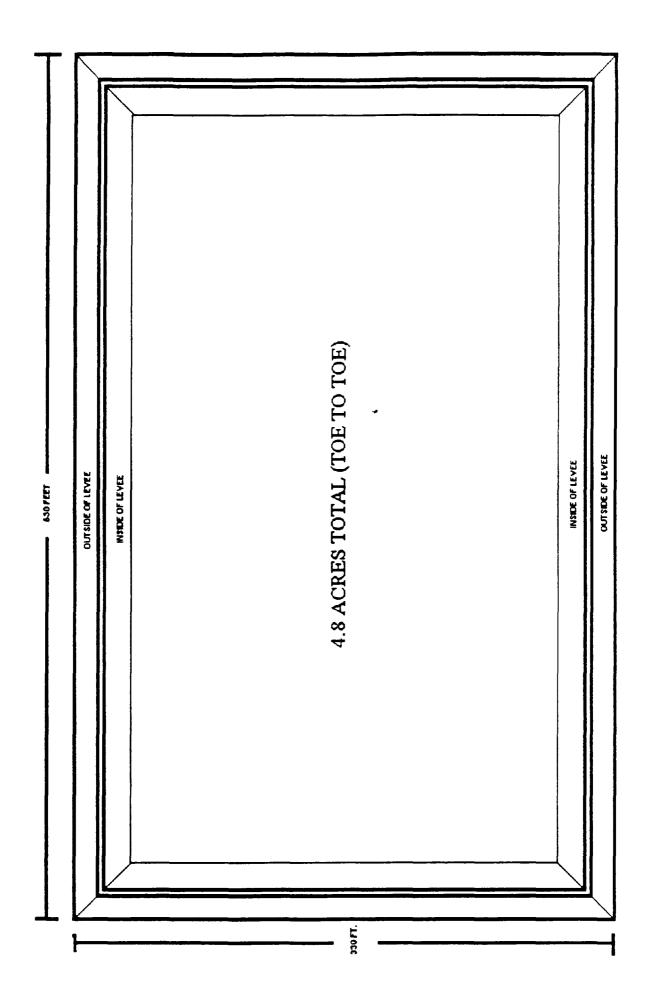
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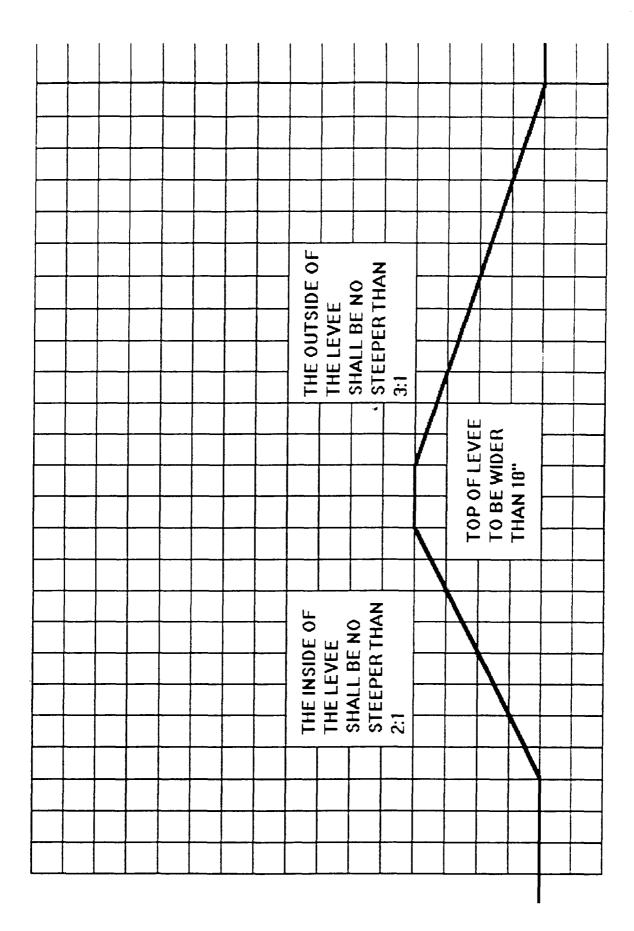
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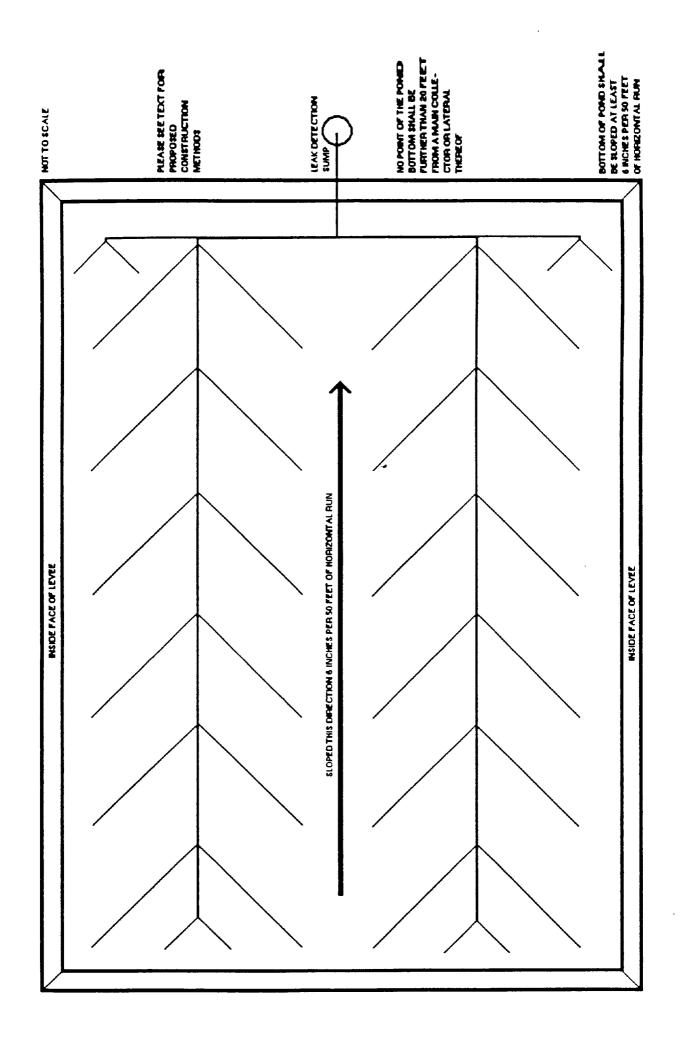


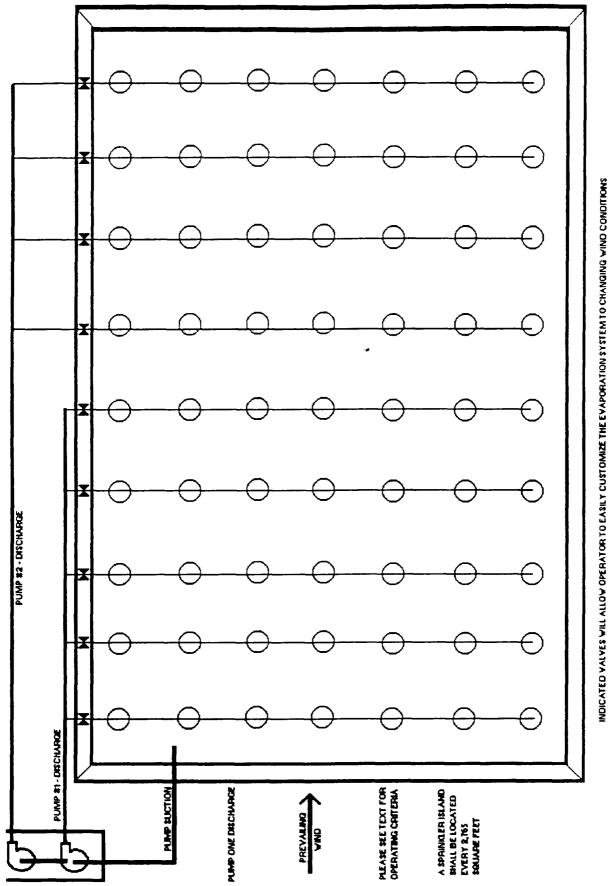


Appres. 100 Feet











FACILITY DESIGN AND CONSTRUCTION

- 1. The ponds will be constructed such that the inside grade of the levee is no steeper than 2:1 and the outside grade of the levee is no steeper than 3:1. The top of the levees shall be at least eighteen inches wide. Fluid discharge points into the ponds will be directed so that no fluid force is directed towards the liner.
- 2. Liner markings or some other approved device shall be utilized to accurately determine freeboard.
- 3. The evaporation pond will be double lined with an impermeable synthetic material of at least 30 mil thickness and have good resistance to tears and/or punctures. The material shall also be resistant to ultraviolet light, hydrocarbons, salts, and acidic and alkaline conditions. No substitution for different materials will be made without prior approval of all applicable regulatory agencies.
- 4. Leak Detection:
 - a. A leak detection system of an approved design will be installed between the primary and secondary liner. The OCD will be notified at least 24 hours prior to the installation of the primary liner to allow the division the opportunity to inspect the leak detection system if so desired.
 - b. A network of slotted or perforated drainage pipes will be installed between the primary and secondary liners. The main collector pipes shall be no less than two inches diameter, and all laterals are to be no less than one inch in diameter. The pipe grid shall be designed and installed such that no point in the pond bed will be more than twenty feet from a main collector pipe or lateral.
 - c. The material utilized between the pipes and laterals shall be sufficiently permeable to allow transport of any leaked fluids to the leak detection system. The slope for all drainage pipes and laterals shall be no less than six inches per fifty feet. The slope of the pond bed shall also conform to these values to assure fluid flow towards the leak detection system, which will in turn convey the fluids to a corrosion proof sump located outside the perimeter of the pond.
- 5. Preparation of Pond Bed for Installation of Liners:
 - a. The bed of the ponds and inside grade of the levees shall be smooth and compacted, free of holes, rocks, stumps, clods, or any other debris which could rupture the liner. If necessary to prevent rocks from damaging the liner, the pond bed will be covered with a compacted layer of sand or other suitable material.

- b. An anchor trench will be excavated on top of the levee around the entire perimeter of the pond for the purpose of anchoring the liner. This trench will be located a minimum of nine inches from the slope break, and will be a minimum of twelve inches deep. An anchor of used pipe will be placed over the liner in the anchor trench and the trench backfilled.
- c. The liner will rest smoothly on the pond beds and the inside face of the levees, and will be large enough to extend into the bottom of the anchor trench and extend a minimum of two inches outside the trench on the side furthest from the pond. As per manufacturers recommendations, wrinkles or folds will be placed at each of the inside corners of the ponds to allow for contraction and expansion of the liner due to temperature variations, and the liner will be adequately vented.
- d. The placement of the geotextile membrane layer placed on top of the secondary liner will be completed in such a manner as to minimize the risk of damage.
- 6. A fence will be constructed and maintained around the perimeter of the facility so as to prevent livestock, wildlife, and unauthorized personnel from entering the facility area. The fence will not be constructed upon the levee, and adequate space between the fence and the levee for passage of maintenance vehicles.
- 7. A sign will be posted at the entrance to the facility, and shall be legible from at least fifty feet. The sign will contain the following information, name of the facility, location by quarter-quarter section, township and range, and emergency phone numbers.
- 8. Above ground tanks which contain materials other than fresh water shall be bermed to contain one and one third the volume of the largest tank or all interconnected tanks.

FACILITY OPERATIONS

- 1. The facility will be inspected a minimum of one time per week. The facility will be secured when no attendant is present.
- 2. No produced water will be received, by truck, at the facility unless the transporter has a valid form C-133 (Authorization to Move Produced Water) on file with the Division.
- 3. Any hydrocarbons inadvertently discharged to the ponds will be removed within twenty four hours.

- 4. The ponds will have a minimum freeboard of two feet. If overtopping occurs, the freeboard will be increased to prevent another occurrence.
- 5. The spray evaporation system will be operated in such a manner that all spray will remain within the confines of the lined portion of the pond. An anemometer with automatic shutdown capabilities will be installed and utilized such that the spray system will not operate when winds, sustained, or in gusts, cause windborne drift to leave the confines of the pond berm.
- 6. The leak detection system will be inspected a minimum of once per week. Records of such inspections will be made and kept on file for two years from the date of record. If fluids are found in the sump, the following steps will be immediately undertaken:
 - a. The operator will notify the OCD Aztec Office within twenty four hours of discovery.
 - b. The fluids will be sampled and analyzed to determine the source.
 - c. Fluids will be immediately and continuously removed from the sump. Such fluids may be returned to the pond.
- 7. If a leak is determined to exist in the primary liner, the operator will undertake the following contingency measures under the direction of the OCD:
 - a. Introduction of fluids into the pond will cease.
 - b. Enhanced evaporation will commence, provided that atmospheric conditions are such that the spray systems can be operated in accordance with the provisions of this permit. This will continue until the fluid level in the pond is below the location of the leak in the liner.
 - c. The liner will be repaired and tested and the leak detection system will be completely drained before resuming introduction of fluids into the pond.
- 8. The outside walls of the levees will be maintained in such a manner as to prevent erosion. Inspections of the outside walls of the levees will be made weekly and after any rainfall of consequence.

H_S PREVENTION & CONTINGENCY PLAN

- 1. Tests will be conducted and records made to determine the <u>dissolved oxygen</u> levels in the pond. Samples for each test will be taken one foot from the bottom of the pond and the location of each test will vary around the pond. This test will be conducted <u>monthly</u>. The OCD Aztec office will be notified if any test shows a dissolved residual oxygen level of less that 0.5 ppm.
- 2. Tests of ambient H₂S levels will be conducted weekly and records made. Such tests will be made at varying locations around the pond levee. The wind speed and direction will be recorded in conjunction with each test.
- 3. If an H_2S reading of 0.1 ppm or greater is obtained:
 - a. A second reading will be taken on the down wind berm within one hour.
 - b. The dissolved Oxygen and dissolved sulfide levels of the pond will be tested immediately and the need for immediate actions determined.
 - c. Tests for H_2S levels will be made at the fenceline, downwind from the pond.
- 4. If two consecutive H_2S readings of 0.1 ppm or greater are obtained:
 - a. The operator will notify OCD Aztec Office immediately.
 - b. The operator will commence hourly monitoring on a 24-hour basis.
 - c. The operator will obtain daily analyses of dissolved sulfides in the pond.
 - d. The operator will implement an approved treatment plan so as to reduce dissolved sulfides in the pond and eliminate H₂S emissions.
- 5. If an H₂S reading of 10.0 ppm or greater at the facility fence line is obtained:
 - a. The operator will immediately notify the OCD Aztec and Sante Fe Offices and the following public safety agencies:
 - State Police County Sheriff County Fire Marshall
 - b. The operator will initiate notification of all persons residing within one-half mile of the fence line and assist public safety officials with evacuation as requested.

RECORDS & REPORTING

- 1. The operator will keep and make available for inspection all H₂S monitoring and treatment records. Such records will be maintained for a period of two years from the date of reading.
- 2. The operator shall keep and make available for inspection all leak detection monitoring records. Such records will be maintained for a period of two years from the date of record.
- 3. The operator will file forms C-117-A, C-118, and C-120-A with the Sante Fe district office as required by OCD Rules 1118 and 1120.
- 4. The OCD will be notified of any break, spill, blow out, fire, or any other circumstance that could constitute a hazard or contamination in accordance with OCD Rule 116.

CLOSURE

1. The OCD will be notified when operation of the facility is discontinued for a period in excess of six months or when the facility is to be dismantled.

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- 2. When the facility is to be closed, no new material will be accepted. The operator will provide for the removal of all fluids and/or wastes, closure of all pits or ponds, and clean-up of any contaminated soils and/or waters pursuant to OCD approval. The area will be reseeded with natural grasses and allowed to return to it's natural state.
- 3. Closure and waste disposal will be in accordance with the statutes, rules, and regulations in effect at the time of closure.

The ponds will be located on the San Jose formation, which is the youngest Tertiary bedrock unit in the San Juan Basin proper. It occurs at the surface over a vast portion of the central basin. The formation has been divided into four members: Cuba Mesa, Regina, Llaves, and Tapicitos (in ascending order).

The sandstones of the Cuba Mesa and Llaves Members are generally coarse-grained, often pebbly, submature arkose. The mudstones of the Regina and Tapacitos Members commonly are silty or sandy and contain beds and lenses of claystone, siltstone, and poorly consolidated sandstone. The abundance of swelling clay is attested to by the familiar popcorn weathering habit of these members.

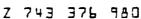
The soil type has been classified as the Penistaja series by the United States Soil Conservation Service (SCS) and are defined as Ustollic Haplargids, fine-loamy, mixed, mesic. This soil type has been rated favorably for pond and reservoir areas by the SCS. These deep, well drained soils are on mesas and plateaus. The soils formed in alluvial and eolian material derived from shale and sandstone. Slope is 0 to 5 percent. Elevation is 6400 to 7200 feet. The average annual precipitation is 10 to 13 inches, the average annual air temperature is 48 to 52 degrees F, and the average frost-free season is 120 to 150 days. The horizons are defined as follows:

A1	0 to 2 inches; brown loam, dark brown moist; weak medium platy structure parting to weak fine granular; soft, very friable, slightly sticky and slightly plastic; few fine roots; few fine continuous pores; noneffervescent; mildly alkaline; clear smooth boundary.
B1	2 to 5 inches; brown clay loam, dark brown moist, weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few fine roots; few fine and medium continuous pores; noneffervescent; mildly alkaline; clear smooth boundary.
B21t	5 to 12 inches; brown clay loam, dark brown moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, sticky and plastic; thin continuous clay films; few fine and medium roots; few fine and medium continuous pores; noneffervescent; mildly alkaline; clear smooth boundary.
B22t	12 to 24 inches; brown clay loam; dark brown moist, moderate medium prismatic structure parting to strong medium subangular blocky; very hard, firm, sticky and plastic; moderately thick continuous clay films; few fine and medium roots; few fine and medium continuous pores; noneffervescent; mildly alkaline; clear smooth boundary.
B3ca	24 to 38 inches; brown clay loam, dark brown moist; weak medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few fine roots; few fine discontinuous pores; common rounded medium sized masses of segregated lime; strongly effervescent; mildly alkaline; clear smooth boundary.
Clca	38 to 67 inches; light brown clay loam, brown moist; massive; hard, friable, slightly sticky and slightly plastic; few very fine roots; few fine discontinuous pores; common rounded medium masses of segregated lime; strongly effervescent; moderately alkaline.

Based on research and a nearby domestic water well, which is located at approximately the same elevation but on the other side of Mentzel Canyon, groundwater is estimated to be in excess of 100 feet below grade at both of the proposed locations. Estimated specific conductance is 1850 micromhos.

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Mr. Mike Pool Area Manager Bureau of Land Management 1235 La Plata HWY Farmington, New Mexico 87401

Mr. Pool:

Please be advised that RMI Environmental Services, Inc. has entered into an agreement with the landowner of record and will be applying for the necessary permits from the New Mexico Oil Conservation Division, and the New Mexico State Engineer's Office, for the construction and operation of a four acre evaporation pond in the NW 1/4 SE 1/4 Section 11 Township 32 North Range 7 West, (approximately 1/2 mile south of the State line, on the east side of the Tiffany road).

The pond will be used for the disposal of produced water and reverse osmosis concentrate resulting from the treatment of produced water at a facility located 1.5 miles to the north, in Colorado. The water will reach the pond via pipeline, at this time we are not planning on utilizing any motor transport.

The pond will be constructed and operated according to the rules and regulations set forth by the New Mexico Oil Conservation Division, which include, but are by no means, limited to:

two synthetic liners with a leak detection system to immediately alarm the operator in the event of a leak in the primary liner;

an anemometer will be used to constantly monitor wind speed, when the wind speed reaches a preset limit the anemometer will automatically shut down the sprinkler systems to prevent overspray from leaving the lined confines of the pond;

the New Mexico Oil Conservation Division will hold a \$25,000.00 cash bond or surety which will guarantee the proper closing and reclamation of the facility in the event of corporate failure of the operator, and;

the pond will have a minimum of two feet of freeboard at all times to prevent overtopping.

The possibility exists that a second two or four acre pond will be added to the facility in the future.

If you have any questions or comments about this letter or the pond in general please do not hesitate to contact me in Farmington at 505/327-5966. If you would like to make comment on the application in general you can contact the Aztec Office of the New Mexico Oil Conservation Division at 505/334-6178.

Sincerely, RMI ENVIRONMENTAL SERVICES, INC.

Patrick M. Steenburg Vice President, Operations

RMI Environmental Services P. O. Box 2522 Farmington, NM 87499 Fax: 505-327-5988 2080 Afton Place. Suite A Farmington, NM 87401 505-327-5966



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Mr. & Mrs. Larry and Rebecca Barnes County Road 4012, #20 Middle Mesa Area Ignacio, Colorado 81137

Mr. & Mrs. Barnes:

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Patrick M. Steenburg Vice President, Operations

RMI Environmental Services P. O. Box 2522 Farmington, NM 87499 Fax: 505-327-5988 2080 Afton Place, Suite A Farmington, NM 87401 305-327-5966



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Mr. Jack Mackey Route 2, County Road 328 Ignacio, Colorado 81137

Mr. Mackey:

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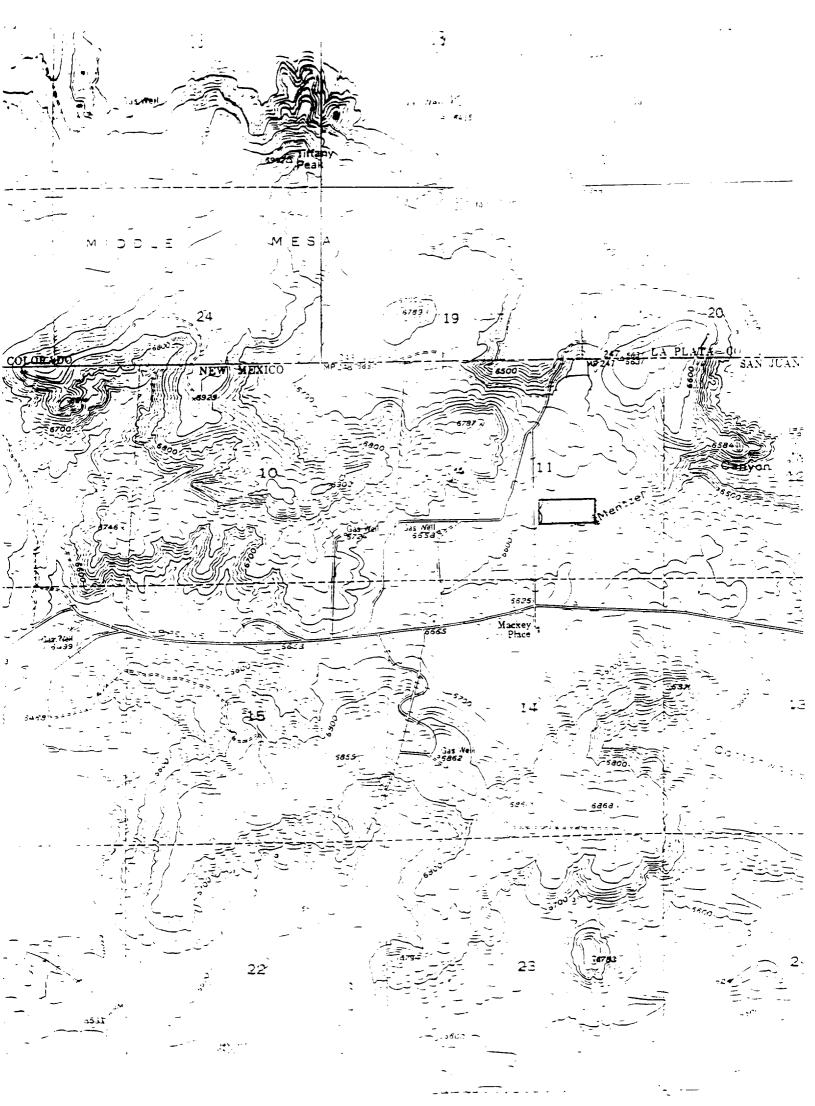
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Sincerely, RMI ENVIRONMENTAL SERVICES, INC.

Patrick M. Steenburg

Vice President, Operations

RMI Environmental Services P. O. Box 2522 Farmington, NM 87499 Fax: 505-327-5988 2080 Afton Place, Suite A Farmington, NM 87401 505-327-5966



rmí~

Mr. David Meyer III 727 Birdie Drive Grand Junction, Colorado 81506

Mr. Meyer:

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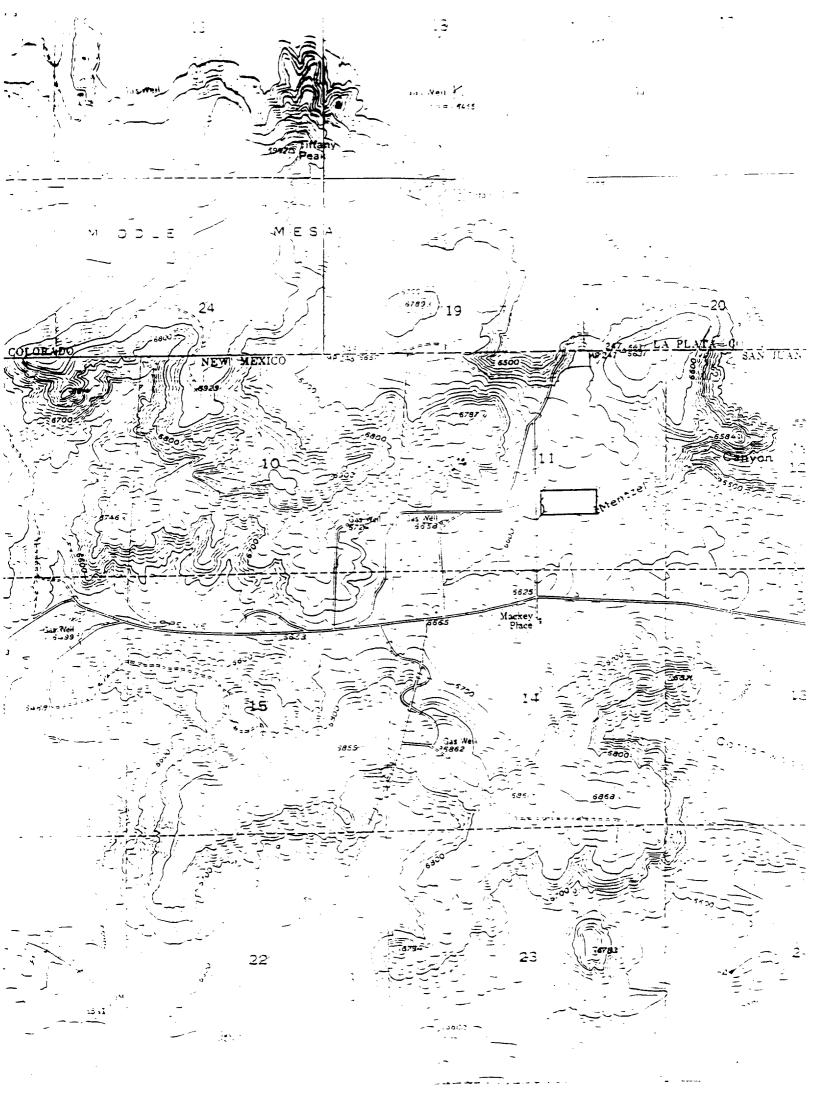
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Sincerely, RMI ENVIRONMENTAL SERVICES, INC.

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Patrick M. Steenburg Vice President, Operations

RMI Environmental Services P. O. Box 2522 Farmington, NM 87499 Fax: 505-327-5988 2080 Afton Place, Suite A Farmington, NM 87401 505-327-5966



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April 12, 1994

Larry D. & Rebecca J. Barnes #20 Road 4012 Middle Mesa Area Ignacio, Colorado 81137

RE: 12-Acre Parcel Lease for Produced Water Evaporation Ponds

Dear Larry & Becky,

RMI Environmental Services, Inc., of Farmington, NM, hereinafter referred to as RMI, submits the following letter agreement to Larry D. Barnes and Rebecca J. Barnes of Ignacio, Colorado, hereinafter referred to as the "Barnes", which outlines the general terms and conditions of a minimum six-year agreement to lease and occupy a specified 12-acre parcel, hereinafter referred to as the "Site", for the construction and implementation of a complex of evaporation ponds. The ponds will be designed, built, and operated by RMI for the purpose of disposing of produced water in the area surrounding Tiffany and Ignacio, Colorado.

This letter agreement will serve as an interrum contract between the parties to facilitate the permitting and preliminary design process, and will be replaced with a final lease agreement which will include the terms and conditions outlined herein as well as any additional verbage to be included by legal council as mutully agreed by both parties. Execution of said final lease agreement will be contingent upon receipt of any and all necessary permits and approvals as required by all regulatory agencies with jurisdiction over the construction, implementation, and operation of such a facility.

The following outlines the agreed terms and conditions of this preliminary agreement to lease the Site (to be further described in the final lease agreement) as discussed above.

RMI agrees to:

- Pay \$8,500.00 per year for a minimum six-year term to lease the Site for the construction, implementation, and operation of a complex of evaporation ponds to dispose of oilfield produced waters from southwestern Colorado and northwestern New Mexico;
- 2) Upon completion of the initial six-year term, RMI will retain the option to renew the lease on the beginning of each year for up to a maximum of ten (10) additional years at a cost of \$8,500.00 per each year extended.

RMI Environmental Services P. O. Box 2522 Farmington, NM 37499 Fax: 505-327-5988 2080 Afton Place, Suite A Farmington, NM 37401 505-327-5966 The first two lease payments for the first two years are due and payable within thirty (30) days of the execution date of the final lease agreement. All other lease fees will be payable within thirty (30) days of the annual renewal date, which will be the anniversary of said lease execution date;

- 3) Upon completion of the final year of the lease, RMI will remove all equipment, materials, and waste, and reclaim the Site according to the minimum requirements as specified by the New Mexico Environmental Department (NMED), New Mexico Oil Conservation Division (NMOCD), and the New Mexico State Engineer (NMSE);
- 4) Guarantee to construct and operate the evaporation ponds with sufficient care and quality control to insure that the disposal facility will meet all appropriate regulatory requirements for the term of the lease agreement;
- 5) Process and handle all the necessary permits and maintain any associated monitoring requirements as they pertain to the treatment, storage, and disposal of the waters supplied to the Site;
- 6) Assume all liability and responsibility for the efficient and safe operation of the Site; and proper handling for the disposal of the produced waters provided thereon.
- 7) Indemnify the Barnes from any and all claims or causes of action asserted by third parties against RMI arising out of the disposal services provided by RMI at the Site. This indemnification includes liability sought or imposed by any governmental agency against RMI as a result of said water treatment services.

In return for RMI meeting the above terms, the BARNES AGREE TO:

- Provide unlimited use and rights, and free and unemcumbered access to the Site for the construction, implementation, and operation of the produced water evaporation ponds during the term of the lease and any extensions thereto;
- Keep confidential all production and Site operation data and any other information designated to be proprietary by RMI and/or any operator providing waters to the Site;
- 3) Maintain ownership of the Site free of any liens, encumbrances and/or claims, other than those listed below, for the term of the initial lease and any extensions thereto.

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- Notify RMI within 24 hours of any claims or liens filed 4) against said parcel, and/or any foreseeable actions that could potentially alter or affect the control and ownership of said parcel. RMI will retain the exclusive first right of refusal to resolve any such actions and/or to purchase said parcel if offered for sale.
- Indemnify RMI from any and all claims or causes of action 5) asserted by third parties against the Barnes arising out of the day-to-day operations and/or any other services provided specifically by the Barnes on their property. This indemnification includes liability sought or imposed by any governmental agency against the Barnes as a result of any business or services performed by the Barnes.

If you are in agreement with the foregoing, please execute as provided below and return one original to RMI. The executed copy will be forwarded to RMI's attorney for the preparation a final lease agreement, which in turn can be forwarded to you and/or your legal council.

IN WITNESS WHEREOF, the parties hereto agree the terms and conditions as outlined as of the day and year set forth above.

RMI ENVIRONMENTAL SERVICES, INC.

Brad & Simmons

Brad F. Simmons, President

Date: 4/14/94

Barnes

5 Date:

Date: 4/15/94

Witness