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APPROVALS

YEAR(S):

2000-1997



STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 S. PACHECO
SANTA FE, NEW MEXICO 87505
(505) 827-7131

February 7, 2000

CERTIFIED MAIL
RETURN RECEIPT NO. Z-559-572-897

Mr. Larry Sugano
Tipperary Corporation
633 Seventeenth St., Suite 1550
Denver, Colorado 80202

RE: VERA #1 AND STATE NBN #1 PIT CLOSURES

Dear Mr. Sugano:

The New Mexico Oil Conservation Division (OCD) has reviewed Tipperary Corporation's (TC) November 2, 1999 "REQUEST FOR FINAL PIT CLOSURE, VERA #1, SEC 32E-T11N-R33E, TATUM PIT CLOSURE PROJECT, LEA COUNTY, NM" and November 2, 1999 "REQUEST FOR FINAL CLOSURE OF PIT, STATE NBN #1, SEC 16N-T11N-33E, TATUM PIT CLOSURE PROJECT, LEA COUNTY, NM. These documents which were received by the OCD on December 20, 1999 contain the results of the remediation of soils and ground water contamination related to former oilfield production pits at TC's Vera #1 and State NBN #1 well sites and requests final closure of the site remedial actions

The above referenced closure requests for TC's Vera #1 and State NBN#1 are approved.

Please be advised that OCD approval does not relieve TC of liability should remaining contamination pose a future threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve TC of responsibility for compliance with any other applicable federal, state or local laws and regulation.

If you have any questions, please call me at (505) 827-7154.

Sincerely,

William C. Olson
Hydrologist
Environmental Bureau

xc: Chris Williams, OCD Hobbs District Office
Mike Matush, NM State Land Office
Mike Griffin, Whole Earth Environmental, Inc.



STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 S. PACHECO
SANTA FE, NEW MEXICO 87505
(505) 827-7131

August 6, 1999

CERTIFIED MAIL
RETURN RECEIPT NO. Z-274-520-689

Mr. Larry G. Sugano
Tipperary Corporation
633 Seventeenth St., Suite 1550
Denver, Colorado 80202

RE: TATUM PIT CLOSURES

Dear Mr. Sugano:

The New Mexico Oil Conservation Division (OCD) has reviewed Tipperary Corporation's (TC) April 27, 1999 "APRIL 1999 PROGRESS REPORT, TATUM PIT CLOSURE PROJECT, LEA COUNTY, NEW MEXICO". This document contains the results of TC's monitoring of ground water contamination related to the closure of 10 unlined pits west of Tatum, New Mexico. The document also requests final closure of the remedial actions related to unlined pits at the State NBN #1 and Vera #1 sites and proposes modifications to the ground water sampling program.

In order to complete a review of the above referenced closure requests and sampling modifications, the OCD requires that TC submit the following information, with all maps, tables and data segregated into separate case files for each site:

1. A water table potentiometric map for each site which shows the location of the pit and excavated areas, the surveyed locations of all monitor wells and recovery wells and any other pertinent site features as well as the direction and magnitude of the hydraulic gradient created using the water table elevation in each monitor well. On March 29, 1999, the OCD required that TC submit this information. The above referenced document states that TC was preparing the maps. To date the OCD has not received this required information.
2. Tables of water table elevations in each monitor well during each sampling event. The document discusses seasonal fluctuations in the water table as responsible for increases in contaminant concentrations in ground water. However, the supporting water table elevation vs. time data for each monitor well is not provided.
3. Tables of all past and present water quality sampling results for each ground water monitoring and recovery well as required in the OCD's January 15, 1999 conditions of approval. The document only contains analytical data for ground water monitoring wells that are currently being sampled.

Mr. Larry G. Sugano
August 6, 1999
Page 2

4. An explanation of the use of drill cuttings as backfill in the annular space above the bentonite plug in each newly constructed monitor well . This is a direct violation of the OCD's January 15, 1999 conditions of approval which required that the remainder of the annular space be grouted to the surface with cement containing 3-5% bentonite. As a result the monitor wells as constructed by TC are potentially direct conduits to ground water.
5. The monitor well development procedures and volumes for each monitor well.
6. The volume of ground water and product recovered to date at all sites with fluid recovery as required in the OCD's January 15, 1999 conditions of approval.
7. A completed OCD pit closure and remediation report form for each site requested for closure. Each form will contain a discussion and the results of all soil and ground water site closure activities including all soil analytical data from the excavations and the backfilled materials as well as figures showing all sample locations.

The above required information shall be submitted to the OCD Santa Fe Office by October 4, 1999 with a copy provided to the OCD Hobbs District Office. Submission of this information will allow the OCD to complete a review of TC's closure requests and proposed ground water sampling plan modifications.

If you have any questions or comments, please call me at (505) 827-7154.

Sincerely,



William C. Olson
Hydrologist
Environmental Bureau

xc: Chris Williams, OCD Hobbs District Office
Mike Matush, NM State Land Office
Mike Griffin, Whole Earth Environmental, Inc.



**NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT**

OIL CONSERVATION DIVISION
2040 South Pacheco Street
Santa Fe, New Mexico 87506
(505) 827-7131

March 29, 1999

CERTIFIED MAIL
RETURN RECEIPT NO. Z-274-520-638

Mr. Larry Sugano
Tipperary Corporation
633 Seventeenth St., Suite 1550
Denver, Colorado 80202

RE: TATUM PIT CLOSURES

Dear Mr. Sugano:

The New Mexico Oil Conservation Division (OCD) has reviewed Tipperary Corporation's (TC) February 16, 1999 "January 1999 PROGRESS REPORT, TATUM PIT CLOSURE PROJECT, LEA COUNTY, NEW MEXICO". This document contains the results of TC's monitoring of ground water contamination related to the closure of 10 unlined pits west of Tatum, New Mexico and requests final closure of the remedial actions related to unlined pits at the Iva Com #1, Mable Com #1, State NBN #1 and Vera #1 sites. The document also requests an extension of the deadline for submission of a report on ground water investigations from April 1 to May 1, 1999.

The above referenced deadline extension request is approved.

In order to complete a review of the above referenced closure requests, the OCD requires that TC submit a water table potentiometric map for each of the 10 sites which shows the location of the pit and excavated areas, the surveyed locations of all monitor wells and recovery wells and any other pertinent site features as well as the direction and magnitude of the hydraulic gradient created using the water table elevation in each monitor well.

If you have any questions, please call me at (505) 827-7154.

Sincerely,

William C. Olson
Hydrologist
Environmental Bureau

xc: Chris Williams, OCD Hobbs District Office
Mike Matush, NM State Land Office
Mike Griffin, Whole Earth Environmental, Inc.



STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 S. PACHECO
SANTA FE, NEW MEXICO 87505
(505) 827-7131

January 15, 1999

CERTIFIED MAIL
RETURN RECEIPT NO. Z-274-520-592

Mr. Larry Sugano
Tipperary Corporation
633 Seventeenth St., Suite 1550
Denver, Colorado 80202

**RE: TATUM PIT CLOSURES
LEA COUNTY, NEW MEXICO**

Dear Mr. Sugano:

The New Mexico Oil Conservation Division (OCD) has reviewed Tipperary Corporation's (TC) September 8, 1998 "WORK PLAN & 6/98 PROGRESS REPORT, TATUM PIT CLOSURE PROJECT, LEA COUNTY, NEW MEXICO". This document contains the results of TC's monitoring of ground water contamination related to the closure of 10 unlined pits west of Tatum, New Mexico. The document also contains TC's work plan for additional investigations through installation of monitor wells and ground water sampling.

The above referenced work plan is approved with the following conditions:

1. A sufficient number of monitor wells will be installed to determine the downgradient and lateral extent of ground water contamination at each site with either downgradient monitor wells which show ground water contamination in excess of standards or with evidence of contaminants migrating as a slug through the monitoring system.
2. Each monitor well will be constructed and completed as follows:
 - a. A minimum of 15 feet of well screen will be installed with 5 feet of well screen placed above the water table and 10 feet of well screen placed below the water table.
 - b. An appropriately sized gravel pack will be set in the annulus around the well screen from the bottom of the hole to 2-3 feet above the top of the well screen.

Mr. Larry G. Sugano
January 15, 1999
Page 2

- c. A 2-3 foot bentonite plug will be placed above the gravel pack.
 - d. The remainder of the hole will be grouted to the surface with cement containing 3-5% bentonite.
 - e. A concrete pad and locking well cover will be placed at the surface.
 - f. The well will be developed after construction using EPA approved procedures.
3. No less than 48 hours after the wells are developed, ground water from all monitor wells at each site will be purged, sampled and analyzed for concentrations of benzene, toluene, ethylbenzene, xylene (BTEX) major cations and anions, total dissolved solids (TDS), and New Mexico Water Quality Control Commission (WQCC) metals using EPA approved methods and quality assurance/quality control (QA/QC).
 4. All wastes generated during the investigation will be disposed of at an OCD approved facility.
 5. TC will submit a report on the investigations to the OCD by April 1, 1999. The report will be submitted to the OCD Santa Fe Office with a copy provided to the OCD Hobbs District Office. The report will present the investigation work for each site as a separate case report. Each case report will contain the following information:
 - a. A description of the investigation activities which occurred including conclusions and recommendations.
 - b. A geologic/lithologic log and well completion diagram for each monitor well.
 - c. A water table map showing the location of the pit, monitor wells, recovery wells and any other pertinent site features as well as the direction and magnitude of the hydraulic gradient created using the water table elevation from each monitor well.
 - d. Summary tables of all past and present ground water quality sampling results and copies of all recent laboratory analytical data sheets and associated QA/QC data.
 - e. If ground water recovery is occurring at the site, the volume of ground water and volume of product recovered to date.
 - f. The disposition of all wastes generated.

Mr. Larry G. Sugano
January 15, 1999
Page 3

Please be advised that OCD approval does not limit TC to the proposed work if the plan fails to adequately determine the extent of contamination or if contamination exists which is outside the scope of the plan. In addition, OCD approval does not relieve TC of responsibility for compliance with any other federal, state or local laws and regulations.

If you have any questions, please call me at (505) 827-7154.

Sincerely,



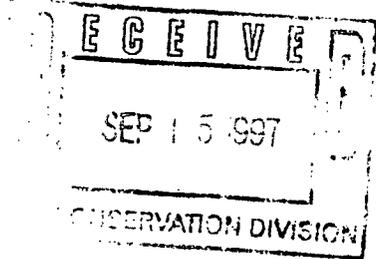
William C. Olson
Hydrologist
Environmental Bureau

xc: Chris Williams, OCD Hobbs District Office
Mike Matush, NM State Land Office
Mike Griffin, Whole Earth Environmental, Inc.



Tipperary
CORPORATION

633 Seventeenth Street
Suite 1550
Denver, Colorado 80202



September 11, 1997

Mr. William C. Olson
Hydrogeologist – Environmental Bureau
New Mexico Energy And Natural Resources Dept.
Oil Conservation Division
2040 South Pacheco
Santa Fe, New Mexico 87504

Subject: Tatum, New Mexico Area “Pit Closure Project”.

Dear Mr. Olson:

Enclosed is a copy of the laboratory analyses of the first water samples taken from the new monitoring wells at our Tatum, New Mexico “Pit Closure Project”. The data indicates BTEX concentrations below allowable maximums for pit closures, but higher than maximums allowed for the more stringent WQCC standards that here apply to the Ogalla Aquifer. Pits with monitor well water samples exceeding the WQCC BTEX maximums include the: Bell State “A” #1, Sohio State “A”, Sohio State #1, Satellite #4, and the State NBF#1.

We have already removed the BTEX source (pit sludge) at these locations, and believe that through time, the processes of natural attenuation will remediate the minor amounts detected. Therefore, as a continuation of our pit closure project, in an effort to establish the extent of the plume we intend to set one new monitor well 150 feet down the ground-water gradient from each of the pits listed above. Tipperary believes these new monitor wells will define the lateral extent of the BTEX at these sites. We intend to sample these wells quarterly.

Please indicate your approval of the above modification to Tipperary’s pit closure plan so that we may proceed with the work. Let me know if you have questions or need more information.

Sincerely,

Robert H. Fehlmann
Environmental Coordinator

WPWIN \ TIP \ LETTERS \ NMPClose.L09

Tipperary Oil & Gas Corporation
Phone (303) 293-9379

Burro Pipeline Corporation
Fax (303) 292-3428



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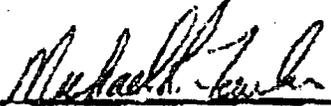
WHOLE EARTH ENVIRONMENTAL
ATTN: MR. MIKE GRIFFIN
18606 SAN GABRIEL
HOUSTON, TEXAS 77064
FAX: 1-281-846-8936

Receiving Date: 08/08/97
Sample Type: WATER
Project: TIPPERARY
Project Location: NONE GIVEN

Analysis Date: 08/09/97
Sampling Date: 08/06/97, 08/06/97
Sample Condition: Intact/ice

ELTS	FIELD CODE	BENZENE mg/l	TOLUENE mg/l	ETHYLBENZENE mg/l	m,p-XYLENE mg/l	o-XYLENE mg/l
12475	VA COM MWW1	<.001	<.001	<.001	0.002	0.007
12476	VA COM MWW2	<.001	<.001	<.001	<.001	<.001
12477	VA COM SW	3.129	2.557	0.209	1.182	0.094
12478	GS #12	1.834	0.055	0.081	3.085	0.084
12481	BELL #0	0.687	0.013	0.024	0.060	0.006
12482	NBN #7	<.001	<.001	<.001	<.001	<.001
12483	SONID 1 #10	2.559	1.148	0.243	1.257	0.081
12484	SONID A #11	0.096	0.004	0.002	0.068	0.012
12485	BAT 4 #9	0.092	0.010	0.015	0.082	0.002
12486	NBF #8	0.302	0.208	0.089	0.753	0.161
12487	VERA #6	0.008	0.003	0.005	0.021	0.028
12488	MABLE MW #3	0.010	0.008	0.031	0.139	0.012
12489	MABLE MW #4	0.015	0.002	0.002	0.010	0.002
% IA		111	111	112	111	113
% EA		113	112	114	112	111
BLANK		<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8020,5030


Michael R. Fowler

9-10-97
Date



STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

2040 S. PACHECO
SANTA FE, NEW MEXICO 87505
(505) 827-7131

June 4, 1997

CERTIFIED MAIL
RETURN RECEIPT NO. P-410-431-177

Mr. Larry G. Sugano
Tipperary Corporation
633 Seventeenth St., Suite 1550
Denver, Colorado 80202

**RE: PIT CLOSURES
TATUM, NEW MEXICO**

Dear Mr. Sugano:

The New Mexico Oil Conservation Division (OCD) has reviewed Tipperary Corporation's (TC) April 9, 1997 "PIT CLOSURES TATUM, NEW MEXICO" and TC's undated "TATUM PIT CLOSURE PROJECT". This document contains the results of soil investigations and remedial action plans for field production pits at the following TC locations in the North Bagley Oil Field near Tatum, New Mexico:

-	Bell State "A"	Unit C, Sec 21, T11S, R33E
-	G.S. State #1	Unit G, Sec 08, T11S, R33E
-	Iva Com #1	Unit H, Sec 20, T11S, R33E
-	Mabel Com #1	Unit D, Sec 29, T11S, R33E
-	Satellite #4	Unit I, Sec 12, T11S, R33E
-	Sohio State "A"	Unit P, Sec 04, T11S, R33E
-	State NBF #1	Unit N, Sec 22, T11S, R33E
-	State NBN #1	Unit N, Sec 16, T11S, R33E
-	Vera #1	Unit E, Sec 32, T11S, R33E

The remedial action work plan, as contained in the above referenced documents, is approved with the following conditions:

1. All soil samples from the excavations and remediated soils will be taken and analyzed for total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene and xylene (BTEX) using EPA approved methods and quality assurance/quality control procedures.

NOTE: The proposed BTEX soil analytical method QP-19 is not an EPA approved method for analysis of soils. In fact, the QP-19 procedure does not measure BTEX in soils but actually measures the concentrations of BTEX in vapors emanating from the soil in an enclosed headspace. This method is not acceptable for a final determination of the

Mr. Larry G. Sugano
June 4, 1997
Page 2

remaining concentrations of BTEX in soils. EPA approved methods must be used.

In addition, the TPH analytical data sheets for the initial surveys do not contain the EPA method QA/QC data such as duplicates, spikes, etc. for each site nor do they contain the signature of the analyst. The soil TPH analyses from the excavations and remediated soils must include appropriate QA/QC data for the EPA method TPH soil analysis and a data sheet signed by the analyst.

2. Upon completion of the soil remedial actions at the Vera #1, State NBN #1, State NBF #1, Bell State "A" and G.S. State #1, TC will install a monitor well directly adjacent to and downgradient of the pit at each site.
3. At the Mabel Com #1 and Iva Com #1, TC will define the full extent of free phase and dissolved phase hydrocarbon contaminants in ground water which are in excess of New Mexico Water Quality Control Commission (WQCC) standards. During the initial ground water investigations at least 2 monitor wells will be installed in a radial pattern downgradient of each site recovery well such that the direction of the local ground water gradient can be determined.
4. At the Mabel Com #1 and Iva Com #1, the recovery wells will be installed directly adjacent to the excavated pit such that the well bore does not pierce the liners in the excavated pit areas.
5. All monitor wells and recovery wells will be constructed and completed as set out below:
 - a. A minimum of fifteen feet of well screen will be installed, with at least five feet of well screen above the water table and ten feet of well screen below the water table.
 - b. An appropriately sized gravel pack will be set around the well screen from the bottom of the hole to 2-3 feet above the top of the well screen.
 - c. A 2-3 foot bentonite plug will be placed above the gravel pack.
 - d. The remainder of the hole will be grouted to the surface with cement containing 5 % bentonite.
 - e. Each well will be developed after construction using EPA approved procedures.

Mr. Larry G. Sugano
June 4, 1997
Page 3

6. Ground water from all monitor wells and recovery wells will be initially sampled and analyzed for concentrations of benzene, toluene, ethylbenzene, xylene (BTEX), major cations and anions, WQCC metals and polynuclear aromatic hydrocarbons using EPA approved methods and QA/QC procedures.
7. All wastes generated during the investigative and remedial actions will be disposed of at an OCD approved facility.

NOTE: The OCD permitted Gandy/Marley Landfarm is not allowed to accept liquids. This landfarm is only permitted to accept contaminated soils and sludges. If liquids are recovered during the remedial actions they will need to be disposed of at an alternate OCD approved facility which is permitted for those types of wastes.

8. TC will submit a report on the investigations and remedial actions to the OCD by September 5, 1997. The report will contain:
 - a. A description of all activities which occurred during the investigations and remedial actions including the final excavated size of each pit, the volume of material remediated as well as conclusions and recommendations.
 - b. A completed OCD "PIT REMEDIATION AND CLOSURE REPORT" form for each site for which final pit closure approval is sought.
 - c. A summary of all laboratory analytic results of soil and water quality sampling for each site including copies of all laboratory analytical data sheets and associated QA/QC data.
 - d. A water table elevation map for the Mable Com #1 and Iva Com #1 sites using the water table elevation of the ground water in all site monitor wells.
 - e. A geologic log and as built well completion diagram for each monitor well and recovery well.
9. The OCD defers comment on the long term ground water monitoring plan for the Mabel Com #1 and Iva Com #1 until the full extent of contamination has been determined.
10. TC will notify the OCD at least one week in advance of all scheduled activities such that the OCD has the opportunity to witness the events and/or split samples.

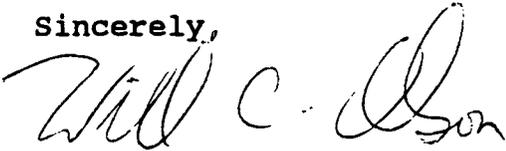
Mr. Larry G. Sugano
June 4, 1997
Page 4

11. All documents submitted for approval will be submitted to the OCD Santa Fe Office with copies provided to the OCD Hobbs District Office.

Please be advised that OCD approval does not relieve TC of liability if contamination exists which is beyond the scope of the work plan or if the activities fail to adequately determine the extent of or adequately remediate contamination related to TC's activities. In addition, OCD approval does not relieve TC of responsibility for compliance with any other federal, state or local laws and/or regulations.

If you have any questions, please call me at (505) 827-7154.

Sincerely,



William C. Olson
Hydrogeologist
Environmental Bureau

xc: Jerry Sexton, OCD Hobbs District Supervisor
Wayne Price, OCD Hobbs Office
Linda Freedman, NM State Land Office
Mike Griffin, Whole Earth Environmental, Inc.

P 410 431 177

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